Oracle® Fusion Middleware

Upgrading Oracle Data Integrator

12c (12.2.1.3)
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Oracle Fusion Middleware Upgrading Oracle Data Integrator, 12c (12.2.1.3)

E95535-02

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Preface

This document describes how to upgrade an existing Oracle Data Integrator environment to 12*c* (12.2.1.3.0).

- Audience
  Identify the target audience for your book and learn more about this document intended for.
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  Look for all the documents that you want to refer in Fusion Middleware from various documentation libraries.
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Audience

Identify the target audience for your book and learn more about this document intended for.

This document is intended for system administrators who are responsible for installing, maintaining, and upgrading Oracle Data Integrator. It is assumed that readers have knowledge of the following:

- Oracle Fusion Middleware system administration and configuration.
- Configuration parameters and expected behavior of the system being upgraded.

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Related Documents

Look for all the documents that you want to refer in Fusion Middleware from various documentation libraries.

For more information, see the following documents, which are available on the home page of *Fusion Middleware Documentation*:

- For Oracle Data Integrator related information, see *Oracle Data Integrator Documentation*.
- For Oracle Fusion Middleware getting started related information, see *Fusion Middleware Getting Started*.
- For Oracle Fusion Middleware installation related information, see *Fusion Middleware Installation Documentation*.
- For Oracle Fusion Middleware upgrade related information, see *Fusion Middleware Upgrade Documentation*.
- For Oracle Fusion Middleware administration-related information, see *Fusion Middleware Administration Documentation*.
- For Oracle Fusion Middleware release-related information, see *Fusion Middleware Release Notes Documentation*.

Conventions

Learn about the conventions used in this document.

This document uses the following text conventions:

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.

Part I
Getting Started

This part of *Upgrading Oracle Data Integrator* introduces Oracle Data Integrator and provides steps you must perform to prepare for upgrading to 12*c* (12.2.1.3.0).

- Introduction to Upgrading Oracle Data Integrator to 12c (12.2.1.3.0)
  Before you begin, review all introductory information to understand the standard upgrade topologies and upgrade paths for Oracle Data Integrator 12*c* (12.2.1.3.0).
- Pre-Upgrade Requirements
  Before you begin to upgrade Oracle Data Integrator 12*c* (12.2.1.3.0), you must perform pre-upgrade tasks such as backing up, cloning your current environment, and verifying that your system meets certified requirements.

1

Introduction to Upgrading Oracle Data Integrator to 12*c* (12.2.1.3.0)

Before you begin, review all introductory information to understand the standard upgrade topologies and upgrade paths for Oracle Data Integrator 12*c* (12.2.1.3.0).

Following the pre-upgrade information and preparation steps, the procedures in this guide are divided into two sections:

- Upgrades from 11*g*, described in Upgrading Oracle Data Integrator from 11*g*.

> **Note:**
>
> Versions of Interfaces created in Oracle Data Integrator 11*g* are not migrated when upgrading Oracle Data Integrator from 11*g* to 12*c*.

- Upgrades from a previous 12*c* release, described in Upgrading Oracle Data Integrator from a Previous 12*c* Release.

> **Note:**
>
> For general information about Fusion Middleware upgrade planning and other upgrade concepts and resources, see the following sections in *Planning an Upgrade of Oracle Fusion Middleware*:
>
> - Planning an Upgrade to Oracle Fusion Middleware 12*c* (12.2.1.3.0)
> - Understanding In-Place versus Out-of-Place Upgrades
> - Understanding the Basic 12*c* Upgrade Tasks

The following topics describe the concepts related to upgrading Oracle Data Integrator:

- About the Valid Starting Points for the Oracle Data Integrator Upgrade
  You can upgrade Oracle Data Integrator from 11*g* or from a previous 12*c* release.
- About the Oracle Data Integrator Standard Topologies
  The steps to upgrade Oracle Data Integrator to 12*c* (12.2.1.3.0) depend on the existing production topology (either 11*g* or a previous 12*c* release).
- About the New Features for Oracle Data Integrator 12c
  There are several changes between Oracle Data Integrator 11*g* and 12*c*.

About the Valid Starting Points for the Oracle Data Integrator Upgrade

You can upgrade Oracle Data Integrator from 11*g* or from a previous 12*c* release.

The following supported starting points are supported for an upgrade to Oracle Data Integrator 12*c* (12.2.1.3.0):

- Oracle Data Integrator 11*g* Release 1 (11.1.1.7, 11.1.1.8, and 11.1.1.9)
- Oracle Data Integrator 12*c* (12.1.2.0, 12.1.3.0, 12.2.1.0, 12.2.1.1, 12.2.1.2, and 12.2.1.2.6)

The upgrade procedures in this guide explain how to upgrade an existing Oracle Data Integrator 11*g* domain and existing 12*c* domain to Oracle Fusion Middleware 12*c* (12.2.1.3.0). If your domain contains other components that also need to be upgraded, links to supporting documentation are provided.

If your existing version of Oracle Data Integrator is earlier than 11*g* Release 1 (11.1.1.6.0), you must first upgrade your software to one of the following supported versions before you can upgrade to 12*c* (12.2.1.3.0):

- To upgrade to 11*g* Release 1 (11.1.1.6.0), see the *Oracle Fusion Middleware Upgrade Guide for Oracle Data Integrator* in the 11*g* Release 1 (11.1.1.6.0) documentation library.
- To upgrade to 11*g* Release 1 (11.1.1.7.0), see the *Oracle Fusion Middleware Upgrade Guide for Oracle Data Integrator* in the 11*g* Release 1 (11.1.1.7.0) documentation library.

> **Note:**
>
> If your current starting point is 11*g* Release 1 (11.1.1.6.0), Oracle recommends upgrading to 11.1.1.7 first, and then upgrading to 12*c* (12.2.1.3.0).

About the Oracle Data Integrator Standard Topologies

The steps to upgrade Oracle Data Integrator to 12*c* (12.2.1.3.0) depend on the existing production topology (either 11*g* or a previous 12*c* release).

As a result, it is difficult to provide exact upgrade instructions for every possible Oracle Data Integrator installation. Therefore, this guide provides instructions for upgrading several typical Oracle Data Integrator topologies. These typical topologies are referred to as *standard upgrade topologies*.

Your actual topology may vary, but the topologies described here provide examples that can be used as a guide to upgrade other similar Oracle Data Integrator topologies.

> **Note:**
>
> For additional information about the upgrade process and planning resources to ensure your upgrade is successful, see Planning an Upgrade to Oracle Fusion Middleware 12*c* (12.2.1.3.0) in *Planning an Upgrade of Oracle Fusion Middleware*.

If you are upgrading from a previous 12*c* release, the standard topology remains unchanged. See Upgrading Oracle Data Integrator from a Previous 12*c* Release.

If you are upgrading from 11*g*, refer to the following sections to upgrade the following specific topologies:

- Oracle Data Integrator Standard Upgrade Topology for Standalone Agents
- Oracle Data Integrator Standard Upgrade Topology for Standalone Collocated Agents
- Oracle Data Integrator Standard Upgrade Topology for Java EE Agents

Oracle Data Integrator Standard Upgrade Topology for Standalone Agents

When upgrading from 11*g* to 12*c* (12.2.1.3.0), the Oracle Data Integrator topology for standalone agents that are not configured in a WebLogic domain is updated as described here. If you are upgrading from a previous 12*c* release, the existing topology remains unchanged.

A standalone agent runs in a separate Java Virtual Machine (JVM) process. It connects to the work repository and to the source and target data servers using JDBC. Standalone agents can be installed on any server with a Java Virtual Machine installed. This type of agent is appropriate when you have to use a resource that is local to one of your data servers (for example, the file system or a loader utility installed with the database instance), and you do not want to install a Java EE application server on this machine.

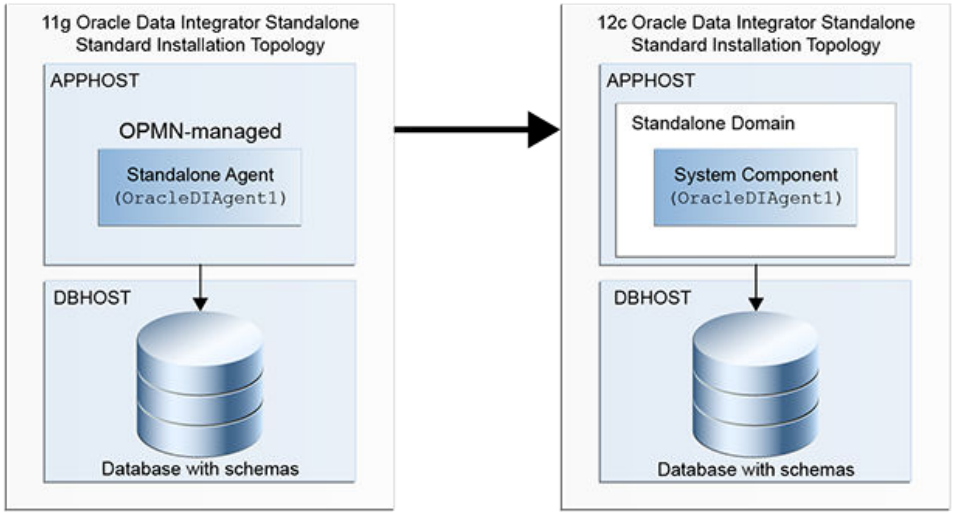
In 11*g*, the following standalone agent configurations are possible:

- Standalone agent as a standalone Oracle instance, not managed by OPMN. In this configuration, the Upgrade Assistant *does not* support the upgrade of standalone system component configurations to 12*c* (12.2.1.3.0).
- Standalone agent managed by OPMN. In this configuration, the Upgrade Assistant supports the upgrade of standalone system component configurations to 12*c* (12.2.1.3.0).

Figure 1-1 shows the 11*g* Oracle Data Integrator standard installation topology for a standalone agent managed by OPMN and the resulting 12*c* topology as it appears after you complete the upgrade procedures in this guide.

The upgrade roadmap and procedures for this topology are provided in Upgrading an Oracle Data Integrator Standalone Agent Environment from 11*g* .

Figure 1-1 Oracle Data Integrator Standard Upgrade Topology for a Standalone Agent



All the elements in the above topology illustration are described in the following table.

Table 1-1 Description of the Elements in the Standalone Agent Standard Upgrade Topology for Standalone Agents

Element	Description and Links to Additional Documentation
11*g* Oracle Data Integrator Standalone Standard Installation Topology	This is the label for the left side of the figure. It shows a typical single-host topology created using the Oracle Fusion Middleware 11*g* Oracle Data Integrator installer. It consists of a single standalone agent (`OracleDIAgent1`) on a single machine. The standalone agent is managed by OPMN. A relational database for the Master and Work Repository is also required, as shown in the figure.
12c Oracle Data Integrator Standalone Agent 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* Oracle Data Integrator distribution. It consists of a single standalone agent (`OracleDIAgent1`) configured in a standalone domain, along with a relational database for the Master and Work Repository.
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.
Standalone Agent	The standalone Oracle Data Integrator agent that runs in a separate Java Virtual Machine (JVM) process. In 11*g*, the standalone agent is created directly as part of the installation.

Table 1-1 (Cont.) Description of the Elements in the Standalone Agent Standard Upgrade Topology for Standalone Agents

Element	Description and Links to Additional Documentation
Standalone Domain	See Standalone Domain in *Administering Oracle HTTP Server*.
System Component	In 12*c*, a standalone domain must be created before a standalone agent can be created. A system component corresponds to a standalone agent.

Oracle Data Integrator Standard Upgrade Topology for Standalone Collocated Agents

When upgrading from 11*g* to 12*c* (12.2.1.3.0), the Oracle Data Integrator topology for standalone agents that are configured in a WebLogic domain is updated as described here. If you are upgrading from a previous 12*c* release, the existing topology remains unchanged.

A standalone collocated agent runs in a separate Java Virtual Machine (JVM) process but is part of a WebLogic Server domain and controlled by a WebLogic Administration Server. Standalone collocated agents can be installed on any server with a Java Virtual Machine installed, but require a connection to the WebLogic Administration Server. This type of agent is appropriate when you need to use a resource that is local to one of your data servers, but you want centralized management of all applications in an enterprise application server.

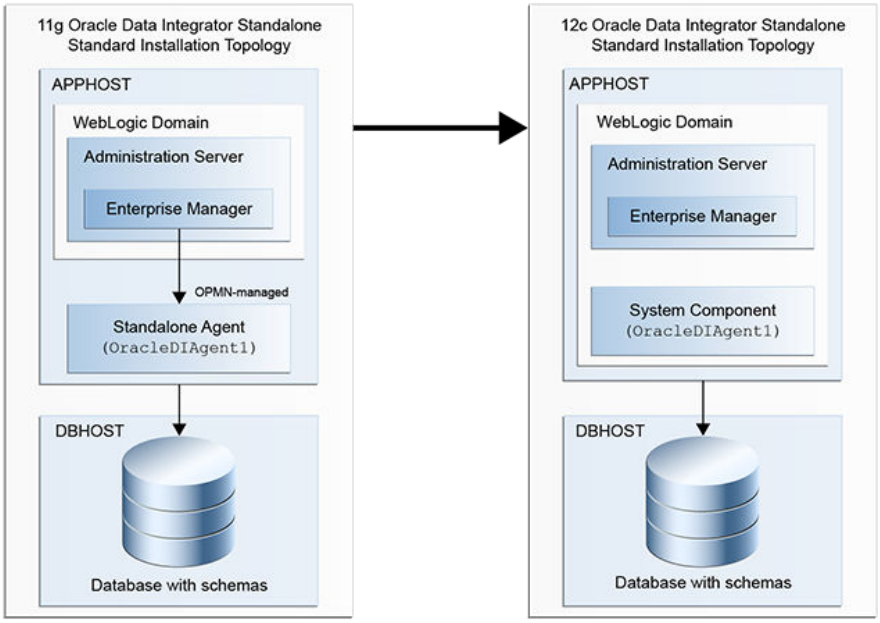
In 11*g*, the following standalone collocated agent configurations are possible:

- Standalone collocated agent not managed by OPMN. In this configuration, the Upgrade Assistant *does not* support the upgrade of WebLogic domain component configurations to 12*c* (12.2.1.3.0).
- Standalone collocated agent managed by OPMN. In this configuration, the Upgrade Assistant supports the upgrade of WebLogic domain component configurations to 12*c* (12.2.1.3.0).

Figure 1-2 shows the 11*g* Oracle Data Integrator standard installation topology for a standalone collocated agent managed by OPMN and the resulting 12*c* topology as it appears after you complete the upgrade procedures in this guide.

The upgrade roadmap and procedures for this topology are provided in Upgrading an Oracle Data Integrator Standalone Collocated Agent Environment from 11*g*.

Figure 1-2 Oracle Data Integrator Standard Upgrade Topology for a Standalone Collocated Agent



All the elements in the above topology illustration are described in the following table.

Table 1-2 Description of the Elements in the Standard Upgrade Topology for Standalone Collocated Agents

Element	Description and Links to Additional Documentation
11*g* Oracle Data Integrator Standalone Standard Installation Topology	This is the label for the left side of the figure. It shows a typical single-host topology created using the Oracle Fusion Middleware 11*g* Oracle Data Integrator installer. It consists of a single standalone agent (`OracleDIAgent1`) on a single machine. The standalone agent is managed by OPMN and is part of a WebLogic domain. A relational database for the Master and Work Repository is also required, as shown in the Figure 1-2.
12*c* Oracle Data Integrator Standalone 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* Oracle Data Integrator distribution. It consists of a single standalone agent (`OracleDIAgent1`) configured in a WebLogic domain, along with a relational database for the Master and Work Repository.
APPHOST	Standard term used in Oracle documentation referring to the machine that is hosting the application tier.

Table 1-2 (Cont.) Description of the Elements in the Standard Upgrade Topology for Standalone Collocated Agents

Element	Description and Links to Additional Documentation
DBHOST	Standard term used in Oracle documentation referring to the machine that is hosting the database.
WebLogic Domain	A logically related group of Java components (in this case, the Administration Server, Managed Servers, Standalone Agent, and other related software components). See What Is an Oracle WebLogic Server Domain? in *Understanding Oracle Fusion Middleware*.
Administration Server	The central control entity of a domain that maintains the domain's configuration objects and distributes configuration changes to Managed Servers. See What Is the Administration Server? in *Understanding Oracle Fusion Middleware*.
Enterprise Manager	Oracle Enterprise Manager Fusion Middleware Control. See Oracle Enterprise Manager Fusion Middleware Control in *Understanding Oracle Fusion Middleware*.
Standalone Agent	The standalone Oracle Data Integrator agent that runs in a separate Java Virtual Machine (JVM) process. In 11*g*, the standalone agent is created directly as part of the installation.
System Component	A system component corresponds to a standalone agent managed with the WebLogic Management Framework.

Oracle Data Integrator Standard Upgrade Topology for Java EE Agents

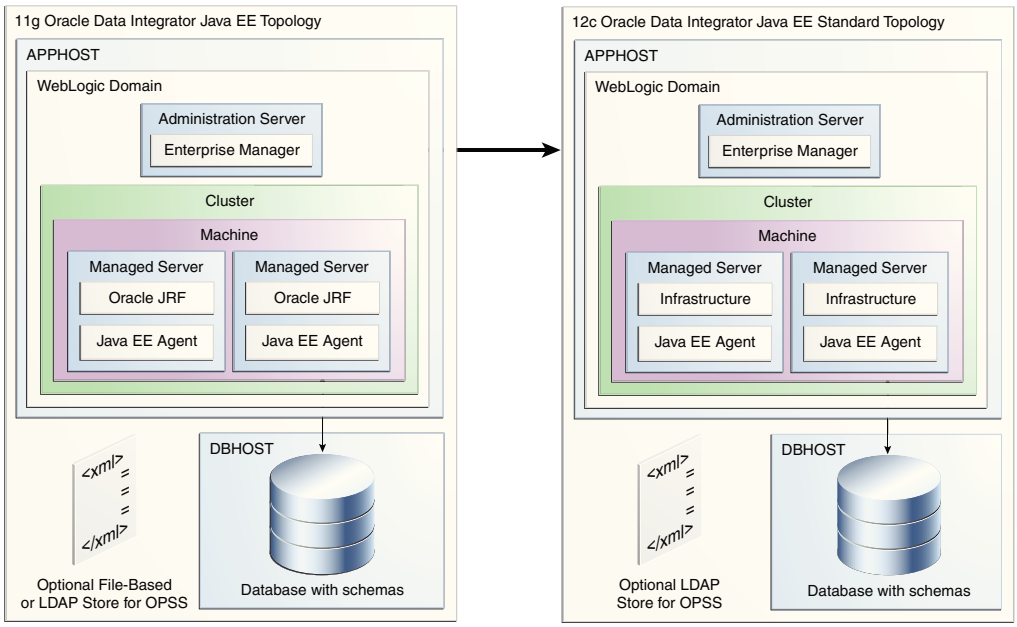
When upgrading from 11*g* to 12*c* (12.2.1.3.0), the Oracle Data Integrator topology for Java EE agents is updated as described here. If you are upgrading from a previous 12*c* release, the existing topology remains unchanged.

A Java EE agent is deployed as a web application in a Java EE application server, such as Oracle WebLogic Server. The Java EE agent can benefit from all the features of the application server (for example, JDBC data sources or clustering for Oracle WebLogic Server). This type of agent is appropriate when there is a need for centralizing the deployment and management of all applications in an enterprise application server, or when you have requirements for high availability.

Figure 1-3 shows the 11*g* Oracle Data Integrator Java EE standard installation topology and the resulting 12*c* topology as it appears after you complete the upgrade procedures in this guide.

The upgrade roadmap and procedures for this topology are provided in Upgrading an Oracle Data Integrator Java EE Agent Environment from 11*g* .

Figure 1-3 Oracle Data Integrator Standard Upgrade Topology for a Java EE Agent



All the elements in the above topology illustration are described in the following table.

Table 1-3 Description of the Elements in the Standard Upgrade Topology for Java EE Agents

Element	Description and Links to Additional Documentation
11*g* Oracle Data Integrator Java EE Topology	This is the label for the left side of the figure. It shows a typical single-host topology created using the Oracle Fusion Middleware 11*g* Oracle Data Integrator installer. It consists of a single domain that contains a cluster of two managed servers, a Java EE agent, and the Administration Server. The domain also requires a relational database for the Master and Work Repository schema, and either an LDAP-based or file store for Oracle Platform Security Services (OPSS).
12*c* Oracle Data Integrator Java EE 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* Oracle Data Integrator distribution. Like the 11*g* topology, it also consists of a single domain that contains a cluster of two managed servers, a Java EE agent, the Administration Server, and a database for the Master and Work Repository schema. Unlike the 11*g* topology, only an LDAP based store can be used for OPSS; file-based stores are not allowed in 12*c*.
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.

Table 1-3 (Cont.) Description of the Elements in the Standard Upgrade Topology for Java EE Agents

Element	Description and Links to Additional Documentation
WebLogic Domain	A logically related group of Java components (in this case, the Administration Server, Managed Servers, Java EE agent, and other related software components). See What Is an Oracle WebLogic Server Domain? in *Understanding Oracle Fusion Middleware*.
Administration Server	The central control entity of a domain that maintains the domain's configuration objects and distributes configuration changes to Managed Servers. See What Is the Administration Server? in *Understanding Oracle Fusion Middleware*.
Enterprise Manager	Oracle Enterprise Manager Fusion Middleware Control. See Oracle Enterprise Manager Fusion Middleware Control in *Understanding Oracle Fusion Middleware*.
Cluster	A collection of multiple WebLogic Server instances running simultaneously and working together. See Overview of Managed Servers and Managed Server Clusters in *Understanding Oracle Fusion Middleware*.
Machine	Logical representation of the computer that hosts one or more WebLogic Server instances (servers). Machines are also the logical glue between WebLogic Managed Servers and the Node Manager; in order to start or stop a Managed Server with Node Manager, the Managed Server must be associated with a machine.
Managed Server	Host for your applications, application components, Web services, and their associated resources. See Understanding Managed Servers and Managed Server Clusters in *Understanding Oracle Fusion Middleware*.
Java EE Agent	A Java EE agent is a JEE application that is deployed and runs on a Managed Server configured in a WebLogic domain. For more information about these agents and how they fit into the overall Oracle Data Integrator topology, see Introduction to the Oracle Data Integrator Topology in *Developing Integration Projects with Oracle Data Integrator*.
Oracle JRF	Oracle JRF (Java Required Files) consists of components that are 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.

Table 1-3 (Cont.) Description of the Elements in the Standard Upgrade Topology for Java EE Agents

Element	Description and Links to Additional Documentation
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. See What Is the Metadata Repository? in *Understanding Oracle Fusion Middleware*. • Oracle Application Developer Framework (ADF) • Oracle Web Services Manager (OWSM)
Database with Schemas	Represents a supported database, where the Oracle Fusion Middleware schemas have been created using the Repository Creation Utility (RCU).

About the New Features for Oracle Data Integrator 12*c*

There are several changes between Oracle Data Integrator 11*g* and 12*c*.

See New and Changed Features for 12*c* in *Understanding Oracle Fusion Middleware*.

If your environment includes Oracle WebLogic Server with Oracle ADF, see Key Differences Between Application Developer 11*g* and Infrastructure 12*c* in *Upgrading to the Oracle Fusion Middleware Infrastructure*.

The following key differences exist between Oracle Data Integrator 11*g* and 12*c*:

- Standalone Agents are Managed by the WebLogic Management Framework
- Standalone Agents are Installed in Their Own Directories
- Repository Upgrade Validates Name Uniqueness for Objects

Standalone Agents are Managed by the WebLogic Management Framework

In 12*c*, system components, like the Oracle Data Integrator standalone agent, are managed by the WebLogic Management Framework.

See What Is the WebLogic Management Framework? in *Understanding Oracle Fusion Middleware*.

Standalone Agents are Installed in Their Own Directories

In 12*c*, standalone agents that are configured within a WebLogic Server domain are installed in a separate directory and not within the product installation directory.

See About the Oracle Data Integrator Standalone Agent Standard Installation Topology in *Installing and Configuring Oracle Data Integrator*.

Repository Upgrade Validates Name Uniqueness for Objects

During the repository upgrade to 12*c*, the upgrade process checks for duplicated names (according to the namespace rules) for a number of objects. The check is done before the actual upgrade starts and if duplicates are detected, then you must print a report with the list of duplicates in the upgrade log and stop the upgrade. You should then connect to the 11*g* repository using ODI Studio to manually fix the duplicates (either by rename or delete), and then restart the upgrade.

In 12*c*, the following objects must have unique names:

- Folder
- Interface
- Procedure/ KM

> **Note:**
>
> The Knowledge Modules must have unique names within the parent scope. This applies to either their own project or for global Knowledge Modules.

- Package
- Profile
- User Functions

2
Pre-Upgrade Requirements

Before you begin to upgrade Oracle Data Integrator 12*c* (12.2.1.3.0), you must perform pre-upgrade tasks such as backing up, cloning your current environment, and verifying that your system meets certified requirements.

- Oracle Fusion Middleware Pre-Upgrade Checklist
  Perform the tasks in this checklist before you begin any upgrade to ensure you have a successful upgrade and limited downtime.
- Creating a Complete Backup
  Before you start an upgrade, back up all system-critical files, including the databases that host your Oracle Fusion Middleware schemas.
- Cloning Your Production Environment for Testing
  Create a copy of your actual production environment, upgrade the cloned environment, verify that the upgraded components work as expected, and then (and only then) upgrade your production environment.
- Verifying Certification and System Requirements
  Review the certification matrix and system requirements documents to verify that your environment meets the necessary requirements for installation.
- Updating Policy Files when Using Enhanced Encryption (AES 256)
  If you plan to use enhanced encryption, such as Advanced Encryption Standard (AES) 256, in your upgraded environment, Oracle recommends that you apply the latest required policy files to the JDK before you upgrade.
- Purging Unused Data
  Purging unused data and maintaining a purging methodology before an upgrade can optimize the upgrade process.
- Creating an Edition on the Server for Edition-Based Redefinition
  Before upgrading an Edition-Based Redefinition (EBR) enabled schema, you must connect to the database server and create an edition on the database server for 12*c*.
- Creating a Non-SYSDBA User to Run the Upgrade Assistant
  Oracle recommends that you create a non-SYSDBA user called `FMW` to run the Upgrade Assistant. This user has the privileges required to modify schemas, but does not have full administrator privileges.
- Identifying Existing Schemas Available for Upgrade
  This optional task enables you to review the list of available schemas before you begin the upgrade by querying the schema version registry. The registry contains schema information such as version number, component name and ID, date of creation and modification, and custom prefix.
- Configuring External Authentication for ODI
  Switch external authentication mode to internal authentication before you start the Upgrade Assistant.

Oracle Fusion Middleware Pre-Upgrade Checklist

Perform the tasks in this checklist before you begin any upgrade to ensure you have a successful upgrade and limited downtime.

Upgrades are performed while the servers are down. This checklist identifies important and often time-consuming pre-upgrade tasks that you can perform before the upgrade to limit your downtime. The more preparation you can do before you begin the upgrade process, the less time you will spend offline.

> **Note:**
>
> The pre-upgrade procedures you perform will depend on the configuration of your existing system, the components you are upgrading, and the environment you want to create at the end of the upgrade and configuration process. Complete only those tasks that apply to your configurations or use cases.

Table 2-1 Tasks to Perform Before You Upgrade to Oracle Fusion Middleware 12*c*

Task	Description
Required Create a complete backup of your existing environment.	Back up all system-critical files and database(s) that contain any schemas that are to be upgraded. If the upgrade fails, you must restore your pre-upgrade environment and begin the upgrade again. See Creating a Complete Backup. • Make sure that your backup includes the schema version registry table. See Backing Up the Schema Version Registry Table. • If you modified any of the startup scripts in your existing domain, you will need to copy them to temporary directory location (outside of the existing domain) during the upgrade and redeploy them after the upgrade. See Maintaining Customized Domain and Environment Settings.
Optional Clone your production environment to use as an upgrade testing platform.	In addition to creating a complete backup of your system files, Oracle strongly recommends that you clone your production environment. This environment can be used to test the upgrade. See Cloning Your Production Environment for Testing.

Table 2-1 (Cont.) Tasks to Perform Before You Upgrade to Oracle Fusion Middleware 12*c*

Task	Description
Required Verify that you are installing and upgrading your product on a supported hardware and software configuration. **Caution:** Do not attempt an upgrade if you are unable to use the latest supported operating system. As with all supported configurations, failure to comply with these requirements may cause your upgrade to fail.	Verify that your hardware and software configurations (including operating systems) are supported by the latest certifications and requirements documents. Also make sure to use a supported JDK version before you install the 12*c* product distributions. Oracle recommends that you verify this information right before you start the upgrade as the certification requirements are frequently updated. **Note:** Make sure that you have applied the latest patches to your components before you upgrade. See Verifying Certification and System Requirements.
Required for 32–bit Operating Systems Only Migrate to a 64-bit operating system before you can upgrade.	This is required only if you are currently running an unsupported 32–bit operating system. See Migrating from a 32-Bit to a 64-Bit Operating System.
Optional Update security policy files if you are using enhanced encryption (AES 256).	Some of the security algorithms used in Fusion Middleware 12*c* require additional policy files for the JDK. If you plan to use enhanced encryption, such as AES 256, Oracle recommends that you apply the latest required policy files to the JDK before you upgrade. See Updating Policy Files when Using Enhanced Encryption (AES 256).
Optional Purge any outdated or unused data before you upgrade.	To optimize performance, Oracle strongly recommends that you purge data and objects that will not be used in the upgraded environment. See Purging Unused Data.
Required for Oracle Database Users Only Before upgrading an Edition-Based Redefinition (EBR) enabled schema, you must connect to the database server and create an edition on the database server for 12*c* (12.2.1.3.0).	If you are using an Edition-Based Redefinition (EBR) database, you must create the edition before starting the upgrade. See Creating an Edition on the Server for Edition-Based Redefinition.
Optional Create a Non-SYSDBA user to run the Upgrade Assistant.	Oracle recommends that you create the FMW user to run Upgrade Assistant. User FMW can run the Upgrade Assistant without system administration privileges. See Creating a Non-SYSDBA User to Run the Upgrade Assistant

Creating a Complete Backup

Before you start an upgrade, back up all system-critical files, including the databases that host your Oracle Fusion Middleware schemas.

The backup must include the `SYSTEM.SCHEMA_VERSION_REGISTRY$` table so that you can restore the contents back to its pre-upgrade state if the upgrade fails.

The Upgrade Assistant Prerequisites screen prompts you to acknowledge that backups have been performed before you proceed with the actual upgrade. However, note that the Upgrade Assistant does not verify that a backup has been created.

See:

- Backing Up Your Environment in *Administering Oracle Fusion Middleware*
- Upgrading and Preparing Your Oracle Databases for 12*c* in *Planning an Upgrade of Oracle Fusion Middleware*
- Backing Up the Schema Version Registry Table
  Your system backup must include the `SYSTEM.SCHEMA_VERSION_REGISTRY$` table or the `FMWREGISTRY.SCHEMA_VERSION_REGISTRY$` table.
- Maintaining Customized Domain and Environment Settings
  If you have modified any domain-generated, server startup scripts, or configuration files in your pre-upgrade environment, it is important to note that these changes are overwritten during the installation, domain upgrade, and reconfiguration operations. Save your customized files to a shared library location so that you can continue to use them after the upgrade.

Backing Up the Schema Version Registry Table

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

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

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

Maintaining Customized Domain and Environment Settings

If you have modified any domain-generated, server startup scripts, or configuration files in your pre-upgrade environment, it is important to note that these changes are overwritten during the installation, domain upgrade, and reconfiguration operations.

Save your customized files to a shared library location so that you can continue to use them after the upgrade.

Every domain installation includes dynamically-generated domain and server startup scripts, such as `setDomainEnv`. These files are replaced by newer versions during the installation and upgrade process. To maintain your custom domain-level environment settings, Oracle recommends that you create a separate file to store the custom domain information before you upgrade, instead of modifying the scripts directly.

For example, 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 add custom libraries to the WebLogic Server classpath, specify additional command-line options for running the servers, or specify additional environment variables. When using the `pack` and `unpack` commands, any custom settings that you add to this file are preserved during the domain upgrade operation and are carried over to the remote servers.

The following example illustrates startup customizations in a `setUserOverrides` file:

```
# add custom libraries to the WebLogic Server system claspath
  if [ "${POST_CLASSPATH}" != "" ] ; then
    POST_CLASSPATH="${POST_CLASSPATH}${CLASSPATHSEP}${HOME}/foo/fooBar.jar"
    export POST_CLASSPATH
  else
    POST_CLASSPATH="${HOME}/foo/fooBar.jar"
    export POST_CLASSPATH
  fi

# specify additional java command-line options for servers
JAVA_OPTIONS="${JAVA_OPTIONS}  -Dcustom.property.key=custom.value"
```

If the `setUserOverrides` file exists during a server startup, the file is included in the startup sequence and any overrides contained within this file take effect. You must store the `setUserOverrides` file in the *`EXISTING_DOMAIN_HOME`*`/bin` directory.

> **Note:**
>
> If you are unable to create the `setUserOverrides` script before an upgrade, you need to reapply your settings as described in Re-apply Customizations to Startup Scripts in *Upgrading Oracle WebLogic Server*.

Cloning Your Production Environment for Testing

Create a copy of your actual production environment, upgrade the cloned environment, verify that the upgraded components work as expected, and then (and only then) upgrade your production environment.

Cloning your production environment for testing is recommended, but not required.

Upgrades cannot be reversed. In most cases, if an error occurs, you must stop the upgrade and restore the entire environment from backup and begin the upgrade

process from the beginning. Identifying potential upgrade issues in a development environment can eliminate unnecessary downtime.

> **Note:**
>
> It is beyond the scope of this document to describe the cloning procedures for all components and operating systems. Cloning procedures are component and operating system-specific. At a high level, you install the pre-upgrade version of your component domain on a test machine, create the required schemas using the Repository Creation Utility (RCU), and perform the upgrade.

Additional benefits of running an upgrade in a cloned production environment include the following:

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

> **Note:**
>
> You can run the pre-upgrade Readiness Check on the cloned production environment to help identify potential upgrade issues with your data, but you must perform a complete test upgrade on a cloned environment to ensure a successful upgrade.

Cloning an Oracle Data Integrator Production Environment for Testing

Cloning an Oracle Data Integrator production environment is a two-part process.

- Task 1: Clone (or copy) the existing production environment — referred to as **A** in the example below.
- Task 2: Run the full upgrade on the cloned environment — referred to as **B** in the example below.

Task 1: Clone existing production environment (A) for upgrade validation.

1. Install Oracle Data Integrator 11*g* or 12*c* version that matches the production Oracle Data Integrator instance version on the test machine.
   a. If your pre-upgrade environment is Oracle Data Integrator 11*g* Release 1, see the *Installation Guide for Oracle Data Integrator* for the specific 11*g* release.
   b. If your pre-upgrade environment is a previous Oracle Data Integrator 12*c* release, see the *Installing and Configuring Oracle Data Integrator* guide for the specific 12*c* release.

2. Run the Repository Creation Utility (RCU) from the production version you just installed, and create new Oracle Data Integrator repository schemas (B). You will want to perform testing on non-production schemas.

> **Note:**
>
> If you are cloning an Oracle Data Integrator 11*g* production environment: When you create a new repository using the RCU, you are required to enter a repository ID for both Master and Work. The defaults are 0=Master and 1=Work. Make sure that the new IDs are different that those used in the existing production repository to avoid ID conflicts during repository import in Step 6.
>
> This is not required if you are cloning an Oracle Data Integrator 12*c* production environment.

3. If there are multiple work repositories, then you must create the other work repositories to match the production environment. See Creating a Work Repository in Oracle Data Integrator installation guide for your instance release.
4. Purge the execution logs to avoid exporting and importing excessive data as part of work repository export/import in the following step. See Purging the Logs.
5. Export Oracle Data Integrator master and work repository from the production system using Oracle Data Integrator export functionality. See Exporting and Importing the Master Repository in *Developing Integration Projects with Oracle Data Integrator*.
6. Import the Oracle Data Integrator master and work repository exports into the newly created Oracle Data Integrator schemas.

Your test environment should now be a clone of your production Oracle Data Integrator environment.

Task 2: Upgrade the cloned environment (B) to test the upgrade

1. Review the Oracle Fusion Middleware Pre-Upgrade Checklist to ensure that you have met all of the pre-upgrade requirements.
2. Install Oracle Data Integrator 12*c* (12.2.1.3.0) and any other product distributions into a new Oracle home on the test machine. See Installing the Oracle Data Integrator Software in *Installing and Configuring Oracle Data Integrator*.
3. Follow the standard upgrade procedures for your environment. Make sure that you select the appropriate upgrade procedures for your environment. See Introduction to Upgrading Oracle Data Integrator to 12c (12.2.1.3.0).
4. Complete all post-upgrade configuration tasks and verify that the upgraded components work as expected.

Verifying Certification and System Requirements

Review the certification matrix and system requirements documents to verify that your environment meets the necessary requirements for installation.

> **Note:**
>
> When checking the certification, system requirements, and interoperability information, be sure to check specifically for any 32-bit or 64-bit system requirements. It is important for you to download software specifically designed for the 32-bit or 64-bit environment, explicitly.

> **WARNING:**
>
> Make sure that your current environment has been patched to the latest patch set *before* you begin the upgrade. Certifications are based on fully patched environments, unless stated otherwise.

- Verify Your Environment Meets Certification Requirements
  Oracle has tested and verified the performance of your product on all certified systems and environments. Make sure that you are installing your product on a supported hardware or software configuration.
- Verify System Requirements and Specifications
  It is important to verify that the system requirements such as disk space, available memory, specific platform packages and patches, and other operating system-specific items are met.
- Verify That the Database Hosting Oracle Fusion Middleware is Supported
  You must have a supported Oracle database configured with the required schemas before you run Oracle Fusion Middleware 12*c*.
- Verify That the JDK Is Certified for This Release of Oracle Fusion Middleware
  At the time this document was published, the certified JDK for 12*c* (12.2.1.3.0) was 1.8.0_131.

Verify Your Environment Meets Certification Requirements

Oracle has tested and verified the performance of your product on all certified systems and environments. Make sure that you are installing your product on a supported hardware or software configuration.

Whenever new certifications occur, they are added to the appropriate certification document right away. New certifications can occur at any time, and for this reason the certification documents are kept outside of the documentation libraries and are available on Oracle Technology Network. See the Certification Matrix for 12*c* (12.2.1.3.0).

Verify System Requirements and Specifications

It is important to verify that the system requirements such as disk space, available memory, specific platform packages and patches, and other operating system-specific items are met.

Use the *Oracle Fusion Middleware System Requirements and Specifications* document to verify that the requirements of the certification are met. For example, if the Certification Matrix for 12*c* (12.2.1.3.0) indicates that your product is certified for installation on 64-Bit Oracle Linux 7, the System Requirements and Specifications document should be used to verify that your Oracle Linux 7 system has met the required minimum specifications such as disk space, available memory, specific platform packages and patches, and other operating system-specific items. This document is updated as needed and resides outside of the documentation libraries on the Oracle Technology Network (OTN).

> **Note:**
>
> When you install the Oracle Fusion Middleware Release 12*c* software in preparation for upgrade, you should use the same user account that you used to install and configure the existing, pre-upgrade Oracle Fusion Middleware software. On UNIX operating systems, this ensures that the proper owner and group is applied to new Oracle Fusion Middleware 12*c* files and directories.

If you are running a 32–bit environment, you will need to perform an additional set of steps:

- Migrating from a 32-Bit to a 64-Bit Operating System
  If you have a 32–bit operating system, then you must migrate your 32-bit environment to a 64-bit software environment before you upgrade.

Migrating from a 32-Bit to a 64-Bit Operating System

If you have a 32–bit operating system, then you must migrate your 32-bit environment to a 64-bit software environment before you upgrade.

Make sure to validate the migration to ensure all your Oracle Fusion Middleware 11*g* software is working properly on the 64-bit machine, and only then perform the upgrade to Oracle Fusion Middleware 12*c*.

In these tasks, *host* refers to the 32-bit source machine and *target* refers to the new 64-bit target machine.

> **Note:**
>
> These steps assume that your database is located on a separate host and will not be moved.

Upgrading an operating system typically involves the following:

> **Caution:**
>
> These steps are provided as an example of the operating system upgrade process and may or may not include all of the procedures you must perform to update your specific operating system. Consult your operating system's upgrade documentation for more information.

- Procure the Hardware That Supports the Upgrade's 64-bit Software Requirement
  Make sure that you have supported target hardware in place before you begin the upgrade process.
- Stop All Processes
  Before upgrading, you must stop all processes, including Managed Servers, the Administration Server, and Node Manager, if they are started on the host.
- Back Up All Files from the 32-bit Host Machine
  Make sure that you have created a complete backup of your entire 11*g* deployment before you begin the upgrade process. These files can be used if there is an issue during the migration and you have to restart the process.
- Set Up the Target 64-bit Machine with the 11g Host Name and IP Address
  The host name and IP address of the target machine must be made identical to the host. This requires you to change the IP address and name of the source machine or decommission the source machine to avoid conflicts in the network.
- Restore the 11g Backup from 32-bit Host to 64-bit Host
  Restore the files you backed from the 32-bit host using the same directory structure that was used in 11*g*. The directory structure on the target machine must be identical to the structure of the host machine.
- Install the 12c Product Distributions on the Target Machine
  Oracle recommends an Out-of-Place approach for upgrade. Therefore, you must install the 12*c* product distributions in a new Oracle home on the target machine.
- Upgrade the Target 64-bit Environment Using the Standard Upgrade Procedure
  After installing the product on the target machine, you must upgrade each product component individually using an Upgrade Utility specified in the component-specific upgrade guide and complete any post-upgrade tasks.

Procure the Hardware That Supports the Upgrade's 64-bit Software Requirement

Make sure that you have supported target hardware in place before you begin the upgrade process.

Stop All Processes

Before upgrading, you must stop all processes, including Managed Servers, the Administration Server, and Node Manager, if they are started on the host.

Stop the Managed Servers

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

- (UNIX) *`EXISTING_DOMAIN_HOME`*`/bin/stopManagedWebLogic.sh` *`managed_server_name admin_url`*

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

When prompted, enter your user name and password.

Stop the Administration Server

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

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

- (UNIX) *EXISTING_DOMAIN_HOME*/bin/stopWebLogic.sh
- (Windows) *EXISTING_DOMAIN_HOME*\bin\stopWebLogic.cmd

When prompted, enter your user name, password, and the URL of the Administration Server.

Stop Node Manager

To stop Node Manager, close the command shell in which it is running.

Alternatively, after having set the `nodemanager.properties` attribute `QuitEnabled` to `true` (the default is `false`), you can use WLST to connect to Node Manager and shut it down. See stopNodeManager in *WLST Command Reference for WebLogic Server*.

Back Up All Files from the 32-bit Host Machine

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

> **Note:**
>
> If the upgrade from 32-bit to 64-bit takes place on the same machine, there is a risk of corrupting the source environment if the upgrade fails.

See Backing Up Your Environment in *Oracle Fusion Middleware Administrator's Guide*.

During the upgrade you must have access to the contents of the following:

- *11g_DOMAIN_HOME*
- *11g*/nodemanager directory located in *11g_ORACLE_HOME*/wlserver/common/

Some of the backup and recovery procedures described in Backing Up Your Environment in *Oracle Fusion Middleware Administrator's Guide* are product-specific. Do not proceed with the upgrade until you have a complete backup.

Set Up the Target 64-bit Machine with the 11*g* Host Name and IP Address

The host name and IP address of the target machine must be made identical to the host. This requires you to change the IP address and name of the source machine or decommission the source machine to avoid conflicts in the network.

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

Restore the 11*g* Backup from 32-bit Host to 64-bit Host

Restore the files you backed from the 32-bit host using the same directory structure that was used in 11*g*. The directory structure on the target machine must be identical to the structure of the host machine.

See Recovering Your Environment in *Oracle Fusion Middleware Administrator's Guide*.

Install the 12*c* Product Distributions on the Target Machine

Oracle recommends an Out-of-Place approach for upgrade. Therefore, you must install the 12*c* product distributions in a new Oracle home on the target machine.

Refer to the component-specific installation guides for the component(s) you are installing.

Upgrade the Target 64-bit Environment Using the Standard Upgrade Procedure

After installing the product on the target machine, you must upgrade each product component individually using an Upgrade Utility specified in the component-specific upgrade guide and complete any post-upgrade tasks.

If you are upgrading additional components, see the component-specific upgrade guide.

> **Note:**
>
> The Node Manager upgrade procedure requires access to the original Node Manager files. Use the 11*g* Node Manger files that you backed up from the 32-bit source machine as part of Back Up All Files from the 32-bit Host Machine.

Verify That the Database Hosting Oracle Fusion Middleware is Supported

You must have a supported Oracle database configured with the required schemas before you run Oracle Fusion Middleware 12*c*.

Review the Fusion Middleware database requirements before starting the upgrade to ensure that the database hosting Oracle Fusion Middleware is supported and has sufficient space to perform an upgrade. See the Certification Matrix for 12*c* (12.2.1.3.0).

> **Note:**
>
> If your database version is no longer supported, you must upgrade to a supported version before starting an upgrade. See Upgrading and Preparing Your Oracle Databases for 12c in *Planning an Upgrade of Oracle Fusion Middleware*.

Verify That the JDK Is Certified for This Release of Oracle Fusion Middleware

At the time this document was published, the certified JDK for 12*c* (12.2.1.3.0) was 1.8.0_131.

Refer to the Oracle Fusion Middleware Supported System Configurations information on the Oracle Technology Network (OTN) to verify that the JDK you are using is supported.

If your JDK is not supported, or you do not have a JDK installed, you must download the required Java SE JDK, from the following website:

`http://www.oracle.com/technetwork/java/javase/downloads/index.html`

Make sure that the JDK is installed outside of the Oracle home. The Oracle Universal Installer validates that the designated Oracle home directory is empty, and the install does not progress until an empty directory is specified. If you install JDK under Oracle home, you may experience issues in future operations. Therefore, Oracle recommends that you use install the JDK in the following directory: `/home/oracle/products/jdk`.

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

Updating Policy Files when Using Enhanced Encryption (AES 256)

If you plan to use enhanced encryption, such as Advanced Encryption Standard (AES) 256, in your upgraded environment, Oracle recommends that you apply the latest required policy files to the JDK before you upgrade.

The Java platform defines a set of APIs spanning major security areas, including cryptography, public key infrastructure, authentication, secure communication, and access control. These APIs allow developers to easily integrate security mechanisms into their application code.

Some of the security algorithms used in Fusion Middleware 12*c* require additional policy files for the JDK. See Java Cryptography Architecture Oracle Providers Documentation.

> **Note:**
>
> If you attempt to use enhanced encryption without applying these policy files to the JDK before you begin the upgrade, the upgrade can fail and you must restore the entire pre-upgrade environment and start the upgrade from the beginning.

Purging Unused Data

Purging unused data and maintaining a purging methodology before an upgrade can optimize the upgrade process.

Some components have automated purge scripts. If you are using purge scripts, wait until the purge is complete before starting the upgrade process. The upgrade may fail if the purge scripts are running while using the Upgrade Assistant to upgrade your schemas.

Purge the execution logs to avoid exporting and importing excessive data as part of work repository export/import. See Purging the Logs in *Administering Oracle Data Integrator*.

Creating an Edition on the Server for Edition-Based Redefinition

Before upgrading an Edition-Based Redefinition (EBR) enabled schema, you must connect to the database server and create an edition on the database server for 12*c*.

Edition-based redefinition enables you to upgrade an application's database objects while the application is in use, thus minimizing or eliminating downtime. This is accomplished by changing (redefining) database objects in a private environment known as an edition. Only when all the changes have been made and tested, you make the new version of the application available to users.

> **Note:**
>
> This task must be completed by an Oracle Database User with DBA privileges.

Before upgrading an Edition-Based Redefinition (EBR) enabled schema, you must connect to the database server and create an edition on the database server for 12*c*. The new edition for 12*c* must be a child of your existing 11*g* or 12*c* edition.

To create an edition on the database server, sign in as an SYS user (or another Oracle user that has DBA privileges) and enter the following command:

```
create edition Oracle_FMW_12_2_1_1 as child of
Oracle_FMW_11_1_1_7_0;
```

where `Oracle_FMW_11_1_1_7_0` is an example of the edition name you specified in RCU 11.1.1.7 when the 11.1.1.7 schemas were created. Be sure to provide the actual name used when creating the edition.

The following message notifies you that the edition is created successfully:

```
Edition created.
```

During the upgrade, you are prompted to launch the Reconfiguration Wizard to reconfigure your existing domain. Before running the Reconfiguration Wizard, you must specify the database default edition. Use the following SQL command to manually set up the default edition name for the database, for example:

```
ALTER DATABASE DEFAULT EDITION = Oracle_FMW_12_2_1_1;
```

Creating a Non-SYSDBA User to Run the Upgrade Assistant

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

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

Notes:

The non-SYSDBA user FMW is created solely for the purpose of running the Upgrade Assistant. After this step is complete, drop the FMW user. Note that privileges required for running the Upgrade Assistant may change from release to release.
By default, the `v$xatrans$` table does not exist. You must run the `XAVIEW.SQL` script to create this table before creating the user. Moreover, the `grant select` privilege on the`v$xatrans$` table is required only by Oracle Identity Governance . If you do not require Oracle Identity Governance for configuration, or if you do not have the `v$xatrans$` table, then remove the following line from the script:

```
grant select on v$xatrans$ to FMW with grant option;
```

In the example below, `password` is the password that you set for the FMW user. When granting privileges, make sure that you specify your actual password.

```
create user FMW identified by password;
grant dba to FMW;
grant execute on DBMS_LOB to FMW with grant option;
```

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

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

```
grant execute on SYS.DBMS_FLASHBACK to fmw with grant option;
grant execute on sys.DBMS_SHARED_POOL to fmw with grant option;
grant execute on SYS.DBMS_XMLGEN to FMW with grant option;
grant execute on SYS.DBMS_DB_VERSION to FMW with grant option;
grant execute on SYS.DBMS_SCHEDULER to FMW with grant option;
```

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

Identifying Existing Schemas Available for Upgrade

This optional task enables you to review the list of available schemas before you begin the upgrade by querying the schema version registry. The registry contains schema information such as version number, component name and ID, date of creation and modification, and custom prefix.

You can let the Upgrade Assistant upgrade all of the schemas in the domain, or you can select individual schemas to upgrade. To help decide, follow these steps to view a list of all the schemas that are available for an upgrade:

1. If you are using an Oracle database, connect to the database by using an acount that has Oracle DBA privileges, and run the following from SQL*Plus:

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

2. Examine the report that is generated.

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

3. Note the schema prefix name that was used for your existing schemas. You will use the same prefix when you create new 12*c* schemas.

Notes:

- If your existing schemas are not from a supported version, then you must upgrade them to a supported version before using the 12*c* (12.2.1.3.0) upgrade procedures. Refer to your pre-upgrade version documentation for more information.
- Some components, such as Oracle Enterprise Data Quality, Oracle GoldenGate Monitor, and Oracle GoldenGate Veridata, support an upgrade from versions other than the standard Oracle Fusion Middleware supported versions.
- If you used an OID-based policy store in 11*g*, make sure to create a new OPSS schema before you perform the upgrade. After the upgrade, the OPSS schema remains an LDAP-based store.
- You can only upgrade schemas for products that are available for upgrade in Oracle Fusion Middleware release 12*c* (12.2.1.3.0). Do not attempt to upgrade a domain that includes components that are not yet available for upgrade to 12*c* (12.2.1.3.0).

Configuring External Authentication for ODI

Switch external authentication mode to internal authentication before you start the Upgrade Assistant.

If ODI is configured with external authentication mode, then you must switch the authentication mechanism to internal authentication before the upgrade so that the Upgrade Assistant can authenticate the given ODI credentials. This external authentication should be switched back again in the upgraded environment once the upgrade process is complete.

Note:

This only applies if you are using external authentication. If you are not using external authentication, skip this step.

Refer to the following topics in *Administering Oracle Data Integrator*:

- Configuring External Authentication
- Switching an Existing Master Repository to External Authentication Mode

Part II

Upgrading Oracle Data Integrator from 11*g*

This part of *Upgrading Oracle Data Integrator* provides information about upgrading Oracle Data Integrator from 11*g* release version to the latest 12*c* (12.2.1.3.0) version.

- Upgrading an Oracle Data Integrator Standalone Agent Environment from 11g
  You can upgrade an Oracle Data Integrator standalone agent environment that is not configured in a WebLogic domain from Oracle Fusion Middleware 11*g* to 12*c* (12.2.1.3.0).
- Upgrading an Oracle Data Integrator Standalone Collocated Agent Environment from 11g
  You can upgrade an Oracle Data Integrator standalone agent environment that is configured in a WebLogic domain from Oracle Fusion Middleware 11*g* to 12*c* (12.2.1.3.0).
- Upgrading an Oracle Data Integrator Java EE Agent Environment from 11g
  You can upgrade an Oracle Data Integrator Java EE agent environment from Oracle Fusion Middleware 11*g* to 12*c* (12.2.1.3.0).

3

Upgrading an Oracle Data Integrator Standalone Agent Environment from 11*g*

You can upgrade an Oracle Data Integrator standalone agent environment that is not configured in a WebLogic domain from Oracle Fusion Middleware 11*g* to 12*c* (12.2.1.3.0).

- About the Oracle Data Integrator Standalone Agent Upgrade Process
  Review the flowchart and roadmap for an overview of the upgrade process for an Oracle Data Integrator Standalone agent that is not configured in a WebLogic domain.
- Installing the Oracle Data Integrator Standalone Agent Environment
  Before beginning your upgrade, download the Oracle Data Integrator 12*c* (12.2.1.3.0) distribution on the target system and install it using Oracle Universal Installer.
- Creating the Required 12c Schemas
  When upgrading from 11*g*, you must create the required 12*c* schemas. You can use the Repository Creation Utility (RCU) to create customized schemas or, optionally, you can use the Upgrade Assistant to create schemas using the default schema settings. This procedure describes how to create schemas using the RCU. Information about using the Upgrade Assistant to create schemas is covered in the upgrade procedures.
- Stopping Servers and Processes
  Before you run the Upgrade Assistant to upgrade your schemas and configurations, you must shut down all of the pre-upgrade processes and servers, including the Administration Server and any managed servers.
- Upgrading Product Schemas
  After stopping servers and processes, use the Upgrade Assistant to upgrade supported product schemas to the current release of Oracle Fusion Middleware.
- Upgrading Standalone System Component Configurations
  Use the Upgrade Assistant to upgrade the standalone agent's component configurations when the agent is managed by OPMN. The standalone component configuration upgrade does not support upgrade of a standalone agent that is not managed by OPMN.
- Starting Servers and Processes
  After a successful upgrade, restart all processes and servers, including the Administration Server and any Managed Servers.

About the Oracle Data Integrator Standalone Agent Upgrade Process

Review the flowchart and roadmap for an overview of the upgrade process for an Oracle Data Integrator Standalone agent that is not configured in a WebLogic domain.

Figure 3-1 Oracle Data Integrator Standalone Agent Upgrade Process Flowchart

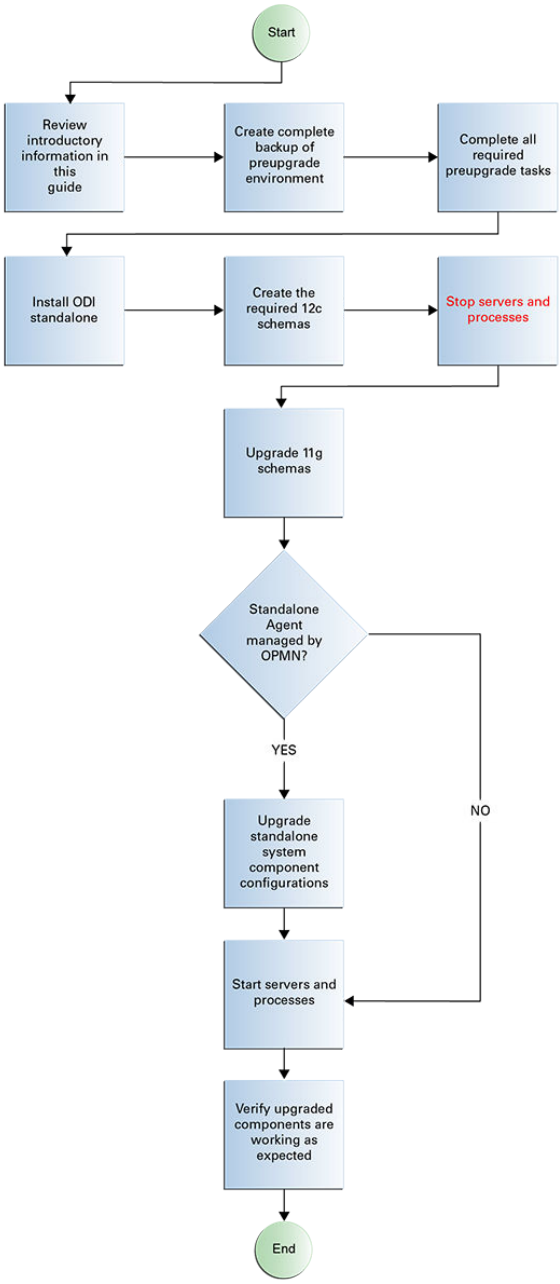


Table 3-1 Tasks for Upgrading an Oracle Data Integrator Standalone Agent from 11g

Task	Description
Required If you have not done so already, review the introductory topics in this guide and complete the required pre-upgrade tasks.	See: • Introduction to Upgrading Oracle Data Integrator to 12*c* (12.2.1.3.0) • Pre-Upgrade Requirements
Required Install Oracle Data Integrator Standalone 12*c* (12.2.1.3.0) in a new Oracle home.	Install the product software in a *new* Oracle home on the same host as the 11*g* production deployment before you begin the upgrade. In 12*c*, Oracle home is used to describe the 11*g* Middleware home. See Installing Oracle Data Integrator Standalone Agent Environment.
Required Start the Repository Creation Utility (RCU) to create the required 12*c* database schemas.	Create the STB schema. See Creating the Required 12c Schemas.
Required Shut down the 11*g* environment (stop all Administration and Managed Servers).	**WARNING:** Failure to shut down your servers during an upgrade may lead to data corruption. See Stopping Servers and Processes.
Required Start the Upgrade Assistant to upgrade the 11*g* database schemas and to migrate all active (in flight) instance data.	See Upgrading Product Schemas. **Note:** The upgrade of active instance data is started automatically when running the Upgrade Assistant. Once the data is successfully upgraded to the new 12*c* (12.2.1.3.0) environment, you can close the Upgrade Assistant. The closed instances will continue to upgrade through a background process.

Table 3-1 (Cont.) Tasks for Upgrading an Oracle Data Integrator Standalone Agent from 11g

Task	Description
Required if managed by OPMN Start the Upgrade Assistant (again) to upgrade standalone system component configurations.	Run the Upgrade Assistant to upgrade the standalone agent's component configurations when the agent is managed by OPMN. The standalone component configuration upgrade does not support upgrade of a standalone agent that is not managed by OPMN. See Upgrading Standalone System Component Configurations.
Required Restart the servers and the 12*c* (12.2.1.3.0) instance.	When the upgrade process is complete, restart the 12*c* (12.2.1.3.0) instance. See Starting Servers and Processes.
Required Verify the upgrade.	Ensure all of the upgraded components are working as expected before deleting your backups.

Installing the Oracle Data Integrator Standalone Agent Environment

Before beginning your upgrade, download the Oracle Data Integrator 12*c* (12.2.1.3.0) distribution on the target system and install it using Oracle Universal Installer.

To install the 12*c* (12.2.1.3.0) distribution:

1. Sign in to the target system.
2. Download the following 12*c* (12.2.1.3.0) product distribution from Oracle Technology Network or Oracle Software Delivery Cloud to your target system:
   - Oracle Data Integrator (`fmw_12.2.1.3.0_odi_Disk1_1of2.zip` and `fmw_12.2.1.3.0_odi_Disk1_2of2.zip`)
3. Change to the directory where you downloaded the 12*c* (12.2.1.3.0) product distribution.
4. Unzip the installer `fmw_12.2.1.3.0_odi_Disk1_1of2.zip` and `fmw_12.2.1.3.0_odi_Disk1_2of2.zip` files.
5. Enter the following command to start the installer for your product distribution and repeat the steps above to navigate through the installer screens:

   (UNIX) *JDK_HOME*`/bin/java -jar fmw_12.2.1.3.0_odi_generic.jar`

   (Windows) *JDK_HOME*`\bin\java -jar fmw_12.2.1.3.0_odi_generic.jar`
6. On UNIX operating systems, the Installation Inventory Setup screen appears if this is the first time you are installing an Oracle product on this host.

   Specify the location where you want to create your central inventory. Make sure that the operating system group name selected on this screen has write permissions to the central inventory location, and click **Next**.

> **Note:**
>
> The Installation Inventory Setup screen does not appear on Windows operating systems.

7. On the Welcome screen, review the information to make sure that you have met all the prerequisites. Click **Next**.
8. On the Auto Updates screen, select an option:
   - **Skip Auto Updates**: If you do not want your system to check for software updates at this time.
   - **Select patches from directory**: To navigate to a local directory if you downloaded patch files.
   - **Search My Oracle Support for Updates**: To automatically download software updates if you have a My Oracle Support account. You must enter Oracle Support credentials then click **Search**. To configure a proxy server for the installer to access My Oracle Support, click **Proxy Settings**. Click **Test Connection** to test the connection.

   Click **Next**.
9. On the Installation Location screen, specify the location for the Oracle home directory and click **Next**.

   For more information about Oracle Fusion Middleware directory structure, see Understanding Directories for Installation and Configuration in *Oracle Fusion Middleware Planning an Installation of Oracle Fusion Middleware*.
10. On the Installation Type screen, select **Standalone Installation**.

    Click **Next**.
11. The Prerequisite Checks screen analyzes the host computer to ensure that the specific operating system prerequisites have been met.

    To view the list of tasks that are verified, select **View Successful Tasks**. To view log details, select **View Log**. If any prerequisite check fails, then an error message appears at the bottom of the screen. Fix the error and click **Rerun** to try again. To ignore the error or the warning message and continue with the installation, click **Skip** (not recommended).
12. On the Installation Summary screen, verify the installation options that you selected.

    If you want to save these options to a response file, click **Save Response File** and enter the response file location and name. The response file collects and stores all the information that you have entered, and enables you to perform a silent installation (from the command line) at a later time.
    Click **Install** to begin the installation.
13. On the Installation Progress screen, when the progress bar displays 100%, click **Finish** to dismiss the installer, or click **Next** to see a summary.
14. The Installation Complete screen displays the Installation Location and the Feature Sets that are installed. Review this information and click **Finish** to close the installer.

Creating the Required 12*c* Schemas

When upgrading from 11*g*, you must create the required 12*c* schemas. You can use the Repository Creation Utility (RCU) to create customized schemas or, optionally, you can use the Upgrade Assistant to create schemas using the default schema settings. This procedure describes how to create schemas using the RCU. Information about using the Upgrade Assistant to create schemas is covered in the upgrade procedures.

For the ODI environments described in this guide, the required schemas are:

- ODI standalone agent (no WebLogic domain): `STB`
- ODI standalone collocated agent (with WebLogic domain): `STB`, `OPSS`, `IAU`, `IAU_VIEWER`, and `IAU_APPEND`
- ODI Java EE agent: `STB`, `OPSS`, `IAU`, `IAU_VIEWER`, and `IAU_APPEND`

> **Note:**
>
> If you are upgrading from a previous 12*c* release of Oracle Fusion Middleware, you do not need to re-create these schemas if they already exist. Refer to the steps below to identify the existing schemas in your domain.

The following schemas must exist before you upgrade to 12*c*. If you are upgrading from 11*g*, and you are not sure which schemas you currently have, refer to the steps below to identify the existing schemas in your domain. You do not need to re-create these schemas if they already exist.

- **Service Table** schema (*`prefix`*`_STB`). This schema is new in 12*c* and is required for domain-based upgrades. It stores basic schema configuration information (for example, schema prefixes and passwords) that can be accessed and used by other Oracle Fusion Middleware components during the domain creation. This schema is automatically created when you run the Repository Creation Utility (RCU), where you specify the existing schema owner prefix that you used for your other 11*g* schemas.

  > **Note:**
  >
  > If the Service Table schema does not exist, you may encounter the error message `UPGAST-00328 : The schema version registry table does not exist on this database. If that happens it is necessary to create the service table schema in order to run Upgrade Assistant`

- **Oracle Platform Security Services (OPSS)** schema (*`prefix`*`_OPSS`). This schema is required if you are using an OID-based security store in 11*g*. This schema is automatically created when you run the Repository Creation Utility (RCU). The only supported LDAP-based OPSS security store is Oracle Internet Directory (OID). An LDAP-based policy store is typically used in production environments. You do not need to reassociate an OID-based security store before upgrade.

While the Upgrade Assistant is running, you can select the OPSS schema. The Upgrade Assistant upgrades the OID-based security store automatically.

> **Note:**
>
> The 12*c* OPSS database schema is required so that you can reference the 12*c* schema during the reconfiguration of the domain. Your domain continues to use the OID-based security store after the upgrade is complete.

- **Audit** schemas. When upgrading audit services (`_IAU`), make sure that you select `_IAU_VIEWER` and `_IAU_APPEND` in addition to `_IAU`. The Upgrade Assistant handles this creation for you automatically, when they are selected.

To create the 12*c* schemas with the RCU:

1. (Optional) If you are upgrading from 11*g*, and you wish to confirm the schemas which are present in your existing domain, then connect to the database as a user with DBA privileges, and run the following code from SQL*Plus:

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

2. Verify that a certified JDK already exists on your system by running `java -version` from the command line. For 12*c* (12.2.1.3.0), the certified JDK is 1.8.0_131 and later.

   Ensure that the `JAVA_HOME` environment variable is set to the location of the certified JDK. For example:

   - (UNIX) `setenv JAVA_HOME /home/Oracle/Java/jdk1.8.0_131`
   - (Windows) `set JAVA_HOME=C:\home\Oracle\Java\jdk1.8.0_131`

   Add `$JAVA_HOME/bin` to `$PATH`.

3. Go to the `oracle_common/bin` directory:

   - (UNIX) *`NEW_ORACLE_HOME`*`/oracle_common/bin`
   - (Windows) *`NEW_ORACLE_HOME`*`\oracle_common\bin`

4. Start the RCU:

   - (UNIX) `./rcu`
   - (Windows) `rcu.bat`

5. On the Welcome screen, click **Next**.

6. On the Create Repository screen, select **Create Repository** and then select **System Load and Product Load**.

   If you do not have DBA privileges, select **Prepare Scripts for System Load**. This will generate a SQL script containing all the same SQL statements and blocks that

would have been called if the RCU were to execute the actions for the selected components. After the script is generated, a user with the necessary SYS or SYSDBA privileges can execute the script to complete the system load phase. Click **Next**.

7. On the Database Connection Details screen, select the **Database Type** and enter the connection information for the database that hosts the 11*g* schemas. See the pertinent table below.

Table 3-2 Connection Credentials for Oracle Databases and Oracle Databases with Edition-Based Redefinition

Option	Description and Example
Host Name	Specify the name of the server where your database is running in the following format: `examplehost.exampledomain.com` For Oracle RAC databases, specify the VIP name or one of the node names in this field.
Port	Specify the port number for your database. The default port number for Oracle databases is 1521.
Service Name	Specify the service name for the database. Typically, the service name is the same as the global database name. For Oracle RAC databases, specify the service name of one of the nodes in this field. For example: `examplehost.exampledomain.com`
Username	Enter the user name for your database. The default user name is SYS.
Password	Enter the password for your database user.
Role	Select the database user's role from the drop-down list: **Normal** or **SYSDBA**

Table 3-3 Connection Credentials for MySQL Databases

Option	Description and Example
Host Name	Specify the host name, IP address, or complete server name in *`host\server`* format of the server where your database is running.
Port	Specify the port number for your database.
Database Name	Specify the name of your database.
Username	Specify the name of a user with administrator privileges.
Password	Enter the password for your database user.

Table 3-4 Connection Credentials for Microsoft SQL Server Databases

Option	Description and Example
Unicode Support	Select **Yes** or **No** from the drop-down list.

Table 3-4 (Cont.) Connection Credentials for Microsoft SQL Server Databases

Option	Description and Example
Server Name	Specify the host name, IP address, or complete server name in *host\server* format of the server where your database is running. MSSQL named instances: A named instance is identified by the network name of the computer and the instance name that you specify during installation. The client must specify both the server name and the instance name when connecting.
Port	Specify the port number for your database.
Database Name	Specify the name of your database.
Username	Specify the name of a user with administrator privileges.
Password	Enter the password for your database user.

Table 3-5 Connection Credentials for IBM DB2 Databases

Option	Description and Example
Server Name	Specify the host name, IP address, or complete server name in *host\server* format of the server where your database is running.
Port	Specify the port number for your database.
Database Name	Specify the name of your database.
Username	Specify the name of a user with DB Owner privileges. The default user name for IBM DB2 databases is `db2admin`.
Password	Enter the password for your database user.

If the prerequisite check is successful, click **OK** to continue to the next screen. If the check fails, review the details you entered and try again.

8. On the Select Components screen, select **Select existing prefix** and select the prefix that was used to create the existing 11*g* schemas from the drop-down menu (for example, `DEV11G`). This prefix is used to logically group schemas together for use in this domain.

> **Note:**
>
> The Common Infrastructure Services (*prefix*`_STB`) and Oracle Platform Security Services (*prefix*`_OPSS`) schemas are selected by default if they have not yet been created.

Make a note of the prefix and schema names for the components you are installing as you will need this information when you configure the installation. Click **Next**.

9. In the Checking Prerequisites dialog, verify that the prerequisites check is successful, then click **OK**.

10. On the Schema Passwords screen, specify the passwords for your schema owners.

    Make a note of the passwords you enter on this screen as you will need this information while configuring your product installation.

11. On the Map Tablespaces screen, configure the required tablespace mapping for the schemas you want to create.

    Click **Next**, then click **OK** in the confirmation dialog. When the progress dialog shows the tablespace creation is complete, click **OK**.

    You see the **Encrypt Tablespace** check box only if you have enabled Transparent Data Encryption (TDE) in the database (Oracle or Oracle EBR) when you start the RCU. Select the **Encrypt Tablespace** check box on the Map Tablespaces screen to encrypt all new tablespaces that the RCU creates.

12. Verify the information on the Summary screen and click **Create** to begin schema creation.

    This screen contains information about the log files that were created from this RCU operation. Click on the name of a particular log file to view the contents of that file.

13. Review the information on the Completion Summary screen to verify that the operation is completed successfully. Click **Close** to complete the schema creation.

Stopping Servers and Processes

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

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

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

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

Step 1: Stop System Components

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

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

- (Windows) *EXISTING_DOMAIN_HOME*\bin\stopComponent.cmd *component_name*

You can stop system components in any order.

Step 2: Stop the Managed Servers

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

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

When prompted, enter your user name and password.

Step 3: Stop Oracle Identity Management Components

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

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

Step 4: Stop the Administration Server

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

To stop the Administration Server, use the stopWebLogic script:

- (UNIX) *EXISTING_DOMAIN_HOME*/bin/stopWebLogic.sh
- (Windows) *EXISTING_DOMAIN_HOME*\bin\stopWebLogic.cmd

When prompted, enter your user name, password, and the URL of the Administration Server.

> **Note:**
>
> If external password storage is set up for the repository, then the server hosting the credential store should be up and running so that the work repository password can be retrieved during upgrade. See Setting Up External Password Storage in *Administering Oracle Data Integrator*.

Step 5: Stop Node Manager

To stop Node Manager, close the command shell in which it is running.

Alternatively, after setting the nodemanager.properties attribute QuitEnabled to true (the default is false), you can use WLST to connect to Node Manager and shut it down. See stopNodeManager in *WLST Command Reference for WebLogic Server*.

Upgrading Product Schemas

After stopping servers and processes, use the Upgrade Assistant to upgrade supported product schemas to the current release of Oracle Fusion Middleware.

The Upgrade Assistant allows you to upgrade individually selected schemas or all schemas associated with a domain. The option you select determines which Upgrade Assistant screens you will use.

- Starting the Upgrade Assistant
  Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 12*c* (12.2.1.3.0). Oracle recommends that you run the Upgrade Assistant as a non-SYSDBA user, completing the upgrade for one domain at a time.
- Upgrading Product Schemas Using the Upgrade Assistant
  Navigate through the screens in the Upgrade Assistant to upgrade the product schemas.
- Verifying the Schema Upgrade
  After completing all the upgrade steps, verify that the upgrade was successful by checking that the schema version in `schema_version_registry` has been properly updated.

Starting the Upgrade Assistant

Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 12*c* (12.2.1.3.0). Oracle recommends that you run the Upgrade Assistant as a non-SYSDBA user, completing the upgrade for one domain at a time.

To start the Upgrade Assistant:

> **Note:**
>
> Before you start the Upgrade Assistant, make sure that the JVM character encoding is set to UTF-8 for the platform on which the Upgrade Assistant is running. If the character encoding is not set to UTF-8, then you will not be able to download files containing Unicode characters in their names. This can cause the upgrade to fail.

1. Go to the `oracle_common/upgrade/bin` directory:
   - (UNIX) *`NEW_ORACLE_HOME`*`/oracle_common/upgrade/bin`
   - (Windows) *`NEW_ORACLE_HOME`*`\oracle_common\upgrade\bin`
2. Start the Upgrade Assistant:
   - (UNIX) `./ua`
   - (Windows) `ua.bat`

For information about other parameters that you can specify on the command line, such as logging parameters, see:

- Upgrade Assistant Parameters

Upgrade Assistant Parameters

When you start the Upgrade Assistant from the command line, you can specify additional parameters.

Table 3-6 Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-readiness`	Required for readiness checks **Note**: Readiness checks cannot be performed on standalone installations (those not managed by the WebLogic Server).	Performs the upgrade readiness check without performing an actual upgrade. Schemas and configurations are checked. Do not use this parameter if you have specified the `-examine` parameter.
`-threads`	Optional	Identifies the number of threads available for concurrent schema upgrades or readiness checks of the schemas. The value must be a positive integer in the range 1 to 8. The default is 4.
`-response`	Required for silent upgrades or silent readiness checks	Runs the Upgrade Assistant using inputs saved to a response file generated from the data that is entered when the Upgrade Assistant is run in GUI mode. Using this parameter runs the Upgrade Assistant in *silent mode* (without displaying Upgrade Assistant screens).
`-examine`	Optional	Performs the examine phase but does not perform an actual upgrade. Do not specify this parameter if you have specified the `-readiness` parameter.

Table 3-6 (Cont.) Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-logLevel` *attribute*	Optional	Sets the logging level, specifying one of the following attributes: • `TRACE` • `NOTIFICATION` • `WARNING` • `ERROR` • `INCIDENT_ERROR` The default logging level is `NOTIFICATION`. Consider setting the `-logLevel TRACE` attribute to so that more information is logged. This is useful when troubleshooting a failed upgrade. The Upgrade Assistant's log files can become very large if `-logLevel TRACE` is used.
`-logDir` *location*	Optional	Sets the default location of upgrade log files and temporary files. You must specify an existing, writable directory where the Upgrade Assistant creates log files and temporary files. The default locations are: (UNIX) *NEW_ORACLE_HOME*`/oracle_common/upgrade/logs` *NEW_ORACLE_HOME*`/oracle_common/upgrade/temp` (Windows) *NEW_ORACLE_HOME*`\oracle_common\upgrade\logs` *NEW_ORACLE_HOME*`\oracle_common\upgrade\temp`
`-help`	Optional	Displays all of the command-line options.

Upgrading Product Schemas Using the Upgrade Assistant

Navigate through the screens in the Upgrade Assistant to upgrade the product schemas.

Notes:

- If you are using external authentication, make sure that external authentication is changed to internal authentication before upgrading product schemas.
- **Edition-based redefinition (EBR) Users Only:** Before upgrading an Edition-Based Redefinition (EBR) enabled schema, you must connect to the database server and create an edition on the database server for 12*c*. The new edition for 12*c* must be a child of your existing 11*g* edition. See Creating an Edition on the Server for Editions-Based Redefinition.

Note:

Make sure that the administration and managed servers are stopped before you launch the Upgrade Assistant.

To upgrade product schemas with the Upgrade Assistant:

1. On the Welcome screen, review the introduction to the Upgrade Assistant and information about important pre-upgrade tasks. Click **Next**.

   Note:

   For more information about any Upgrade Assistant screen, click **Help** on the screen.

2. On the Selected Schemas screen, select **Individually Selected Schemas**.

   Caution:

   Upgrade only those schemas that are used to support your 12*c* (12.2.1.3.0) components. Do not upgrade schemas that are currently being used to support components that are not included in Oracle Fusion Middleware 12*c* (12.2.1.3.0).

   Click **Next**.

3. On the Available Components screen, select **Oracle Data Integrator** to upgrade the Master and Work Repository schema.

4. On the Prerequisites screen, acknowledge that the prerequisites have been met by selecting all the check boxes. Click **Next**.

> **Note:**
>
> The Upgrade Assistant does not verify whether the prerequisites have been met.

5. On the ODI Schema screen, specify the database connection details for each schema you are upgrading:
   - Select the database type from the **Database Type** drop-down menu.
   - Enter the database connection details, and click **Connect**.
   - Select the schema you want to upgrade from the **Schema User Name** drop-down menu, and then enter the password for the schema. Be sure to use the correct schema prefix for the schemas you are upgrading.
6. On the ODI Options screen, select all of the options.

Table 3-7 ODI Options

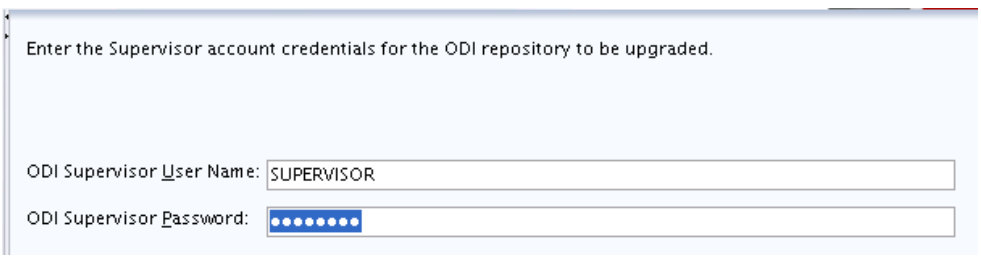
Option	Description
Replace Knowledge Modules with mandatory updates	This selection replaces standard Knowledge Modules with the newest version. Customizations to Oracle installed Knowledge Modules will be overwritten. But, if you copy an installed Knowledge Module and customize the Knowledge Module, the customizations are not lost.
Upgrade topology and security metadata	This selection replaces topology and security artifacts such as Technologies, Datatypes, Security Profiles and others with the newest version. Customizations of installed objects will be overwritten. If the object is copied and customized, then the customizations are not lost.

See Advanced Upgrade Options that are important when upgrading ODI repository from 11g to 12c.

7. On the ODI Supervisor screen, enter the Supervisor account credentials for the ODI repository to be upgraded.

   The installed Supervisor account is `SUPERVISOR`. Check with your ODI administrator for correct Supervisor account name and password, supplied when prompted by the Repository Creation Utility (RCU) when creating the Master and Work repositories for ODI.

Figure 3-2 Account credentials for the ODI repository



> **Note:**
>
> When **All Schemas Used by a Domain** is selected, the Supervisor credentials for ODI are not pre-populated in the first instance as the domain does not contain them. If there are multiple ODI schemas, the Upgrade Assistant populates the user entry using the first set of credentials.

8. On the ODI Upgrade Key screen, use the auto-generated upgrade key to convert 11*g* IDs for repository objects into unique GUIDs, or specify your own key in the **Upgrade Key** field.

> **Recommendations:**
>
> - Edit the auto-generated key to provide a meaningful key that is easier to remember.
> - Note down the upgrade key so that the same upgrade key can be provided when the ODI objects are imported from the XML file.

ODI objects exist in ODI repositories and also in XML files exported from such repositories. For example, in metadata exchanges between repositories, which can be used.. As such, there may be multiple copies of the same object, in different repositories and XML files.

In 12*c*, ODI uses GUIDs instead of internal numeric IDs for object identification. In order to make sure the object identity is preserved after upgrade, a deterministic algorithm is applied to calculate GUIDs from the internal IDs for existing objects (note that for new objects, ODI will generate random GUIDs).

Because the internal numeric IDs are not really universally unique, and are dependent on the repository ID to achieve a pseudo-uniqueness, ODI allows the user to specify the upgrade key in order to reduce the likelihood of generating duplicated GUIDs. The upgrade key is fed into the GUID generation algorithm together with the internal numeric ID, to calculate the GUID.

Thus, choosing different upgrade keys protects objects from getting duplicate GUIDs that accidentally have the same internal numeric IDs. However, when multiple copies of the same object exists (in a repository or exported in XML files), the same GUID should be produced for all copies of the object. For this reason, the same upgrade key must be used for all upgrade operations involving the copies of that particular object.

For example, if you have a project with `1001` as the ID in the 11*g* repository, and you also have a file exported from the same repository, which contains the same project (ID = `1001`). In this case, the upgrade key used to upgrade the repository should be the same as the upgrade key used to import the XML file into the upgraded 12*c* repository. This ensures that the project object in the import file will be properly matched with the project object in the repository (when using one of `SYNONYM` import modes). However, if there is an 11*g* XML export file provided from a source containing objects created in another repository of which you have no information, there is a chance that it may contain a project that accidentally has the same internal ID (`1001`). In this case, to protect from erroneous object

matching, which may corrupt the metadata, a different, custom upgrade key should be used when importing that file into the repository.

9. On the Examine screen, review the status of the Upgrade Assistant as it examines each schema, verifying that the schema is ready for upgrade. If the status is **Examine finished**, click **Next**.

   If the examine phase fails, Oracle recommends that you cancel the upgrade by clicking **No** in the Examination Failure dialog. Click **View Log** to see what caused the error and refer to Troubleshooting Your Upgrade in *Upgrading with the Upgrade Assistant* for information on resolving common upgrade errors.

   > **Note:**
   >
   > - If you resolve any issues detected during the examine phase without proceeding with the upgrade, you can start the Upgrade Assistant again without restoring from backup. However, if you proceed by clicking **Yes** in the Examination Failure dialog box, you need to restore your pre-upgrade environment from backup before you start the Upgrade Assistant again.
   > - Canceling the examination process has no effect on the schemas or configuration data; the only consequence is that the information the Upgrade Assistant has collected must be collected again in a future upgrade session.

10. The Upgrade Summary screen lists the schemas that will be upgraded and/or created.

    Verify that the correct Source and Target Versions are listed for each schema that you intend to upgrade.

    If you want to save these options to a response file to run the Upgrade Assistant again later in response (or silent) mode, click **Save Response File** and provide the location and the name of the response file. A silent upgrade performs exactly the same function that the Upgrade Assistant performs, but you do not have to manually enter the data again.

    Click **Next**.

11. On the Upgrade Progress screen, monitor the status of the upgrade.

    > **Caution:**
    >
    > Allow the Upgrade Assistant enough time to perform the upgrade. Do not cancel the upgrade operation unless absolutely necessary. Doing so may result in an unstable environment.

    If any schemas are not upgraded successfully, refer to the Upgrade Assistant log files for more information.

> **Note:**
>
> The progress bar on this screen displays the progress of the current upgrade procedure. It does not indicate the time remaining for the upgrade.

Click **Next**.

12. If the upgrade is successful: On the Upgrade Success screen, click **Close** to complete the upgrade and close the wizard.

    If the upgrade fails: On the Upgrade Failure screen, click **View Log** to view and troubleshoot the errors. The logs are available at *NEW_ORACLE_HOME*`/oracle_common/upgrade/logs`.

> **Note:**
>
> If the upgrade fails, you must restore your pre-upgrade environment from backup, fix the issues, then restart the Upgrade Assistant.

Verifying the Schema Upgrade

After completing all the upgrade steps, verify that the upgrade was successful by checking that the schema version in `schema_version_registry` has been properly updated.

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

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

In the query result:

- Check that the number in the `VERSION` column matches the latest version number for that schema. For example, verify that the schema version number is 12.2.1.3.0.

> **Note:**
>
> However, that not all schema versions will be updated. Some schemas do not require an upgrade to this release and will retain their pre-upgrade version number.

- 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.
- Synonym objects owned by `IAU_APPEND` and `IAU_VIEWER` will appear as `INVALID`, but that does not indicate a failure.

  They become invalid because the target object changes after the creation of the synonym. The synonyms objects will become valid when they are accessed. You can safely ignore these `INVALID` objects.

Upgrading Standalone System Component Configurations

Use the Upgrade Assistant to upgrade the standalone agent's component configurations when the agent is managed by OPMN. The standalone component configuration upgrade does not support upgrade of a standalone agent that is not managed by OPMN.

- Starting the Upgrade Assistant
  Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 12*c* (12.2.1.3.0). Oracle recommends that you run the Upgrade Assistant as a non-SYSDBA user, completing the upgrade for one domain at a time.
- Upgrading Standalone System Component Configurations Using the Upgrade Assistant
  Navigate through the screens in the Upgrade Assistant to upgrade standalone system component configurations.

Starting the Upgrade Assistant

Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 12*c* (12.2.1.3.0). Oracle recommends that you run the Upgrade Assistant as a non-SYSDBA user, completing the upgrade for one domain at a time.

To start the Upgrade Assistant:

> **Note:**
>
> Before you start the Upgrade Assistant, make sure that the JVM character encoding is set to UTF-8 for the platform on which the Upgrade Assistant is running. If the character encoding is not set to UTF-8, then you will not be able to download files containing Unicode characters in their names. This can cause the upgrade to fail.

1. Go to the `oracle_common/upgrade/bin` directory:
   - (UNIX) *`NEW_ORACLE_HOME`*`/oracle_common/upgrade/bin`
   - (Windows) *`NEW_ORACLE_HOME`*`\oracle_common\upgrade\bin`
2. Start the Upgrade Assistant:
   - (UNIX) `./ua`

- (Windows) `ua.bat`

For information about other parameters that you can specify on the command line, such as logging parameters, see:

- Upgrade Assistant Parameters

Upgrade Assistant Parameters

When you start the Upgrade Assistant from the command line, you can specify additional parameters.

Table 3-8 Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-readiness`	Required for readiness checks **Note**: Readiness checks cannot be performed on standalone installations (those not managed by the WebLogic Server).	Performs the upgrade readiness check without performing an actual upgrade. Schemas and configurations are checked. Do not use this parameter if you have specified the `-examine` parameter.
`-threads`	Optional	Identifies the number of threads available for concurrent schema upgrades or readiness checks of the schemas. The value must be a positive integer in the range 1 to 8. The default is 4.
`-response`	Required for silent upgrades or silent readiness checks	Runs the Upgrade Assistant using inputs saved to a response file generated from the data that is entered when the Upgrade Assistant is run in GUI mode. Using this parameter runs the Upgrade Assistant in *silent mode* (without displaying Upgrade Assistant screens).
`-examine`	Optional	Performs the examine phase but does not perform an actual upgrade. Do not specify this parameter if you have specified the `-readiness` parameter.

Table 3-8 (Cont.) Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-logLevel` *attribute*	Optional	Sets the logging level, specifying one of the following attributes: • `TRACE` • `NOTIFICATION` • `WARNING` • `ERROR` • `INCIDENT_ERROR` The default logging level is `NOTIFICATION`. Consider setting the `-logLevel TRACE` attribute to so that more information is logged. This is useful when troubleshooting a failed upgrade. The Upgrade Assistant's log files can become very large if `-logLevel TRACE` is used.
`-logDir` *location*	Optional	Sets the default location of upgrade log files and temporary files. You must specify an existing, writable directory where the Upgrade Assistant creates log files and temporary files. The default locations are: (UNIX) *NEW_ORACLE_HOME*`/oracle_common/upgrade/logs` *NEW_ORACLE_HOME*`/oracle_common/upgrade/temp` (Windows) *NEW_ORACLE_HOME*`\oracle_common\upgrade\logs` *NEW_ORACLE_HOME*`\oracle_common\upgrade\temp`
`-help`	Optional	Displays all of the command-line options.

Upgrading Standalone System Component Configurations Using the Upgrade Assistant

Navigate through the screens in the Upgrade Assistant to upgrade standalone system component configurations.

> **Note:**
>
> Use the Upgrade Assistant to upgrade the standalone agent's component configurations only when the agent is managed by OPMN. The standalone component configuration upgrade does not support upgrade of a standalone agent that is not managed by OPMN.

To upgrade standalone system component configurations with the Upgrade Assistant:

1. On the Welcome screen, review an introduction to the Upgrade Assistant and information about important pre-upgrade tasks. Click **Next**.

   > **Note:**
   >
   > For more information about any Upgrade Assistant screen, click **Help** on the screen.

2. On the next screen:
   - Select **Standalone System Component Configurations**, then select **Create a new domain**.

     > **Note:**
     >
     > Beginning with 12*c*, standalone system components will have their own standalone domain. When you are upgrading your 11*g* standalone system components (which had no previous domain associations), you must first create a new standalone domain for your system components.

   - In the **Domain Directory** field, specify the full path of the domain you are creating. Oracle recommends that you locate your domain home in accordance with the directory structure summarized in Understanding the Recommended Directory Structure in *Planning an Installation of Oracle Fusion Middleware*, where the domain home is located outside the Oracle home directory. This directory structure will help you avoid issues when you need to upgrade or reinstall your software.

> **Tip:**
>
> The **Update an existing domain** option might be used in a situation where an upgrade was already performed and the domain created, either from another system component upgrade, or from a partial previous Oracle Data Integrator upgrade. These are examples of a situation where you would not need to create a new domain.

Click **Next**.

3. On the Component List screen, verify that the list includes all the components for which you want to upgrade configurations and click **Next**.

   If you do not see the components you want to upgrade, click **Back** to go to the previous screen and specify a different domain.

4. On the Prerequisites screen, acknowledge that the prerequisites have been met by selecting all the check boxes. Click **Next**.

> **Note:**
>
> The Upgrade Assistant does not verify whether the prerequisites have been met.

5. On the Instance Directories screen, specify the location of one or more Oracle instance directories to be upgraded.
6. On the Node Manager screen, specify the credentials of the Node Manager that will be used to create a domain during the upgrade of standalone system components.
7. On the Examine screen, review the status of the Upgrade Assistant as it examines each standalone component, verifying that the standalone component configuration is ready for upgrade. If the status is **Examine finished**, click **Next**.

   If the examine phase fails, Oracle recommends that you cancel the upgrade by clicking **No** in the Examination Failure dialog. Click **View Log** to see what caused the error and refer to Troubleshooting Your Upgrade in *Upgrading with the Upgrade Assistant*for information on resolving common upgrade errors.

> **Note:**
>
> - If you resolve any issues detected during the examine phase without proceeding with the upgrade, you can start the Upgrade Assistant again without restoring from backup. However, if you proceed by clicking **Yes** in the Examination Failure dialog box, you need to restore your pre-upgrade environment from backup before starting the Upgrade Assistant again.
> - Canceling the examination process has no effect on the configuration data; the only consequence is that the information the Upgrade Assistant has collected must be collected again in a future upgrade session.

8. On the Upgrade Summary screen, review the summary of the options you have selected for component configuration upgrade.

   The response file collects and stores all the information that you have entered, and enables you to perform a silent upgrade at a later time. The silent upgrade performs exactly the same function that the Upgrade Assistant performs, but you do not have to manually enter the data again. If you want to save these options to a response file, click **Save Response File** and provide the location and name of the response file.
   Click **Upgrade** to start the upgrade process.

9. On the Upgrade Progress screen, monitor the status of the upgrade.

   > **Caution:**
   >
   > Allow the Upgrade Assistant enough time to perform the upgrade. Do not cancel the upgrade operation unless absolutely necessary. Doing so may result in an unstable environment.

   If any components are not upgraded successfully, refer to the Upgrade Assistant log files for more information.

   > **Note:**
   >
   > The progress bar on this screen displays the progress of the current upgrade procedure. It does not indicate the time remaining for the upgrade.

   Click **Next**.

10. If the upgrade is successful: On the Upgrade Success screen, click **Close** to complete the upgrade and close the wizard. The Post-Upgrade Actions window describes the manual tasks you must perform to make components functional in the new installation. This window appears only if a component has post-upgrade steps.

    If the upgrade fails: On the Upgrade Failure screen, click **View Log** to view and troubleshoot the errors. The logs are available at *ORACLE_HOME*`/oracle_common/upgrade/logs`. Note If the upgrade fails you must restore your pre-upgrade environment from backup, fix the issues, then restart the Upgrade Assistant.

Starting Servers and Processes

After a successful upgrade, restart all processes and servers, including the Administration Server and any Managed Servers.

The components may be dependent on each other so they must be started in the correct order.

> **Note:**
>
> The procedures in this section describe how to start servers and process using the WLST command line or a script. You can also use the Oracle Fusion Middleware Control and the Oracle WebLogic Server Administration Console. See Starting and Stopping Administration and Managed Servers and Node Manager in *Administering Oracle Fusion Middleware.*

To start your Fusion Middleware environment, follow the steps below:

Step 1: Start the Administration Server

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

To start the Administration Server, use the `startWebLogic` script:

- (UNIX) *`NEW_DOMAIN_HOME`*`/bin/startWebLogic.sh`
- (Windows) *`NEW_DOMAIN_HOME`*`\bin\startWebLogic.cmd`

When prompted, enter your user name, password, and the URL of the Administration Server.

Step 2: Start Node Manager

To start Node Manager, use the `startNodeManager` script:

- (UNIX) *`NEW_DOMAIN_HOME`*`/bin/startNodeManager.sh`
- (Windows) *`NEW_DOMAIN_HOME`*`\bin\startNodeManager.cmd`

Step 3: Start Oracle Identity Management Components

Start any Oracle Identity Management components, such as Oracle Internet Directory, that form part of your environment:

- (UNIX) *`NEW_DOMAIN_HOME`*`/bin/startComponent.sh` *`component_name`*
- (Windows) *`NEW_DOMAIN_HOME`*`\bin\startComponent.cmd` *`component_name`*

Step 4: Start the Managed Servers

To start a WebLogic Server Managed Server, use the `startManagedWebLogic` script:

- (UNIX) *`NEW_DOMAIN_HOME`*`/bin/startManagedWebLogic.sh` *`managed_server_name admin_url`*
- (Windows) *`NEW_DOMAIN_HOME`*`\bin\startManagedWebLogic.cmd` *`managed_server_name admin_url`*

When prompted, enter your user name and password.

> **Note:**
>
> The startup of a Managed Server will typically start the applications that are deployed to it. Therefore, it should not be necessary to manually start applications after the Managed Server startup.

Step 5: Start System Components

To start system components, such as Oracle HTTP Server, use the `startComponent` script:

- (UNIX) *`NEW_DOMAIN_HOME`*`/bin/startComponent.sh` *`component_name`*
- (Windows) *`NEW_DOMAIN_HOME`*`\bin\startComponent.cmd` *`component_name`*

You can start system components in any order.

Step 6: Change to External Authentication

If you changed to internal authentication before upgrading product schemas, change back to external authentication after starting servers and processes.

4

Upgrading an Oracle Data Integrator Standalone Collocated Agent Environment from 11*g*

You can upgrade an Oracle Data Integrator standalone agent environment that is configured in a WebLogic domain from Oracle Fusion Middleware 11*g* to 12*c* (12.2.1.3.0).

- About Oracle Data Integrator Standalone Collocated Agent Upgrade Process
  Review the process flowchart for an overview of the upgrade process for an Oracle Data Integrator standalone agent that is configured in a WebLogic domain.
- Installing Oracle Data Integrator Standalone Collocated Agent Environment
  Before beginning your upgrade, download Oracle Data Integrator 12*c* (12.2.1.3.0) distribution on the target system and install it using Oracle Universal Installer.
- Creating the Required 12c Schemas
  When upgrading from 11*g*, you must create the required 12*c* schemas. You can use the Repository Creation Utility (RCU) to create customized schemas or, optionally, you can use the Upgrade Assistant to create schemas using the default schema settings. This procedure describes how to create schemas using the RCU. Information about using the Upgrade Assistant to create schemas is covered in the upgrade procedures.
- Running a Pre-Upgrade Readiness Check
  To identify potential issues with the upgrade, Oracle recommends that you run a readiness check before you start the upgrade process. Be aware that the readiness check may not be able to discover all potential issues with your upgrade. An upgrade may still fail, even if the readiness check reports success.
- Stopping Servers and Processes
  Before you run the Upgrade Assistant to upgrade your schemas and configurations, you must shut down all of the pre-upgrade processes and servers, including the Administration Server and any managed servers.
- Upgrading Product Schemas
  After stopping servers and processes, use the Upgrade Assistant to upgrade supported product schemas to the current release of Oracle Fusion Middleware.
- About Reconfiguring the Domain
  Run the Reconfiguration Wizard to reconfigure your domain component configurations to 12*c* (12.2.1.3.0).
- Upgrading Domain Component Configurations
  After reconfiguring the domain, use the Upgrade Assistant to upgrade the domain *component* configurations inside the domain to match the updated domain configuration.
- Starting Servers and Processes
  After a successful upgrade, restart all processes and servers, including the Administration Server and any Managed Servers.

About Oracle Data Integrator Standalone Collocated Agent Upgrade Process

Review the process flowchart for an overview of the upgrade process for an Oracle Data Integrator standalone agent that is configured in a WebLogic domain.

Figure 4-1 Oracle Data Integrator Standalone Collocated Agent Upgrade Process Flowchart

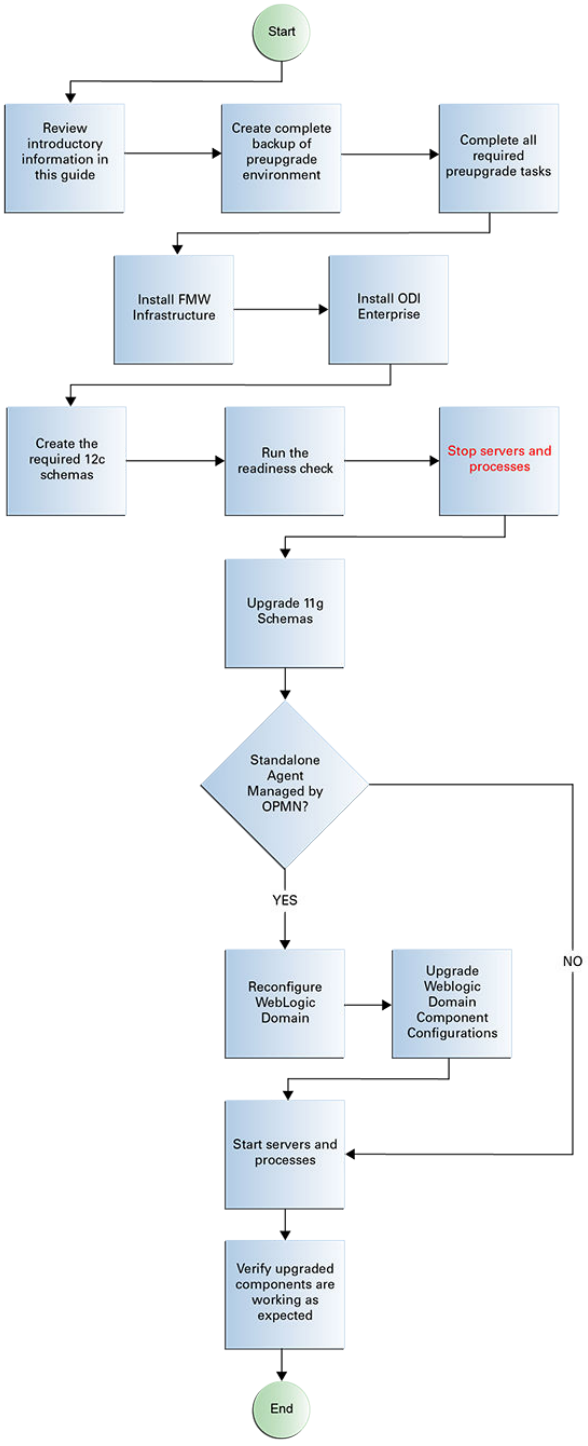


Table 4-1 Tasks for Upgrading Oracle Data Integrator Standalone Collocated Agent from 11g

Task	Description
Required If you have not done so already, review the introductory topics in this guide and complete the required pre-upgrade tasks.	See: • Introduction to Upgrading Oracle Data Integrator to 12*c* (12.2.1.3.0) • Pre-Upgrade Requirements
Required Install Oracle Data Integrator 12*c* (12.2.1.3.0) in a new Oracle home. **Note:** The ODI Enterprise installation process will automatically install Oracle Fusion Middleware Infrastructure if it is not already installed.	See Installing Oracle Data Integrator Standalone Collocated Agent Environment
Required Start the Repository Creation Utility (RCU) to create the required 12*c* database schemas.	Create the `STB`, `OPSS`, `IAU`, `IAU_VIEWER`, and `IAU_APPEND` schemas. See Creating the Required 12c Schemas
Optional Run a pre-upgrade readiness check.	See Running a Pre-Upgrade Readiness Check.
Required Shut down the 11*g* environment (stop all Administration and Managed Servers).	**WARNING:** Failure to shut down your servers during an upgrade may lead to data corruption. See Stopping Servers and Processes.

Table 4-1 (Cont.) Tasks for Upgrading Oracle Data Integrator Standalone Collocated Agent from 11g

Task	Description
Required Start the Upgrade Assistant to upgrade the 11*g* database schemas and to migrate all active (in flight) instance data.	See Upgrading Product Schemas. **Note:** The upgrade of active instance data is started automatically when running the Upgrade Assistant. Once the data is successfully upgraded to the new 12*c* (12.2.1.3.0) environment, you can close the Upgrade Assistant. The closed instances will continue to upgrade through a background process.
Required Start the Reconfiguration Wizard to reconfigure the domain and node manager.	Run the Configuration Wizard to update the existing domain to use the newly installed software. See Reconfiguring the Domain.
Required Start the Upgrade Assistant (again) to upgrade domain configurations.	Run the Upgrade Assistant to update the reconfigured domain's component configurations. The domain component configuration upgrade does not support upgrade of a standalone agent that is not managed by OPMN. See Upgrading Domain Component Configurations.
Required Restart the servers and the 12*c* (12.2.1.3.0) instance.	When the upgrade process is complete, restart the 12*c* (12.2.1.3.0) instance. See Starting Servers and Processes.
Required Verify the upgrade.	Ensure all of the upgraded components are working as expected before deleting your backups.

Installing Oracle Data Integrator Standalone Collocated Agent Environment

Before beginning your upgrade, download Oracle Data Integrator 12*c* (12.2.1.3.0) distribution on the target system and install it using Oracle Universal Installer.

Note:

The ODI Enterprise installation process will automatically install Oracle Fusion Middleware Infrastructure if it is not already installed.

To install Oracle Data Integrator standalone collocated agent environment:

1. Sign in to the target system.
2. Download the following from Oracle Technology Network or Oracle Software Delivery Cloud to your target system:
   - Oracle Data Integrator (`fmw_12.2.1.3.0_odi_Disk1_1of2.zip` and `fmw_12.2.1.3.0_odi_Disk1_2of2.zip`)
3. Change to the directory where you downloaded the 12*c* (12.2.1.3.0) product distribution.
4. Unzip the installer `fmw_12.2.1.3.0_odi_Disk1_1of2.zip` and `fmw_12.2.1.3.0_odi_Disk1_2of2.zip` files.
5. Start the ODI installation:

   (UNIX) *`JDK_HOME`*`/bin/java -jar fmw_12.2.1.3.0_odi_generic.jar`

   (Windows) *`JDK_HOME`*`\bin\java -jar fmw_12.2.1.3.0_odi_generic.jar`
6. On UNIX operating systems, the Installation Inventory Setup screen appears if this is the first time you are installing an Oracle product on this host.

   Specify the location where you want to create your central inventory. Make sure that the operating system group name selected on this screen has write permissions to the central inventory location, and click **Next**.

   > **Note:**
   >
   > The Installation Inventory Setup screen does not appear on Windows operating systems.
7. On the Welcome screen, review the information to make sure that you have met all the prerequisites. Click **Next**.
8. On the Auto Updates screen, select an option:
   - **Skip Auto Updates**: If you do not want your system to check for software updates at this time.
   - **Select patches from directory**: To navigate to a local directory if you downloaded patch files.
   - **Search My Oracle Support for Updates**: To automatically download software updates if you have a My Oracle Support account. You must enter Oracle Support credentials then click **Search**. To configure a proxy server for the installer to access My Oracle Support, click **Proxy Settings**. Click **Test Connection** to test the connection.

   Click **Next**.
9. On the Installation Location screen, specify the location for the Oracle home directory and click **Next**.

   For more information about Oracle Fusion Middleware directory structure, see Understanding Directories for Installation and Configuration in *Oracle Fusion Middleware Planning an Installation of Oracle Fusion Middleware*.
10. On the Installation Type screen, select **Enterprise Installation**.

    Click **Next**.

11. The Prerequisite Checks screen analyzes the host computer to ensure that the specific operating system prerequisites have been met.

    To view the list of tasks that are verified, select **View Successful Tasks**. To view log details, select **View Log**. If any prerequisite check fails, then an error message appears at the bottom of the screen. Fix the error and click **Rerun** to try again. To ignore the error or the warning message and continue with the installation, click **Skip** (not recommended).

12. On the Installation Summary screen, verify the installation options that you selected.

    If you want to save these options to a response file, click **Save Response File** and enter the response file location and name. The response file collects and stores all the information that you have entered, and enables you to perform a silent installation (from the command line) at a later time.
    Click **Install** to begin the installation.

13. On the Installation Progress screen, when the progress bar displays 100%, click **Finish** to dismiss the installer, or click **Next** to see a summary.

14. The Installation Complete screen displays the Installation Location and the Feature Sets that are installed. Review this information and click **Finish** to close the installer.

Creating the Required 12*c* Schemas

When upgrading from 11*g*, you must create the required 12*c* schemas. You can use the Repository Creation Utility (RCU) to create customized schemas or, optionally, you can use the Upgrade Assistant to create schemas using the default schema settings. This procedure describes how to create schemas using the RCU. Information about using the Upgrade Assistant to create schemas is covered in the upgrade procedures.

For the ODI environments described in this guide, the required schemas are:

- ODI standalone agent (no WebLogic domain): `STB`
- ODI standalone collocated agent (with WebLogic domain): `STB`, `OPSS`, `IAU`, `IAU_VIEWER`, and `IAU_APPEND`
- ODI Java EE agent: `STB`, `OPSS`, `IAU`, `IAU_VIEWER`, and `IAU_APPEND`

> **Note:**
>
> If you are upgrading from a previous 12*c* release of Oracle Fusion Middleware, you do not need to re-create these schemas if they already exist. Refer to the steps below to identify the existing schemas in your domain.

The following schemas must exist before you upgrade to 12*c*. If you are upgrading from 11*g*, and you are not sure which schemas you currently have, refer to the steps below to identify the existing schemas in your domain. You do not need to re-create these schemas if they already exist.

- **Service Table** schema (*`prefix`*`_STB`). This schema is new in 12*c* and is required for domain-based upgrades. It stores basic schema configuration information (for example, schema prefixes and passwords) that can be accessed and used by

other Oracle Fusion Middleware components during the domain creation. This schema is automatically created when you run the Repository Creation Utility (RCU), where you specify the existing schema owner prefix that you used for your other 11*g* schemas.

> **Note:**
>
> If the Service Table schema does not exist, you may encounter the error message `UPGAST-00328 : The schema version registry table does not exist on this database. If that happens it is necessary to create the service table schema in order to run Upgrade Assistant`

- **Oracle Platform Security Services (OPSS)** schema (*prefix*`_OPSS`). This schema is required if you are using an OID-based security store in 11*g*. This schema is automatically created when you run the Repository Creation Utility (RCU). The only supported LDAP-based OPSS security store is Oracle Internet Directory (OID). An LDAP-based policy store is typically used in production environments. You do not need to reassociate an OID-based security store before upgrade. While the Upgrade Assistant is running, you can select the OPSS schema. The Upgrade Assistant upgrades the OID-based security store automatically.

> **Note:**
>
> The 12*c* OPSS database schema is required so that you can reference the 12*c* schema during the reconfiguration of the domain. Your domain continues to use the OID-based security store after the upgrade is complete.

- **Audit** schemas. When upgrading audit services (`_IAU`), make sure that you select `_IAU_VIEWER` and `_IAU_APPEND` in addition to `_IAU`. The Upgrade Assistant handles this creation for you automatically, when they are selected.

To create the 12*c* schemas with the RCU:

1. (Optional) If you are upgrading from 11*g*, and you wish to confirm the schemas which are present in your existing domain, then connect to the database as a user with DBA privileges, and run the following code from SQL*Plus:

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

2. Verify that a certified JDK already exists on your system by running `java -version` from the command line. For 12*c* (12.2.1.3.0), the certified JDK is 1.8.0_131 and later.

Ensure that the `JAVA_HOME` environment variable is set to the location of the certified JDK. For example:

- (UNIX) `setenv JAVA_HOME /home/Oracle/Java/jdk1.8.0_131`
- (Windows) `set JAVA_HOME=C:\home\Oracle\Java\jdk1.8.0_131`

Add `$JAVA_HOME/bin` to `$PATH`.

3. Go to the `oracle_common/bin` directory:
   - (UNIX) *`NEW_ORACLE_HOME`*`/oracle_common/bin`
   - (Windows) *`NEW_ORACLE_HOME`*`\oracle_common\bin`
4. Start the RCU:
   - (UNIX) `./rcu`
   - (Windows) `rcu.bat`
5. On the Welcome screen, click **Next**.
6. On the Create Repository screen, select **Create Repository** and then select **System Load and Product Load**.

   If you do not have DBA privileges, select **Prepare Scripts for System Load**. This will generate a SQL script containing all the same SQL statements and blocks that would have been called if the RCU were to execute the actions for the selected components. After the script is generated, a user with the necessary SYS or SYSDBA privileges can execute the script to complete the system load phase. Click **Next**.
7. On the Database Connection Details screen, select the **Database Type** and enter the connection information for the database that hosts the 11*g* schemas. See the pertinent table below.

Table 4-2 Connection Credentials for Oracle Databases and Oracle Databases with Edition-Based Redefinition

Option	Description and Example
Host Name	Specify the name of the server where your database is running in the following format: `examplehost.exampledomain.com` For Oracle RAC databases, specify the VIP name or one of the node names in this field.
Port	Specify the port number for your database. The default port number for Oracle databases is 1521.
Service Name	Specify the service name for the database. Typically, the service name is the same as the global database name. For Oracle RAC databases, specify the service name of one of the nodes in this field. For example: `examplehost.exampledomain.com`
Username	Enter the user name for your database. The default user name is SYS.
Password	Enter the password for your database user.
Role	Select the database user's role from the drop-down list: **Normal** or **SYSDBA**

Table 4-3 Connection Credentials for MySQL Databases

Option	Description and Example
Host Name	Specify the host name, IP address, or complete server name in *host\server* format of the server where your database is running.
Port	Specify the port number for your database.
Database Name	Specify the name of your database.
Username	Specify the name of a user with administrator privileges.
Password	Enter the password for your database user.

Table 4-4 Connection Credentials for Microsoft SQL Server Databases

Option	Description and Example
Unicode Support	Select **Yes** or **No** from the drop-down list.
Server Name	Specify the host name, IP address, or complete server name in *host\server* format of the server where your database is running. MSSQL named instances: A named instance is identified by the network name of the computer and the instance name that you specify during installation. The client must specify both the server name and the instance name when connecting.
Port	Specify the port number for your database.
Database Name	Specify the name of your database.
Username	Specify the name of a user with administrator privileges.
Password	Enter the password for your database user.

Table 4-5 Connection Credentials for IBM DB2 Databases

Option	Description and Example
Server Name	Specify the host name, IP address, or complete server name in *host\server* format of the server where your database is running.
Port	Specify the port number for your database.
Database Name	Specify the name of your database.
Username	Specify the name of a user with DB Owner privileges. The default user name for IBM DB2 databases is `db2admin`.
Password	Enter the password for your database user.

If the prerequisite check is successful, click **OK** to continue to the next screen. If the check fails, review the details you entered and try again.

8. On the Select Components screen, select **Select existing prefix** and select the prefix that was used to create the existing 11*g* schemas from the drop-down menu (for example, `DEV11G`). This prefix is used to logically group schemas together for use in this domain.

> **Note:**
>
> The Common Infrastructure Services (*prefix*_STB) and Oracle Platform Security Services (*prefix*_OPSS) schemas are selected by default if they have not yet been created.

Make a note of the prefix and schema names for the components you are installing as you will need this information when you configure the installation. Click **Next**.

9. In the Checking Prerequisites dialog, verify that the prerequisites check is successful, then click **OK**.
10. On the Schema Passwords screen, specify the passwords for your schema owners.

    Make a note of the passwords you enter on this screen as you will need this information while configuring your product installation.
11. On the Map Tablespaces screen, configure the required tablespace mapping for the schemas you want to create.

    Click **Next**, then click **OK** in the confirmation dialog. When the progress dialog shows the tablespace creation is complete, click **OK**.

    You see the **Encrypt Tablespace** check box only if you have enabled Transparent Data Encryption (TDE) in the database (Oracle or Oracle EBR) when you start the RCU. Select the **Encrypt Tablespace** check box on the Map Tablespaces screen to encrypt all new tablespaces that the RCU creates.
12. Verify the information on the Summary screen and click **Create** to begin schema creation.

    This screen contains information about the log files that were created from this RCU operation. Click on the name of a particular log file to view the contents of that file.
13. Review the information on the Completion Summary screen to verify that the operation is completed successfully. Click **Close** to complete the schema creation.

Running a Pre-Upgrade Readiness Check

To identify potential issues with the upgrade, Oracle recommends that you run a readiness check before you start the upgrade process. Be aware that the readiness check may not be able to discover all potential issues with your upgrade. An upgrade may still fail, even if the readiness check reports success.

- About Running a Pre-Upgrade Readiness Check
  You can run the Upgrade Assistant in `-readiness` mode to detect issues before you perform the actual upgrade. You can run the readiness check in GUI mode using the Upgrade Assistant or in silent mode using a response file.
- Starting the Upgrade Assistant in Readiness Mode
  Use the `-readiness` parameter to start the Upgrade Assistant in readiness mode.
- Performing a Readiness Check with the Upgrade Assistant
  Navigate through the screens in the Upgrade Assistant to complete the pre-upgrade readiness check.

- Understanding the Readiness Report
  After performing a readiness check for your domain, review the report to determine whether you need to take any action for a successful upgrade.

About Running a Pre-Upgrade Readiness Check

You can run the Upgrade Assistant in `-readiness` mode to detect issues before you perform the actual upgrade. You can run the readiness check in GUI mode using the Upgrade Assistant or in silent mode using a response file.

The Upgrade Assistant readiness check performs a read-only, pre-upgrade review of your Fusion Middleware schemas and WebLogic domain configurations that are at a supported starting point. The review is a read-only operation.

The readiness check generates a formatted, time-stamped readiness report so you can address potential issues before you attempt the actual upgrade. If no issues are detected, you can begin the upgrade process. Oracle recommends that you read this report thoroughly before performing an upgrade.

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

You can run the readiness check any number of times before performing any actual upgrade. However, do not run the readiness check after an upgrade has been performed, as the report results may differ from the result of pre-upgrade readiness checks.

> **Note:**
>
> To prevent performance from being affected, Oracle recommends that you run the readiness check during off-peak hours.

Starting the Upgrade Assistant in Readiness Mode

Use the `-readiness` parameter to start the Upgrade Assistant in readiness mode.

To perform a readiness check on your pre-upgrade environment with the Upgrade Assistant:

1. Go to the `oracle_common/upgrade/bin` directory:
   - (UNIX) *`NEW_ORACLE_HOME`*`/oracle_common/upgrade/bin`
   - (Windows) *`NEW_ORACLE_HOME`*`\oracle_common\upgrade\bin`
2. Start the Upgrade Assistant.
   - (UNIX) `./ua -readiness`
   - (Windows) `ua.bat -readiness`

> **Note:**
>
> If the `DISPLAY` environment variable is not set up properly to allow for GUI mode, you may encounter the following error:
>
> ```
> Xlib: connection to ":1.0" refused by server
> Xlib: No protocol specified
> ```
>
> To resolve this issue, set the `DISPLAY` environment variable to the system name or IP address of your local workstation, and rerun Upgrade Assistant.
>
> If you continue to receive these errors after setting `DISPLAY`, try launching another GUI tool, such as `vncconfig`. If you see the same errors, your `DISPLAY` environment variable may still not be set correctly.

For information about other parameters that you can specify on the command line, see:

- Upgrade Assistant Parameters

Upgrade Assistant Parameters

When you start the Upgrade Assistant from the command line, you can specify additional parameters.

Table 4-6 Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-readiness`	Required for readiness checks **Note**: Readiness checks cannot be performed on standalone installations (those not managed by the WebLogic Server).	Performs the upgrade readiness check without performing an actual upgrade. Schemas and configurations are checked. Do not use this parameter if you have specified the `-examine` parameter.
`-threads`	Optional	Identifies the number of threads available for concurrent schema upgrades or readiness checks of the schemas. The value must be a positive integer in the range 1 to 8. The default is 4.
`-response`	Required for silent upgrades or silent readiness checks	Runs the Upgrade Assistant using inputs saved to a response file generated from the data that is entered when the Upgrade Assistant is run in GUI mode. Using this parameter runs the Upgrade Assistant in *silent mode* (without displaying Upgrade Assistant screens).

Table 4-6 (Cont.) Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-examine`	Optional	Performs the examine phase but does not perform an actual upgrade. Do not specify this parameter if you have specified the `-readiness` parameter.
`-logLevel` *`attribute`*	Optional	Sets the logging level, specifying one of the following attributes: • `TRACE` • `NOTIFICATION` • `WARNING` • `ERROR` • `INCIDENT_ERROR` The default logging level is `NOTIFICATION`. Consider setting the `-logLevel TRACE` attribute to so that more information is logged. This is useful when troubleshooting a failed upgrade. The Upgrade Assistant's log files can become very large if `-logLevel TRACE` is used.
`-logDir` *`location`*	Optional	Sets the default location of upgrade log files and temporary files. You must specify an existing, writable directory where the Upgrade Assistant creates log files and temporary files. The default locations are: (UNIX) *`NEW_ORACLE_HOME`*`/oracle_common/upgrade/logs` *`NEW_ORACLE_HOME`*`/oracle_common/upgrade/temp` (Windows) *`NEW_ORACLE_HOME`*`\oracle_common\upgrade\logs` *`NEW_ORACLE_HOME`*`\oracle_common\upgrade\temp`
`-help`	Optional	Displays all of the command-line options.

Performing a Readiness Check with the Upgrade Assistant

Navigate through the screens in the Upgrade Assistant to complete the pre-upgrade readiness check.

Readiness checks are performed only on schemas or component configurations that are at a supported upgrade starting point.

To complete the readiness check:

1. On the Welcome screen, review information about the readiness check. Click **Next**.
2. On the Readiness Check Type screen, select the readiness check that you want to perform:
   - **Individually Selected Schemas** allows you to select individual schemas for review before upgrade. The readiness check reports whether a schema is supported for an upgrade or where an upgrade is needed.
     When you select this option, the screen name changes to Selected Schemas.
   - **Domain Based** allows the Upgrade Assistant to discover and select all upgrade-eligible schemas or component configurations in the domain specified in the **Domain Directory** field.
     When you select this option, the screen name changes to Schemas and Configuration.

     Leave the default selection if you want the Upgrade Assistant to check all schemas and component configurations at the same time, or select a specific option:
     - **Include checks for all schemas** to discover and review all components that have a schema available to upgrade.
     - **Include checks for all configurations** to review component configurations for a managed WebLogic Server domain.

   Click **Next**.
3. If you selected **Individually Selected Schemas**: On the Available Components screen, select the components that have a schema available to upgrade for which you want to perform a readiness check.

   If you selected **Domain Based**: On the Component List screen, review the list of components that are present in your domain for which you want to perform a readiness check.

   If you select a component that has dependent components, those components are automatically selected. For example, if you select Oracle Platform Security Services, Oracle Audit Services is automatically selected.

   Depending on the components you select, additional screens may display. For example, you may need to:
   - Specify the domain directory.
   - Specify schema credentials to connect to the selected schema: **Database Type**, **DBA User Name**, and **DBA Password**. Then click **Connect**.

> **Note:**
>
> Oracle database is the default database type. Make sure that you select the correct database type before you continue. If you discover that you selected the wrong database type, do not go back to this screen to change it to the correct type. Instead, close the Upgrade Assistant and restart the readiness check with the correct database type selected to ensure that the correct database type is applied to all schemas.

- Select the **Schema User Name** option and specify the **Schema Password**.

Click **Next** to start the readiness check.

4. On the Readiness Summary screen, review the summary of the readiness checks that will be performed based on your selections.

   If you want to save your selections to a response file to run the Upgrade Assistant again later in response (or silent) mode, click **Save Response File** and provide the location and name of the response file. A silent upgrade performs exactly the same function that the Upgrade Assistant performs, but you do not have to manually enter the data again.

   For a detailed report, click **View Log**.

   Click **Next**.

5. On the Readiness Check screen, review the status of the readiness check. The process can take several minutes.

   If you are checking multiple components, the progress of each component displays in its own progress bar in parallel.

   When the readiness check is complete, click **Continue**.

6. On the End of Readiness screen, review the results of the readiness check (**Readiness Success** or **Readiness Failure**):

   - If the readiness check is successful, click **View Readiness Report** to review the complete report. Oracle recommends that you review the Readiness Report before you perform the actual upgrade even when the readiness check is successful. Use the **Find** option to search for a particular word or phrase within the report. The report also indicates where the completed Readiness Check Report file is located.
   - If the readiness check encounters an issue or error, click **View Log** to review the log file, identify and correct the issues, and then restart the readiness check. The log file is managed by the command-line options you set.

Understanding the Readiness Report

After performing a readiness check for your domain, review the report to determine whether you need to take any action for a successful upgrade.

The format of the readiness report file is:

`readiness_`*`timestamp`*`.txt`

where *`timestamp`* indicates the date and time of when the readiness check was run.

A readiness report contains the following information:

Table 4-7 Readiness Report Elements

Report Information	Description	Required Action
Overall Readiness Status: SUCCESS or FAILURE	The top of the report indicates whether the readiness check passed or completed with one or more errors.	If the report completed with one or more errors, search for FAIL and correct the failing issues before attempting to upgrade. You can re-run the readiness check as many times as necessary before an upgrade.
Timestamp	The date and time that the report was generated.	No action required.
Log file location *NEW_ORACLE_HOME*/oracle_common/upgrade/logs	The directory location of the generated log file.	No action required.
Readiness report location *NEW_ORACLE_HOME*/oracle_common/upgrade/logs	The directory location of the generated readiness report.	No action required.
Names of components that were checked	The names and versions of the components included in the check and status.	If your domain includes components that cannot be upgraded to this release, such as SOA Core Extension, do not attempt an upgrade.
Names of schemas that were checked	The names and current versions of the schemas included in the check and status.	Review the version numbers of your schemas. If your domain includes schemas that cannot be upgraded to this release, do not attempt an upgrade.
Individual Object Test Status: FAIL	The readiness check test detected an issue with a specific object.	Do not upgrade until all failed issues have been resolved.
Individual Object Test Status: PASS	The readiness check test detected no issues for the specific object.	If your readiness check report shows only the PASS status, you can upgrade your environment. Note, however, that the Readiness Check cannot detect issues with externals such as hardware or connectivity during an upgrade. You should always monitor the progress of your upgrade.
Completed Readiness Check of <Object> Status: FAILURE	The readiness check detected one or more errors that must be resolved for a particular object such as a schema, an index, or datatype.	Do not upgrade until all failed issues have been resolved.
Completed Readiness Check of <Object> Status: SUCCESS	The readiness check test detected no issues.	No action required.

Here is a sample Readiness Report file. Your report may not include all of these checks.

```
Upgrade readiness check completed with one or more errors.

This readiness check report was created on Tue May 30 11:15:52 EDT 2016
Log file is located at: NEW_ORACLE_HOME/oracle_common/upgrade/logs/
ua2016-05-30-11-14-06AM.log
Readiness Check Report File: NEW_ORACLE_HOME/oracle_common/upgrade/logs/
readiness2016-05-30-11-15-52AM.txt

Starting readiness check of components.

Oracle Metadata Services
   Starting readiness check of Oracle Metadata Services.
     Schema User Name: DEV11_MDS
     Database Type: Oracle Database
     Database Connect String: machinename@yourcompany.com
     VERSION Schema DEV11_MDS is currently at version 12.1.1.1.0.
Readiness checks will now be performed.
   Starting schema test:  TEST_REQUIRED_TABLES  Test that the schema
contains all the required tables
   Completed schema test: TEST_REQUIRED_TABLES --> Test that the schema
contains all the required tables +++ PASS
   Starting schema test:  TEST_REQUIRED_PROCEDURES  Test that the schema
contains all the required stored procedures
     EXCEPTION     Schema is missing a required procedure:
GETREPOSITORYFEATURES
   Completed schema test: TEST_REQUIRED_PROCEDURES --> Test that the
schema contains all the required stored procedures +++ FAIL
   Starting schema test:  TEST_REQUIRED_VIEWS  Test that the schema
contains all the required database views
   Completed schema test: TEST_REQUIRED_VIEWS --> Test that the schema
contains all the required database views +++ PASS
   Starting index test for table MDS_ATTRIBUTES:  TEST_REQUIRED_INDEXES --
> Test that the table contains all the required indexes
   Completed index test for table MDS_ATTRIBUTES: TEST_REQUIRED_INDEXES --
> Test that the table contains all the required indexes +++ PASS
   Starting index test for table MDS_COMPONENTS:  TEST_REQUIRED_INDEXES --
> Test that the table contains all the required indexes
   Completed index test for table MDS_TXN_LOCKS: TEST_REQUIRED_INDEXES -->
Test that the table contains all the required indexes +++ PASS
   Starting schema test:  TEST_REQUIRED_TRIGGERS  Test that the schema has
all the required triggers
   Completed schema test: TEST_REQUIRED_TRIGGERS --> Test that the schema
has all the required triggers +++ PASS
   Starting schema test:  TEST_MISSING_COLUMNS  Test that tables and views
are not missing any required columns
   Completed schema test: TEST_MISSING_COLUMNS --> Test that tables and
views are not missing any required columns +++ PASS
   Starting schema test:  TEST_UNEXPECTED_TABLES  Test that the schema
does not contain any unexpected tables
   Completed schema test: TEST_UNEXPECTED_TABLES --> Test that the schema
does not contain any unexpected tables +++ PASS
   Starting schema test:  TEST_UNEXPECTED_PROCEDURES  Test that the schema
```

```
does not contain any unexpected stored procedures
   Completed schema test: TEST_UNEXPECTED_PROCEDURES --> Test that the
schema does not contain any unexpected stored procedures +++ PASS
   Starting schema test:  TEST_UNEXPECTED_VIEWS  Test that the schema does
not contain any unexpected views
   Completed schema test: TEST_UNEXPECTED_VIEWS --> Test that the schema
does not contain any unexpected views +++ PASS
   Starting index test for table MDS_ATTRIBUTES:  TEST_UNEXPECTED_INDEXES
--> Test that the table does not contain any unexpected indexes
   Completed index test for table MDS_ATTRIBUTES: TEST_UNEXPECTED_INDEXES
--> Test that the table does not contain any unexpected indexes +++ PASS
   Completed index test for table MDS_LABELS: TEST_UNEXPECTED_INDEXES -->
Test that the table does not contain any unexpected indexes +++ PASS
   Starting index test for table MDS_LARGE_ATTRIBUTES:
TEST_UNEXPECTED_INDEXES --> Test that the table does not contain any
unexpected indexes
   Starting schema test:  TEST_UNEXPECTED_TRIGGERS  Test that the schema
does not contain any unexpected triggers
   Completed schema test: TEST_UNEXPECTED_TRIGGERS --> Test that the
schema does not contain any unexpected triggers +++ PASS
   Starting schema test:  TEST_UNEXPECTED_COLUMNS  Test that tables and
views do not contain any unexpected columns
   Completed schema test: TEST_UNEXPECTED_COLUMNS --> Test that tables and
views do not contain any unexpected columns +++ PASS
   Starting datatype test for table MDS_ATTRIBUTES:
TEST_COLUMN_DATATYPES_V2 --> Test that all table columns have the proper
datatypes
   Completed datatype test for table MDS_ATTRIBUTES:
TEST_COLUMN_DATATYPES_V2 --> Test that all table columns have the proper
datatypes +++ PASS
   Starting datatype test for table MDS_COMPONENTS:
TEST_COLUMN_DATATYPES_V2 --> Test that all table columns have the proper
datatypes
   Starting permissions test:  TEST_DBA_TABLE_GRANTS  Test that DBA user
has privilege to view all user tables
   Completed permissions test: TEST_DBA_TABLE_GRANTS --> Test that DBA
user has privilege to view all user tables +++ PASS
   Starting schema test:  TEST_ENOUGH_TABLESPACE  Test that the schema
tablespaces automatically extend if full
   Completed schema test: TEST_ENOUGH_TABLESPACE --> Test that the schema
tablespaces automatically extend if full +++ PASS
   Starting schema test:  TEST_USER_TABLESPACE_QUOTA  Test that tablespace
quota for this user is sufficient to perform the upgrade
   Completed schema test: TEST_USER_TABLESPACE_QUOTA --> Test that
tablespace quota for this user is sufficient to perform the upgrade +++
PASS
   Starting schema test:  TEST_ONLINE_TABLESPACE  Test that schema
tablespaces are online
   Completed schema test: TEST_ONLINE_TABLESPACE --> Test that schema
tablespaces are online +++ PASS
   Starting schema test:  TEST_DATABASE_VERSION  Test that the database
server version number is supported for upgrade
     INFO   Database product version: Oracle Database 11g Enterprise
Edition Release 11.2.0.3.0 - 64bit Production
With the Partitioning, OLAP, Data Mining and Real Application Testing
```

```
options
   Completed schema test: TEST_DATABASE_VERSION --> Test that the database
server version number is supported for upgrade +++ PASS
   Finished readiness check of Oracle Metadata Services with status:
FAILURE.
```

If you are running the 12.1.3.0 version of Oracle Fusion Middleware IAU Schemas, and those schemas were upgraded from 11*g* (11.1.1.7 and later) or 12*c* (12.1.2.0), your readiness check may fail with the following error:

```
Starting index test for table IAU_COMMON:  TEST_REQUIRED_INDEXES --> Test
that the table contains all the required indexes
     INFO Audit schema index DYN_EVENT_CATEGORY_INDEX in table IAU_COMMON is
missing the required columns or index itself is missing. This maybe caused by
a known issue, anyway, this missing index will be added in 12.2.2 upgrade.
     INFO Audit schema index DYN_EVENT_TYPE_INDEX in table IAU_COMMON is
missing the required columns or index itself is missing. This maybe caused by
a known issue, anyway, this missing index will be added in 12.2.2 upgrade.
     INFO Audit schema index DYN_TENANT_INDEX in table IAU_COMMON is missing
the required columns or index itself is missing. This maybe caused by a known
issue, anyway, this missing index will be added in 12.2.2 upgrade.
     INFO Audit schema index DYN_USER_INDEX in table IAU_COMMON is missing
the required columns or index itself is missing. This maybe caused by a known
issue, anyway, this missing index will be added in 12.2.2 upgrade.
     INFO Audit schema index DYN_COMPONENT_TYPE_INDEX in table IAU_COMMON is
missing the required columns or index itself is missing. This maybe caused by
a known issue, anyway, this missing index will be added in 12.2.2 upgrade.
     INFO Audit schema index DYN_USER_TENANT_INDEX in table IAU_COMMON is
missing the required columns or index itself is missing. This maybe caused by
a known issue, anyway, this missing index will be added in 12.2.2 upgrade.
   Completed index test for table IAU_COMMON: TEST_REQUIRED_INDEXES --> Test
that the table contains all the required indexes +++ FAIL
```

> **Note:**
>
> You can ignore the missing index error in the readiness report. This is a known issue. The corresponding missing index is added during the schema upgrade operation. This error does not occur if the schema to be upgraded was created in 12*c* using the RCU.

Stopping Servers and Processes

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

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

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

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

Step 1: Stop System Components

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

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

You can stop system components in any order.

Step 2: Stop the Managed Servers

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

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

When prompted, enter your user name and password.

Step 3: Stop Oracle Identity Management Components

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

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

Step 4: Stop the Administration Server

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

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

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

When prompted, enter your user name, password, and the URL of the Administration Server.

> **Note:**
>
> If external password storage is set up for the repository, then the server hosting the credential store should be up and running so that the work repository password can be retrieved during upgrade. See Setting Up External Password Storage in *Administering Oracle Data Integrator*.

Step 5: Stop Node Manager

To stop Node Manager, close the command shell in which it is running.

Alternatively, after setting the `nodemanager.properties` attribute `QuitEnabled` to `true` (the default is `false`), you can use WLST to connect to Node Manager and shut it down. See stopNodeManager in *WLST Command Reference for WebLogic Server*.

Upgrading Product Schemas

After stopping servers and processes, use the Upgrade Assistant to upgrade supported product schemas to the current release of Oracle Fusion Middleware.

The Upgrade Assistant allows you to upgrade individually selected schemas or all schemas associated with a domain. The option you select determines which Upgrade Assistant screens you will use.

- Starting the Upgrade Assistant
  Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 12*c* (12.2.1.3.0). Oracle recommends that you run the Upgrade Assistant as a non-SYSDBA user, completing the upgrade for one domain at a time.
- Upgrading Product Schemas Using the Upgrade Assistant
  Navigate through the screens in the Upgrade Assistant to upgrade the product schemas.
- Verifying the Schema Upgrade
  After completing all the upgrade steps, verify that the upgrade was successful by checking that the schema version in `schema_version_registry` has been properly updated.

Starting the Upgrade Assistant

Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 12*c* (12.2.1.3.0). Oracle recommends that you run the Upgrade Assistant as a non-SYSDBA user, completing the upgrade for one domain at a time.

To start the Upgrade Assistant:

> **Note:**
>
> Before you start the Upgrade Assistant, make sure that the JVM character encoding is set to UTF-8 for the platform on which the Upgrade Assistant is running. If the character encoding is not set to UTF-8, then you will not be able to download files containing Unicode characters in their names. This can cause the upgrade to fail.

1. Go to the `oracle_common/upgrade/bin` directory:
   - (UNIX) *`NEW_ORACLE_HOME`*`/oracle_common/upgrade/bin`
   - (Windows) *`NEW_ORACLE_HOME`*`\oracle_common\upgrade\bin`
2. Start the Upgrade Assistant:
   - (UNIX) `./ua`
   - (Windows) `ua.bat`

For information about other parameters that you can specify on the command line, such as logging parameters, see:

- Upgrade Assistant Parameters

Upgrade Assistant Parameters

When you start the Upgrade Assistant from the command line, you can specify additional parameters.

Table 4-8 Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-readiness`	Required for readiness checks **Note**: Readiness checks cannot be performed on standalone installations (those not managed by the WebLogic Server).	Performs the upgrade readiness check without performing an actual upgrade. Schemas and configurations are checked. Do not use this parameter if you have specified the `-examine` parameter.
`-threads`	Optional	Identifies the number of threads available for concurrent schema upgrades or readiness checks of the schemas. The value must be a positive integer in the range 1 to 8. The default is 4.

Table 4-8 (Cont.) Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-response`	Required for silent upgrades or silent readiness checks	Runs the Upgrade Assistant using inputs saved to a response file generated from the data that is entered when the Upgrade Assistant is run in GUI mode. Using this parameter runs the Upgrade Assistant in *silent mode* (without displaying Upgrade Assistant screens).
`-examine`	Optional	Performs the examine phase but does not perform an actual upgrade. Do not specify this parameter if you have specified the `-readiness` parameter.
`-logLevel` *attribute*	Optional	Sets the logging level, specifying one of the following attributes: • `TRACE` • `NOTIFICATION` • `WARNING` • `ERROR` • `INCIDENT_ERROR` The default logging level is `NOTIFICATION`. Consider setting the `-logLevel TRACE` attribute to so that more information is logged. This is useful when troubleshooting a failed upgrade. The Upgrade Assistant's log files can become very large if `-logLevel TRACE` is used.

Table 4-8 (Cont.) Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-logDir` *location*	Optional	Sets the default location of upgrade log files and temporary files. You must specify an existing, writable directory where the Upgrade Assistant creates log files and temporary files. The default locations are: (UNIX) *NEW_ORACLE_HOME*`/oracle_common/upgrade/logs` *NEW_ORACLE_HOME*`/oracle_common/upgrade/temp` (Windows) *NEW_ORACLE_HOME*`\oracle_common\upgrade\logs` *NEW_ORACLE_HOME*`\oracle_common\upgrade\temp`
`-help`	Optional	Displays all of the command-line options.

Upgrading Product Schemas Using the Upgrade Assistant

Navigate through the screens in the Upgrade Assistant to upgrade the product schemas.

Notes:

- If you are using external authentication, make sure that external authentication is changed to internal authentication before upgrading product schemas.
- **Edition-based redefinition (EBR) Users Only:** Before upgrading an Edition-Based Redefinition (EBR) enabled schema, you must connect to the database server and create an edition on the database server for 12*c*. The new edition for 12*c* must be a child of your existing 11*g* edition. See Creating an Edition on the Server for Editions-Based Redefinition.

> **Note:**
>
> Make sure that the administration and managed servers are stopped before you launch the Upgrade Assistant.

To upgrade product schemas with the Upgrade Assistant:

1. On the Welcome screen, review the introduction to the Upgrade Assistant and information about important pre-upgrade tasks. Click **Next**.

   > **Note:**
   >
   > For more information about any Upgrade Assistant screen, click **Help** on the screen.

2. On the Selected Schemas screen, select **Individually Selected Schemas**.

   > **Caution:**
   >
   > Upgrade only those schemas that are used to support your 12*c* (12.2.1.3.0) components. Do not upgrade schemas that are currently being used to support components that are not included in Oracle Fusion Middleware 12*c* (12.2.1.3.0).

   Click **Next**.

3. On the Available Components screen, select **Oracle Data Integrator** to upgrade the Master and Work Repository schema.
4. On the Prerequisites screen, acknowledge that the prerequisites have been met by selecting all the check boxes. Click **Next**.

   > **Note:**
   >
   > The Upgrade Assistant does not verify whether the prerequisites have been met.

5. On the ODI Schema screen, specify the database connection details for each schema you are upgrading:
   - Select the database type from the **Database Type** drop-down menu.
   - Enter the database connection details, and click **Connect**.
   - Select the schema you want to upgrade from the **Schema User Name** drop-down menu, and then enter the password for the schema. Be sure to use the correct schema prefix for the schemas you are upgrading.
6. On the ODI Options screen, select all of the options.

Table 4-9 ODI Options

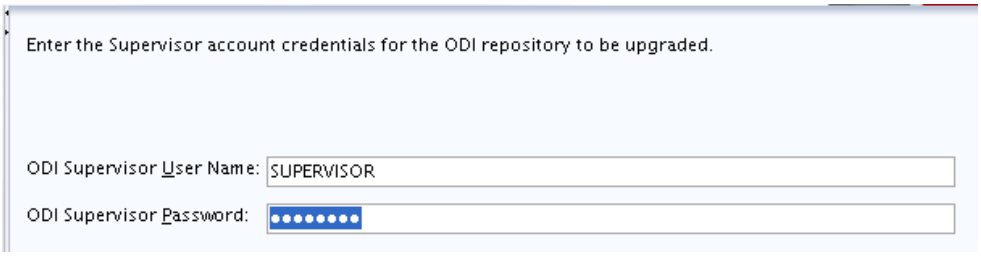
Option	Description
Replace Knowledge Modules with mandatory updates	This selection replaces standard Knowledge Modules with the newest version. Customizations to Oracle installed Knowledge Modules will be overwritten. But, if you copy an installed Knowledge Module and customize the Knowledge Module, the customizations are not lost.
Upgrade topology and security metadata	This selection replaces topology and security artifacts such as Technologies, Datatypes, Security Profiles and others with the newest version. Customizations of installed objects will be overwritten. If the object is copied and customized, then the customizations are not lost.

See Advanced Upgrade Options that are important when upgrading ODI repository from 11g to 12c.

7. On the ODI Supervisor screen, enter the Supervisor account credentials for the ODI repository to be upgraded.

   The installed Supervisor account is `SUPERVISOR`. Check with your ODI administrator for correct Supervisor account name and password, supplied when prompted by the Repository Creation Utility (RCU) when creating the Master and Work repositories for ODI.

Figure 4-2 Account credentials for the ODI repository



> **Note:**
>
> When **All Schemas Used by a Domain** is selected, the Supervisor credentials for ODI are not pre-populated in the first instance as the domain does not contain them. If there are multiple ODI schemas, the Upgrade Assistant populates the user entry using the first set of credentials.

8. On the ODI Upgrade Key screen, use the auto-generated upgrade key to convert 11*g* IDs for repository objects into unique GUIDs, or specify your own key in the **Upgrade Key** field.

Recommendations:

- Edit the auto-generated key to provide a meaningful key that is easier to remember.
- Note down the upgrade key so that the same upgrade key can be provided when the ODI objects are imported from the XML file.

ODI objects exist in ODI repositories and also in XML files exported from such repositories. For example, in metadata exchanges between repositories, which can be used.. As such, there may be multiple copies of the same object, in different repositories and XML files.

In 12*c*, ODI uses GUIDs instead of internal numeric IDs for object identification. In order to make sure the object identity is preserved after upgrade, a deterministic algorithm is applied to calculate GUIDs from the internal IDs for existing objects (note that for new objects, ODI will generate random GUIDs).

Because the internal numeric IDs are not really universally unique, and are dependent on the repository ID to achieve a pseudo-uniqueness, ODI allows the user to specify the upgrade key in order to reduce the likelihood of generating duplicated GUIDs. The upgrade key is fed into the GUID generation algorithm together with the internal numeric ID, to calculate the GUID.

Thus, choosing different upgrade keys protects objects from getting duplicate GUIDs that accidentally have the same internal numeric IDs. However, when multiple copies of the same object exists (in a repository or exported in XML files), the same GUID should be produced for all copies of the object. For this reason, the same upgrade key must be used for all upgrade operations involving the copies of that particular object.

For example, if you have a project with `1001` as the ID in the 11*g* repository, and you also have a file exported from the same repository, which contains the same project (ID = `1001`). In this case, the upgrade key used to upgrade the repository should be the same as the upgrade key used to import the XML file into the upgraded 12*c* repository. This ensures that the project object in the import file will be properly matched with the project object in the repository (when using one of `SYNONYM` import modes). However, if there is an 11*g* XML export file provided from a source containing objects created in another repository of which you have no information, there is a chance that it may contain a project that accidentally has the same internal ID (`1001`). In this case, to protect from erroneous object matching, which may corrupt the metadata, a different, custom upgrade key should be used when importing that file into the repository.

9. On the Examine screen, review the status of the Upgrade Assistant as it examines each schema, verifying that the schema is ready for upgrade. If the status is **Examine finished**, click **Next**.

   If the examine phase fails, Oracle recommends that you cancel the upgrade by clicking **No** in the Examination Failure dialog. Click **View Log** to see what caused the error and refer to Troubleshooting Your Upgrade in *Upgrading with the Upgrade Assistant* for information on resolving common upgrade errors.

> **Note:**
>
> - If you resolve any issues detected during the examine phase without proceeding with the upgrade, you can start the Upgrade Assistant again without restoring from backup. However, if you proceed by clicking **Yes** in the Examination Failure dialog box, you need to restore your pre-upgrade environment from backup before you start the Upgrade Assistant again.
> - Canceling the examination process has no effect on the schemas or configuration data; the only consequence is that the information the Upgrade Assistant has collected must be collected again in a future upgrade session.

10. The Upgrade Summary screen lists the schemas that will be upgraded and/or created.

    Verify that the correct Source and Target Versions are listed for each schema that you intend to upgrade.

    If you want to save these options to a response file to run the Upgrade Assistant again later in response (or silent) mode, click **Save Response File** and provide the location and the name of the response file. A silent upgrade performs exactly the same function that the Upgrade Assistant performs, but you do not have to manually enter the data again.

    Click **Next**.

11. On the Upgrade Progress screen, monitor the status of the upgrade.

> **Caution:**
>
> Allow the Upgrade Assistant enough time to perform the upgrade. Do not cancel the upgrade operation unless absolutely necessary. Doing so may result in an unstable environment.

    If any schemas are not upgraded successfully, refer to the Upgrade Assistant log files for more information.

> **Note:**
>
> The progress bar on this screen displays the progress of the current upgrade procedure. It does not indicate the time remaining for the upgrade.

    Click **Next**.

12. If the upgrade is successful: On the Upgrade Success screen, click **Close** to complete the upgrade and close the wizard.

If the upgrade fails: On the Upgrade Failure screen, click **View Log** to view and troubleshoot the errors. The logs are available at *NEW_ORACLE_HOME*`/oracle_common/upgrade/logs`.

> **Note:**
>
> If the upgrade fails, you must restore your pre-upgrade environment from backup, fix the issues, then restart the Upgrade Assistant.

Verifying the Schema Upgrade

After completing all the upgrade steps, verify that the upgrade was successful by checking that the schema version in `schema_version_registry` has been properly updated.

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

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

In the query result:

- Check that the number in the `VERSION` column matches the latest version number for that schema. For example, verify that the schema version number is 12.2.1.3.0.

  > **Note:**
  >
  > However, that not all schema versions will be updated. Some schemas do not require an upgrade to this release and will retain their pre-upgrade version number.

- 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.
- Synonym objects owned by `IAU_APPEND` and `IAU_VIEWER` will appear as `INVALID`, but that does not indicate a failure.

  They become invalid because the target object changes after the creation of the synonym. The synonyms objects will become valid when they are accessed. You can safely ignore these `INVALID` objects.

About Reconfiguring the Domain

Run the Reconfiguration Wizard to reconfigure your domain component configurations to 12*c* (12.2.1.3.0).

When you reconfigure a WebLogic Server domain, the following items are automatically updated, depending on the applications in the domain:

- WebLogic Server core infrastructure
- Domain version

> **Note:**
>
> Before you begin the domain reconfiguration, note the following limitations:
>
> - The Reconfiguration Wizard does not update any of your own applications that are included in the domain.
> - Transforming a non-dynamic cluster domain to a dynamic cluster domain during the upgrade process is not supported.
>
> The dynamic cluster feature is available when running the Reconfiguration Wizard, but Oracle only supports upgrading a non-dynamic cluster upgrade and then adding dynamic clusters. You cannot add dynamic cluster during the upgrade process.

Specifically, when you reconfigure a domain, the following occurs:

- The domain version number in the `config.xml` file for the domain is updated to the Administration Server's installed WebLogic Server version.
- Reconfiguration templates for all installed Oracle products are automatically selected and applied to the domain. These templates define any reconfiguration tasks that are required to make the WebLogic domain compatible with the current WebLogic Server version.
- Start scripts are updated.

  If you want to preserve your modified start scripts, be sure to back them up before starting the Reconfiguration Wizard.

> **Note:**
>
> When the domain reconfiguration process starts, you can't undo the changes that it makes. Before running the Reconfiguration Wizard, ensure that you have backed up the domain as covered in the pre-upgrade checklist. If an error or other interruption occurs while running the Reconfiguration Wizard, you must restore the domain by copying the files and directories from the backup location to the original domain directory. This is the only way to ensure that the domain has been returned to its original state before reconfiguration.

Follow these instructions to reconfigure the existing domain using the Reconfiguration Wizard. See Reconfiguring WebLogic Domains in *Upgrading Oracle WebLogic Server*.

- Backing Up the Domain
- Starting the Reconfiguration Wizard
- Reconfiguring the Domain with the Reconfiguration Wizard

Backing Up the Domain

Before running the Reconfiguration Wizard, create a backup copy of the domain directory.

To create a backup of the domain directory:

1. Copy the source domain to a separate location to preserve the contents.

   (Windows) `copy C:\domains\mydomain to C:\domains\mydomain_backup`.

   (UNIX) `cp mydomain /domains/mydomain_backup`

2. Before updating the domain on each remote Managed Server, create a backup copy of the domain directory on each remote machine.
3. Verify that the backed up versions of the domain are complete.

If domain reconfiguration fails for any reason, you must copy all files and directories from the backup directory into the original domain directory to ensure that the domain is returned entirely to its original state before reconfiguration.

Starting the Reconfiguration Wizard

> **Note:**
>
> Shut down the administration server and all collocated managed servers before starting the reconfiguration process. See Stopping Servers and Processes .

To start the Reconfiguration Wizard in graphical mode:

1. Sign in to the system on which the domain resides.
2. Open the command shell (on UNIX operating systems) or open a 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 child edition name.
4. Go to the `oracle_common/common/bin` directory:
   - (UNIX) *NEW_ORACLE_HOME*`/oracle_common/common/bin`
   - (Windows) *NEW_ORACLE_HOME*`\oracle_common\commom\bin`

5. Start the Reconfiguration Wizard with the following logging options:
   - (UNIX) `./reconfig.sh -log=log_file -log_priority=ALL`
   - (Windows) `reconfig.cmd -log=log_file -log_priority=ALL`

   where *log_file* is 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.

   The parameter `-log_priority=ALL` ensures that logs are logged in fine mode.

> **Note:**
>
> When you run this command, the following error message might appear 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
> ```

Reconfiguring the Domain with the Reconfiguration Wizard

Navigate through the screens in the Reconfiguration Wizard to reconfigure your existing domain before running the Upgrade Assistant

> **Note:**
>
> If the source is a clustered environment, run the Reconfiguration Wizard on the primary node only. Use the `pack` and `unpack` utilities to apply the changes to other cluster members in the domain.

To reconfigure the domain with the Reconfiguration Wizard:

1. On the Select Domain screen, specify the location of the domain you want to upgrade or click **Browse** to navigate and select the domain directory. Click **Next**.
2. On the Reconfiguration Setup Progress screen, view the progress of the setup process. When complete, click **Next**.

   During this process:

   - The reconfiguration templates for your installed products, including Fusion Middleware products, are automatically applied. This updates various domain configuration files such as `config.xml`, `config-groups.xml`, and `security.xml` (among others).
   - Schemas, scripts, and other such files that support your Fusion Middleware products are updated.
   - The domain upgrade is validated.

3. On the Domain Mode and JDK screen, select the JDK to use in the domain or click **Browse** to navigate to the JDK you want to use. The supported JDK version for 12*c* (12.2.1.3.0) is 1.8.0_131 and later. Click **Next**.

> **Note:**
>
> You cannot change the **Domain Mode** at this stage.

For a list of JDKs that are supported for a specific platform, see Oracle Fusion Middleware Supported System Configurations.

4. On the Database Configuration Type screen, select **RCU Data** to connect to the Server Table (_STB) schema.

   Enter the database connection details using the RCU service table (_STB) schema credentials and click **Get RCU Configuration**.

   The Reconfiguration Wizard uses this connection to automatically configure the data sources required for components in your domain.

> **Note:**
>
> By default **Oracle's Driver (Thin) for Service connections; Versions: Any** is the selected driver. If you specified an instance name in your connection details — instead of the service name — you must select **Oracle's Driver (Thin) for pooled instance connections; Versions: Any** If you do not change the driver type, then the connection will fail.

> **Note:**
>
> For any existing 11*g* datasource, the reconfiguration will preserve the existing values. For new datasources where the schema was created for 12*c* by the RCU, the default connection data will be retrieved from the _STB schema. If no connection data for a given schema is found in the _STB schema, then the default connection data is used.

If the check is successful, click **Next**. If the check fails, reenter the connection details correctly and try again.

> **Note:**
>
> If you are upgrading from 11*g*, and your database has _OPSS or _IAU 11*g* database schemas, you must manually enter database connection details for those schemas. These schemas were not required in 11*g* and had to be created manually. Users could assign any name to these schemas, therefore the Reconfiguration Wizard does not recognize them. When providing connection information for _IAU, use the IAU_APPEND user information.

5. On the JDBC Component Schema screen, verify that the DBMS/Service and the Host name is correct for each component schema and click **Next**.
6. On the JDBC Component Schema Test screen, select all the component schemas and click **Test Selected Connections** to test the connection for each schema. The result of the test is indicated in the Status column.

   When the check is complete, click **Next**.
7. On the Advanced Configuration screen, you can select all categories 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.

   > **Note:**
   >
   > The categories that are listed on the Advanced Configuration screen depend on the resources defined in the templates you selected for the domain.

   For this upgrade, select none of the options and click **Next**.
8. On the Configuration Summary screen, 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.

   To change the configuration, click **Back** to return to the appropriate screen. To reconfigure the domain, click **Reconfig**.

   > **Note:**
   >
   > The location of the domain does not change when you reconfigure it.
9. The Reconfiguration Progress screen displays the progress of the reconfiguration process.

   During this process:

   - Domain information is extracted, saved, and updated.
   - Schemas, scripts, and other such files that support your Fusion Middleware products are updated.

   When the progress bar shows 100%, click **Next**.
10. The End of Configuration screen indicates whether the reconfiguration process completed successfully or failed. It also displays the location of the domain that was reconfigured as well as the Administration Server URL (including the listen port). If the reconfiguration is successful, it displays **Oracle WebLogic Server Reconfiguration Succeeded**.

    If the reconfiguration process did not complete successfully, an error message is displayed indicates the reason. Take appropriate action to resolve the issue. If you cannot resolve the issue, contact My Oracle Support.

    Note the Domain Location and the Admin Server URL for further operations.

Upgrading Domain Component Configurations

After reconfiguring the domain, use the Upgrade Assistant to upgrade the domain *component* configurations inside the domain to match the updated domain configuration.

- Starting the Upgrade Assistant
  Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 12*c* (12.2.1.3.0). Oracle recommends that you run the Upgrade Assistant as a non-SYSDBA user, completing the upgrade for one domain at a time.
- Upgrading Domain Component Configurations Using the Upgrade Assistant
  Navigate through the screens in the Upgrade Assistant to upgrade component configurations in the WebLogic domain.

Starting the Upgrade Assistant

Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 12*c* (12.2.1.3.0). Oracle recommends that you run the Upgrade Assistant as a non-SYSDBA user, completing the upgrade for one domain at a time.

To start the Upgrade Assistant:

> **Note:**
>
> Before you start the Upgrade Assistant, make sure that the JVM character encoding is set to UTF-8 for the platform on which the Upgrade Assistant is running. If the character encoding is not set to UTF-8, then you will not be able to download files containing Unicode characters in their names. This can cause the upgrade to fail.

1. Go to the `oracle_common/upgrade/bin` directory:
   - (UNIX) *`NEW_ORACLE_HOME`*`/oracle_common/upgrade/bin`
   - (Windows) *`NEW_ORACLE_HOME`*`\oracle_common\upgrade\bin`
2. Start the Upgrade Assistant:
   - (UNIX) `./ua`
   - (Windows) `ua.bat`

For information about other parameters that you can specify on the command line, such as logging parameters, see:

- Upgrade Assistant Parameters

Upgrade Assistant Parameters

When you start the Upgrade Assistant from the command line, you can specify additional parameters.

Table 4-10 Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-readiness`	Required for readiness checks **Note**: Readiness checks cannot be performed on standalone installations (those not managed by the WebLogic Server).	Performs the upgrade readiness check without performing an actual upgrade. Schemas and configurations are checked. Do not use this parameter if you have specified the `-examine` parameter.
`-threads`	Optional	Identifies the number of threads available for concurrent schema upgrades or readiness checks of the schemas. The value must be a positive integer in the range 1 to 8. The default is 4.
`-response`	Required for silent upgrades or silent readiness checks	Runs the Upgrade Assistant using inputs saved to a response file generated from the data that is entered when the Upgrade Assistant is run in GUI mode. Using this parameter runs the Upgrade Assistant in *silent mode* (without displaying Upgrade Assistant screens).
`-examine`	Optional	Performs the examine phase but does not perform an actual upgrade. Do not specify this parameter if you have specified the `-readiness` parameter.
`-logLevel` *`attribute`*	Optional	Sets the logging level, specifying one of the following attributes: • `TRACE` • `NOTIFICATION` • `WARNING` • `ERROR` • `INCIDENT_ERROR` The default logging level is `NOTIFICATION`. Consider setting the `-logLevel TRACE` attribute to so that more information is logged. This is useful when troubleshooting a failed upgrade. The Upgrade Assistant's log files can become very large if `-logLevel TRACE` is used.

Table 4-10 (Cont.) Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-logDir` *location*	Optional	Sets the default location of upgrade log files and temporary files. You must specify an existing, writable directory where the Upgrade Assistant creates log files and temporary files. The default locations are: (UNIX) *NEW_ORACLE_HOME*`/oracle_common/upgrade/logs` *NEW_ORACLE_HOME*`/oracle_common/upgrade/temp` (Windows) *NEW_ORACLE_HOME*`\oracle_common\upgrade\logs` *NEW_ORACLE_HOME*`\oracle_common\upgrade\temp`
`-help`	Optional	Displays all of the command-line options.

Upgrading Domain Component Configurations Using the Upgrade Assistant

Navigate through the screens in the Upgrade Assistant to upgrade component configurations in the WebLogic domain.

After running the Reconfiguration Wizard to reconfigure the WebLogic domain to 12*c* (12.2.1.3.0), you must run the Upgrade Assistant to upgrade the domain *component* configurations to match the updated domain configuration.

To upgrade domain component configurations with the Upgrade Assistant:

1. On the Welcome screen, review an introduction to the Upgrade Assistant and information about important pre-upgrade tasks. Click **Next**.

> **Note:**
>
> For more information about any Upgrade Assistant screen, click **Help** on the screen.

2. On the next screen:

- Select **All Configurations Used By a Domain**. The screen name changes to WebLogic Components.
- In the **Domain Directory** field, enter the WebLogic domain directory path.

Click **Next**.

3. On the Component List screen, verify that the list includes all the components for which you want to upgrade configurations and click **Next**.

   If you do not see the components you want to upgrade, click **Back** to go to the previous screen and specify a different domain.

4. On the Prerequisites screen, acknowledge that the prerequisites have been met by selecting all the check boxes. Click **Next**.

   > **Note:**
   >
   > The Upgrade Assistant does not verify whether the prerequisites have been met.

5. On the Examine screen, review the status of the Upgrade Assistant as it examines each component, verifying that the component configuration is ready for upgrade. If the status is **Examine finished**, click **Next**.

   If the examine phase fails, Oracle recommends that you cancel the upgrade by clicking **No** in the Examination Failure dialog. Click **View Log** to see what caused the error and refer to Troubleshooting Your Upgrade in *Upgrading with the Upgrade Assistant* for information on resolving common upgrade errors.

   > **Note:**
   >
   > - If you resolve any issues detected during the examine phase without proceeding with the upgrade, you can start the Upgrade Assistant again without restoring from backup. However, if you proceed by clicking **Yes** in the Examination Failure dialog box, you need to restore your pre-upgrade environment from backup before starting the Upgrade Assistant again.
   > - Canceling the examination process has no effect on the configuration data; the only consequence is that the information the Upgrade Assistant has collected must be collected again in a future upgrade session.

6. On the Upgrade Summary screen, review the summary of the options you have selected for component configuration upgrade.

   The response file collects and stores all the information that you have entered, and enables you to perform a silent upgrade at a later time. The silent upgrade performs exactly the same function that the Upgrade Assistant performs, but you do not have to manually enter the data again. If you want to save these options to a response file, click **Save Response File** and provide the location and name of the response file.

   Click **Upgrade** to start the upgrade process.

7. On the Upgrade Progress screen, monitor the status of the upgrade.

> **Caution:**
>
> Allow the Upgrade Assistant enough time to perform the upgrade. Do not cancel the upgrade operation unless absolutely necessary. Doing so may result in an unstable environment.

If any components are not upgraded successfully, refer to the Upgrade Assistant log files for more information.

> **Note:**
>
> The progress bar on this screen displays the progress of the current upgrade procedure. It does not indicate the time remaining for the upgrade.

Click **Next**.

8. If the upgrade is successful: On the Upgrade Success screen, click **Close** to complete the upgrade and close the wizard. The Post-Upgrade Actions window describes the manual tasks you must perform to make components functional in the new installation. This window appears only if a component has post-upgrade steps.

   If the upgrade fails: On the Upgrade Failure screen, click **View Log** to view and troubleshoot the errors. The logs are available at *`NEW_ORACLE_HOME`*`/oracle_common/upgrade/logs`.

> **Note:**
>
> If the upgrade fails you must restore your pre-upgrade environment from backup, fix the issues, then restart the Upgrade Assistant.

Starting Servers and Processes

After a successful upgrade, restart all processes and servers, including the Administration Server and any Managed Servers.

The components may be dependent on each other so they must be started in the correct order.

> **Note:**
>
> The procedures in this section describe how to start servers and process using the WLST command line or a script. You can also use the Oracle Fusion Middleware Control and the Oracle WebLogic Server Administration Console. See Starting and Stopping Administration and Managed Servers and Node Manager in *Administering Oracle Fusion Middleware.*

To start your Fusion Middleware environment, follow the steps below:

Step 1: Start the Administration Server

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

To start the Administration Server, use the `startWebLogic` script:

- (UNIX) *`NEW_DOMAIN_HOME`*`/bin/startWebLogic.sh`
- (Windows) *`NEW_DOMAIN_HOME`*`\bin\startWebLogic.cmd`

When prompted, enter your user name, password, and the URL of the Administration Server.

Step 2: Start Node Manager

To start Node Manager, use the `startNodeManager` script:

- (UNIX) *`NEW_DOMAIN_HOME`*`/bin/startNodeManager.sh`
- (Windows) *`NEW_DOMAIN_HOME`*`\bin\startNodeManager.cmd`

Step 3: Start Oracle Identity Management Components

Start any Oracle Identity Management components, such as Oracle Internet Directory, that form part of your environment:

- (UNIX) *`NEW_DOMAIN_HOME`*`/bin/startComponent.sh` *`component_name`*
- (Windows) *`NEW_DOMAIN_HOME`*`\bin\startComponent.cmd` *`component_name`*

Step 4: Start the Managed Servers

To start a WebLogic Server Managed Server, use the `startManagedWebLogic` script:

- (UNIX) *`NEW_DOMAIN_HOME`*`/bin/startManagedWebLogic.sh` *`managed_server_name admin_url`*
- (Windows) *`NEW_DOMAIN_HOME`*`\bin\startManagedWebLogic.cmd` *`managed_server_name admin_url`*

When prompted, enter your user name and password.

> **Note:**
>
> The startup of a Managed Server will typically start the applications that are deployed to it. Therefore, it should not be necessary to manually start applications after the Managed Server startup.

Step 5: Start System Components

To start system components, such as Oracle HTTP Server, use the `startComponent` script:

- (UNIX) *`NEW_DOMAIN_HOME`*`/bin/startComponent.sh` *`component_name`*
- (Windows) *`NEW_DOMAIN_HOME`*`\bin\startComponent.cmd` *`component_name`*

You can start system components in any order.

Step 6: Change to External Authentication

If you changed to internal authentication before upgrading product schemas, change back to external authentication after starting servers and processes.

5

Upgrading an Oracle Data Integrator Java EE Agent Environment from 11*g*

You can upgrade an Oracle Data Integrator Java EE agent environment from Oracle Fusion Middleware 11*g* to 12*c* (12.2.1.3.0).

- About Oracle Data Integrator Java EE Agent Upgrade Process
  Review the process flowchart for an overview of the upgrade process for an Oracle Data Integrator Java EE agent.
- Installing Oracle Data Integrator Java EE Environment
  Before beginning your upgrade, download Oracle Data Integrator 12*c* (12.2.1.3.0) distribution on the target system and install it using Oracle Universal Installer.
- Creating the Required 12c Schemas
  When upgrading from 11*g*, you must create the required 12*c* schemas. You can use the Repository Creation Utility (RCU) to create customized schemas or, optionally, you can use the Upgrade Assistant to create schemas using the default schema settings. This procedure describes how to create schemas using the RCU. Information about using the Upgrade Assistant to create schemas is covered in the upgrade procedures.
- Running a Pre-Upgrade Readiness Check
  To identify potential issues with the upgrade, Oracle recommends that you run a readiness check before you start the upgrade process. Be aware that the readiness check may not be able to discover all potential issues with your upgrade. An upgrade may still fail, even if the readiness check reports success.
- Stopping Servers and Processes
  Before you run the Upgrade Assistant to upgrade your schemas and configurations, you must shut down all of the pre-upgrade processes and servers, including the Administration Server and any managed servers.
- Upgrading Product Schemas
  After stopping servers and processes, use the Upgrade Assistant to upgrade supported product schemas to the current release of Oracle Fusion Middleware.
- About Reconfiguring the Domain
  Run the Reconfiguration Wizard to reconfigure your domain component configurations to 12*c* (12.2.1.3.0).
- Upgrading Domain Component Configurations
  After reconfiguring the domain, use the Upgrade Assistant to upgrade the domain *component* configurations inside the domain to match the updated domain configuration.
- Starting Servers and Processes
  After a successful upgrade, restart all processes and servers, including the Administration Server and any Managed Servers.

About Oracle Data Integrator Java EE Agent Upgrade Process

Review the process flowchart for an overview of the upgrade process for an Oracle Data Integrator Java EE agent.

Figure 5-1 Oracle Data Integrator Java EE Agent Upgrade Process Flowchart

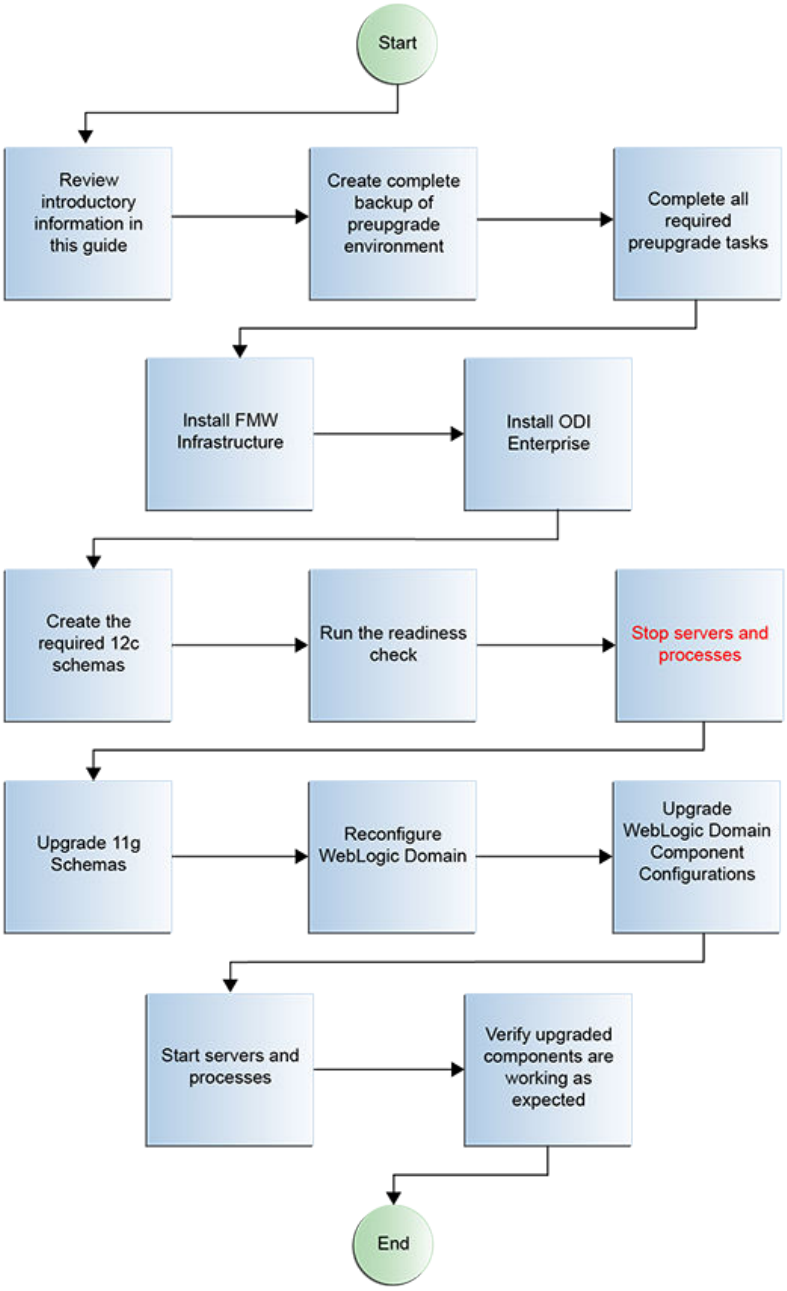


Table 5-1 Tasks for Upgrading Oracle Data Integrator

Task	Description
Required If you have not done so already, review the introductory topics in this guide and complete the required pre-upgrade tasks.	See: • Introduction to Upgrading Oracle Data Integrator to 12*c* (12.2.1.3.0) • Pre-Upgrade Requirements
Required Install Oracle Data Integrator 12*c* (12.2.1.3.0) in the new Oracle home. **Note:** The ODI Enterprise installation process will automatically install Oracle Fusion Middleware Infrastructure if it is not already installed.	See Installing Oracle Data Integrator Java EE Environment.
Required Start the Repository Creation Utility (RCU) to create the required 12*c* database schemas.	Create the `STB`, `OPSS`, `IAU`, `IAU_VIEWER`, and `IAU_APPEND` schemas. See Creating the Required 12c Schemas.
Optional Run a pre-upgrade readiness check.	See Running a Pre-Upgrade Readiness Check.
Required Shut down the 11*g* environment (stop all Administration and Managed Servers). **WARNING:** Failure to shut down your servers during an upgrade may lead to data corruption.	See Stopping Servers and Processes.

Table 5-1 (Cont.) Tasks for Upgrading Oracle Data Integrator

Task	Description
Required Start the Upgrade Assistant to upgrade the 11*g* database schemas and to migrate all active (in flight) instance data.	See Upgrading Product Schemas. **Note:** The upgrade of active instance data is started automatically when running the Upgrade Assistant. Once the data is successfully upgraded to the new 12*c* (12.2.1.3.0) environment, you can close the Upgrade Assistant. The closed instances will continue to upgrade through a background process.
Required Start the Reconfiguration Wizard to reconfigure the domain.	Run the Configuration Wizard to update the existing domain to use the newly installed software. See Reconfiguring the Domain.
Required if JRF component upgrade needed Start the Upgrade Assistant (again) to upgrade domain component configurations.	Run the Upgrade Assistant to update the reconfigured domain's component configurations. See Upgrading Domain Component Configurations.
Required Restart the servers and the 12*c* (12.2.1.3.0) instance.	When the upgrade process is complete, restart the 12*c* (12.2.1.3.0) instance. See Starting Servers and Processes.
Required Verify the upgrade.	Ensure all of the upgraded components are working as expected before deleting your backups.

Installing Oracle Data Integrator Java EE Environment

Before beginning your upgrade, download Oracle Data Integrator 12*c* (12.2.1.3.0) distribution on the target system and install it using Oracle Universal Installer.

Note:

The ODI Enterprise installation process will automatically install Oracle Fusion Middleware Infrastructure if it is not already installed.

To install Oracle Data Integrator Java EE environment:

1. Sign in to the target system.
2. Download the following from Oracle Technology Network or Oracle Software Delivery Cloud to your target system:

- Oracle Data Integrator (`fmw_12.2.1.3.0_odi_Disk1_1of2.zip` and `fmw_12.2.1.3.0_odi_Disk1_2of2.zip`)

3. Change to the directory where you downloaded the 12*c* (12.2.1.3.0) product distribution.
4. Unzip the installer `fmw_12.2.1.3.0_odi_Disk1_1of2.zip` and `fmw_12.2.1.3.0_odi_Disk1_2of2.zip` files.
5. Start the ODI installation:

   (UNIX) *JDK_HOME*`/bin/java -jar fmw_12.2.1.3.0_odi_generic.jar`

   (Windows) *JDK_HOME*`\bin\java -jar fmw_12.2.1.3.0_odi_generic.jar`
6. On UNIX operating systems, the Installation Inventory Setup screen appears if this is the first time you are installing an Oracle product on this host.

   Specify the location where you want to create your central inventory. Make sure that the operating system group name selected on this screen has write permissions to the central inventory location, and click **Next**.

   > **Note:**
   >
   > The Installation Inventory Setup screen does not appear on Windows operating systems.

7. On the Welcome screen, review the information to make sure that you have met all the prerequisites. Click **Next**.
8. On the Auto Updates screen, select an option:
   - **Skip Auto Updates**: If you do not want your system to check for software updates at this time.
   - **Select patches from directory**: To navigate to a local directory if you downloaded patch files.
   - **Search My Oracle Support for Updates**: To automatically download software updates if you have a My Oracle Support account. You must enter Oracle Support credentials then click **Search**. To configure a proxy server for the installer to access My Oracle Support, click **Proxy Settings**. Click **Test Connection** to test the connection.

   Click **Next**.
9. On the Installation Location screen, specify the location for the Oracle home directory and click **Next**.

   For more information about Oracle Fusion Middleware directory structure, see Understanding Directories for Installation and Configuration in *Oracle Fusion Middleware Planning an Installation of Oracle Fusion Middleware*.
10. On the Installation Type screen, select **Enterprise Installation**.

    Click **Next**.
11. The Prerequisite Checks screen analyzes the host computer to ensure that the specific operating system prerequisites have been met.

    To view the list of tasks that are verified, select **View Successful Tasks**. To view log details, select **View Log**. If any prerequisite check fails, then an error message appears at the bottom of the screen. Fix the error and click **Rerun** to try again. To

ignore the error or the warning message and continue with the installation, click **Skip** (not recommended).

12. On the Installation Summary screen, verify the installation options that you selected.

    If you want to save these options to a response file, click **Save Response File** and enter the response file location and name. The response file collects and stores all the information that you have entered, and enables you to perform a silent installation (from the command line) at a later time.
    Click **Install** to begin the installation.

13. On the Installation Progress screen, when the progress bar displays 100%, click **Finish** to dismiss the installer, or click **Next** to see a summary.

14. The Installation Complete screen displays the Installation Location and the Feature Sets that are installed. Review this information and click **Finish** to close the installer.

Creating the Required 12*c* Schemas

When upgrading from 11*g*, you must create the required 12*c* schemas. You can use the Repository Creation Utility (RCU) to create customized schemas or, optionally, you can use the Upgrade Assistant to create schemas using the default schema settings. This procedure describes how to create schemas using the RCU. Information about using the Upgrade Assistant to create schemas is covered in the upgrade procedures.

For the ODI environments described in this guide, the required schemas are:

- ODI standalone agent (no WebLogic domain): `STB`
- ODI standalone collocated agent (with WebLogic domain): `STB`, `OPSS`, `IAU`, `IAU_VIEWER`, and `IAU_APPEND`
- ODI Java EE agent: `STB`, `OPSS`, `IAU`, `IAU_VIEWER`, and `IAU_APPEND`

> **Note:**
>
> If you are upgrading from a previous 12*c* release of Oracle Fusion Middleware, you do not need to re-create these schemas if they already exist. Refer to the steps below to identify the existing schemas in your domain.

The following schemas must exist before you upgrade to 12*c*. If you are upgrading from 11*g*, and you are not sure which schemas you currently have, refer to the steps below to identify the existing schemas in your domain. You do not need to re-create these schemas if they already exist.

- **Service Table** schema (*`prefix`*`_STB`). This schema is new in 12*c* and is required for domain-based upgrades. It stores basic schema configuration information (for example, schema prefixes and passwords) that can be accessed and used by other Oracle Fusion Middleware components during the domain creation. This schema is automatically created when you run the Repository Creation Utility (RCU), where you specify the existing schema owner prefix that you used for your other 11*g* schemas.

> **Note:**
>
> If the Service Table schema does not exist, you may encounter the error message `UPGAST-00328 : The schema version registry table does not exist on this database. If that happens it is necessary to create the service table schema in order to run Upgrade Assistant`

- **Oracle Platform Security Services (OPSS)** schema (*prefix*_OPSS). This schema is required if you are using an OID-based security store in 11*g*. This schema is automatically created when you run the Repository Creation Utility (RCU). The only supported LDAP-based OPSS security store is Oracle Internet Directory (OID). An LDAP-based policy store is typically used in production environments. You do not need to reassociate an OID-based security store before upgrade. While the Upgrade Assistant is running, you can select the OPSS schema. The Upgrade Assistant upgrades the OID-based security store automatically.

> **Note:**
>
> The 12*c* OPSS database schema is required so that you can reference the 12*c* schema during the reconfiguration of the domain. Your domain continues to use the OID-based security store after the upgrade is complete.

- **Audit** schemas. When upgrading audit services (_IAU), make sure that you select _IAU_VIEWER and _IAU_APPEND in addition to _IAU. The Upgrade Assistant handles this creation for you automatically, when they are selected.

To create the 12*c* schemas with the RCU:

1. (Optional) If you are upgrading from 11*g*, and you wish to confirm the schemas which are present in your existing domain, then connect to the database as a user with DBA privileges, and run the following code from SQL*Plus:

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

2. Verify that a certified JDK already exists on your system by running `java -version` from the command line. For 12*c* (12.2.1.3.0), the certified JDK is 1.8.0_131 and later.

   Ensure that the JAVA_HOME environment variable is set to the location of the certified JDK. For example:

   - (UNIX) `setenv JAVA_HOME /home/Oracle/Java/jdk1.8.0_131`
   - (Windows) `set JAVA_HOME=C:\home\Oracle\Java\jdk1.8.0_131`

   Add `$JAVA_HOME/bin` to `$PATH`.

3. Go to the `oracle_common/bin` directory:
   - (UNIX) *`NEW_ORACLE_HOME`*`/oracle_common/bin`
   - (Windows) *`NEW_ORACLE_HOME`*`\oracle_common\bin`
4. Start the RCU:
   - (UNIX) `./rcu`
   - (Windows) `rcu.bat`
5. On the Welcome screen, click **Next**.
6. On the Create Repository screen, select **Create Repository** and then select **System Load and Product Load**.

   If you do not have DBA privileges, select **Prepare Scripts for System Load**. This will generate a SQL script containing all the same SQL statements and blocks that would have been called if the RCU were to execute the actions for the selected components. After the script is generated, a user with the necessary SYS or SYSDBA privileges can execute the script to complete the system load phase. Click **Next**.
7. On the Database Connection Details screen, select the **Database Type** and enter the connection information for the database that hosts the 11*g* schemas. See the pertinent table below.

Table 5-2 Connection Credentials for Oracle Databases and Oracle Databases with Edition-Based Redefinition

Option	Description and Example
Host Name	Specify the name of the server where your database is running in the following format: `examplehost.exampledomain.com` For Oracle RAC databases, specify the VIP name or one of the node names in this field.
Port	Specify the port number for your database. The default port number for Oracle databases is 1521.
Service Name	Specify the service name for the database. Typically, the service name is the same as the global database name. For Oracle RAC databases, specify the service name of one of the nodes in this field. For example: `examplehost.exampledomain.com`
Username	Enter the user name for your database. The default user name is SYS.
Password	Enter the password for your database user.
Role	Select the database user's role from the drop-down list: **Normal** or **SYSDBA**

Table 5-3 Connection Credentials for MySQL Databases

Option	Description and Example
Host Name	Specify the host name, IP address, or complete server name in *host\server* format of the server where your database is running.
Port	Specify the port number for your database.
Database Name	Specify the name of your database.
Username	Specify the name of a user with administrator privileges.
Password	Enter the password for your database user.

Table 5-4 Connection Credentials for Microsoft SQL Server Databases

Option	Description and Example
Unicode Support	Select **Yes** or **No** from the drop-down list.
Server Name	Specify the host name, IP address, or complete server name in *host\server* format of the server where your database is running. MSSQL named instances: A named instance is identified by the network name of the computer and the instance name that you specify during installation. The client must specify both the server name and the instance name when connecting.
Port	Specify the port number for your database.
Database Name	Specify the name of your database.
Username	Specify the name of a user with administrator privileges.
Password	Enter the password for your database user.

Table 5-5 Connection Credentials for IBM DB2 Databases

Option	Description and Example
Server Name	Specify the host name, IP address, or complete server name in *host\server* format of the server where your database is running.
Port	Specify the port number for your database.
Database Name	Specify the name of your database.
Username	Specify the name of a user with DB Owner privileges. The default user name for IBM DB2 databases is `db2admin`.
Password	Enter the password for your database user.

If the prerequisite check is successful, click **OK** to continue to the next screen. If the check fails, review the details you entered and try again.

8. On the Select Components screen, select **Select existing prefix** and select the prefix that was used to create the existing 11*g* schemas from the drop-down menu (for example, `DEV11G`). This prefix is used to logically group schemas together for use in this domain.

> **Note:**
>
> The Common Infrastructure Services (*prefix*_STB) and Oracle Platform Security Services (*prefix*_OPSS) schemas are selected by default if they have not yet been created.

Make a note of the prefix and schema names for the components you are installing as you will need this information when you configure the installation. Click **Next**.

9. In the Checking Prerequisites dialog, verify that the prerequisites check is successful, then click **OK**.
10. On the Schema Passwords screen, specify the passwords for your schema owners.

    Make a note of the passwords you enter on this screen as you will need this information while configuring your product installation.
11. On the Map Tablespaces screen, configure the required tablespace mapping for the schemas you want to create.

    Click **Next**, then click **OK** in the confirmation dialog. When the progress dialog shows the tablespace creation is complete, click **OK**.

    You see the **Encrypt Tablespace** check box only if you have enabled Transparent Data Encryption (TDE) in the database (Oracle or Oracle EBR) when you start the RCU. Select the **Encrypt Tablespace** check box on the Map Tablespaces screen to encrypt all new tablespaces that the RCU creates.
12. Verify the information on the Summary screen and click **Create** to begin schema creation.

    This screen contains information about the log files that were created from this RCU operation. Click on the name of a particular log file to view the contents of that file.
13. Review the information on the Completion Summary screen to verify that the operation is completed successfully. Click **Close** to complete the schema creation.

Running a Pre-Upgrade Readiness Check

To identify potential issues with the upgrade, Oracle recommends that you run a readiness check before you start the upgrade process. Be aware that the readiness check may not be able to discover all potential issues with your upgrade. An upgrade may still fail, even if the readiness check reports success.

- About Running a Pre-Upgrade Readiness Check
  You can run the Upgrade Assistant in `-readiness` mode to detect issues before you perform the actual upgrade. You can run the readiness check in GUI mode using the Upgrade Assistant or in silent mode using a response file.
- Starting the Upgrade Assistant in Readiness Mode
  Use the `-readiness` parameter to start the Upgrade Assistant in readiness mode.
- Performing a Readiness Check with the Upgrade Assistant
  Navigate through the screens in the Upgrade Assistant to complete the pre-upgrade readiness check.

- Understanding the Readiness Report
  After performing a readiness check for your domain, review the report to determine whether you need to take any action for a successful upgrade.

About Running a Pre-Upgrade Readiness Check

You can run the Upgrade Assistant in `-readiness` mode to detect issues before you perform the actual upgrade. You can run the readiness check in GUI mode using the Upgrade Assistant or in silent mode using a response file.

The Upgrade Assistant readiness check performs a read-only, pre-upgrade review of your Fusion Middleware schemas and WebLogic domain configurations that are at a supported starting point. The review is a read-only operation.

The readiness check generates a formatted, time-stamped readiness report so you can address potential issues before you attempt the actual upgrade. If no issues are detected, you can begin the upgrade process. Oracle recommends that you read this report thoroughly before performing an upgrade.

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

You can run the readiness check any number of times before performing any actual upgrade. However, do not run the readiness check after an upgrade has been performed, as the report results may differ from the result of pre-upgrade readiness checks.

> **Note:**
>
> To prevent performance from being affected, Oracle recommends that you run the readiness check during off-peak hours.

Starting the Upgrade Assistant in Readiness Mode

Use the `-readiness` parameter to start the Upgrade Assistant in readiness mode.

To perform a readiness check on your pre-upgrade environment with the Upgrade Assistant:

1. Go to the `oracle_common/upgrade/bin` directory:
   - (UNIX) *`NEW_ORACLE_HOME`*`/oracle_common/upgrade/bin`
   - (Windows) *`NEW_ORACLE_HOME`*`\oracle_common\upgrade\bin`
2. Start the Upgrade Assistant.
   - (UNIX) `./ua -readiness`
   - (Windows) `ua.bat -readiness`

> **Note:**
>
> If the `DISPLAY` environment variable is not set up properly to allow for GUI mode, you may encounter the following error:
>
> ```
> Xlib: connection to ":1.0" refused by server
> Xlib: No protocol specified
> ```
>
> To resolve this issue, set the `DISPLAY` environment variable to the system name or IP address of your local workstation, and rerun Upgrade Assistant.
>
> If you continue to receive these errors after setting `DISPLAY`, try launching another GUI tool, such as `vncconfig`. If you see the same errors, your `DISPLAY` environment variable may still not be set correctly.

For information about other parameters that you can specify on the command line, see:

- Upgrade Assistant Parameters

Upgrade Assistant Parameters

When you start the Upgrade Assistant from the command line, you can specify additional parameters.

Table 5-6 Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-readiness`	Required for readiness checks **Note**: Readiness checks cannot be performed on standalone installations (those not managed by the WebLogic Server).	Performs the upgrade readiness check without performing an actual upgrade. Schemas and configurations are checked. Do not use this parameter if you have specified the `-examine` parameter.
`-threads`	Optional	Identifies the number of threads available for concurrent schema upgrades or readiness checks of the schemas. The value must be a positive integer in the range 1 to 8. The default is 4.
`-response`	Required for silent upgrades or silent readiness checks	Runs the Upgrade Assistant using inputs saved to a response file generated from the data that is entered when the Upgrade Assistant is run in GUI mode. Using this parameter runs the Upgrade Assistant in *silent mode* (without displaying Upgrade Assistant screens).

Table 5-6 (Cont.) Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-examine`	Optional	Performs the examine phase but does not perform an actual upgrade. Do not specify this parameter if you have specified the `-readiness` parameter.
`-logLevel` *attribute*	Optional	Sets the logging level, specifying one of the following attributes: • `TRACE` • `NOTIFICATION` • `WARNING` • `ERROR` • `INCIDENT_ERROR` The default logging level is `NOTIFICATION`. Consider setting the `-logLevel TRACE` attribute to so that more information is logged. This is useful when troubleshooting a failed upgrade. The Upgrade Assistant's log files can become very large if `-logLevel TRACE` is used.
`-logDir` *location*	Optional	Sets the default location of upgrade log files and temporary files. You must specify an existing, writable directory where the Upgrade Assistant creates log files and temporary files. The default locations are: (UNIX) *NEW_ORACLE_HOME*`/oracle_common/upgrade/logs` *NEW_ORACLE_HOME*`/oracle_common/upgrade/temp` (Windows) *NEW_ORACLE_HOME*`\oracle_common\upgrade\logs` *NEW_ORACLE_HOME*`\oracle_common\upgrade\temp`
`-help`	Optional	Displays all of the command-line options.

Performing a Readiness Check with the Upgrade Assistant

Navigate through the screens in the Upgrade Assistant to complete the pre-upgrade readiness check.

Readiness checks are performed only on schemas or component configurations that are at a supported upgrade starting point.

To complete the readiness check:

1. On the Welcome screen, review information about the readiness check. Click **Next**.
2. On the Readiness Check Type screen, select the readiness check that you want to perform:
   - **Individually Selected Schemas** allows you to select individual schemas for review before upgrade. The readiness check reports whether a schema is supported for an upgrade or where an upgrade is needed.
     When you select this option, the screen name changes to Selected Schemas.
   - **Domain Based** allows the Upgrade Assistant to discover and select all upgrade-eligible schemas or component configurations in the domain specified in the **Domain Directory** field.
     When you select this option, the screen name changes to Schemas and Configuration.

     Leave the default selection if you want the Upgrade Assistant to check all schemas and component configurations at the same time, or select a specific option:
     - **Include checks for all schemas** to discover and review all components that have a schema available to upgrade.
     - **Include checks for all configurations** to review component configurations for a managed WebLogic Server domain.

   Click **Next**.
3. If you selected **Individually Selected Schemas**: On the Available Components screen, select the components that have a schema available to upgrade for which you want to perform a readiness check.

   If you selected **Domain Based**: On the Component List screen, review the list of components that are present in your domain for which you want to perform a readiness check.

   If you select a component that has dependent components, those components are automatically selected. For example, if you select Oracle Platform Security Services, Oracle Audit Services is automatically selected.

   Depending on the components you select, additional screens may display. For example, you may need to:
   - Specify the domain directory.
   - Specify schema credentials to connect to the selected schema: **Database Type**, **DBA User Name**, and **DBA Password**. Then click **Connect**.

> **Note:**
>
> Oracle database is the default database type. Make sure that you select the correct database type before you continue. If you discover that you selected the wrong database type, do not go back to this screen to change it to the correct type. Instead, close the Upgrade Assistant and restart the readiness check with the correct database type selected to ensure that the correct database type is applied to all schemas.

- Select the **Schema User Name** option and specify the **Schema Password**.

Click **Next** to start the readiness check.

4. On the Readiness Summary screen, review the summary of the readiness checks that will be performed based on your selections.

   If you want to save your selections to a response file to run the Upgrade Assistant again later in response (or silent) mode, click **Save Response File** and provide the location and name of the response file. A silent upgrade performs exactly the same function that the Upgrade Assistant performs, but you do not have to manually enter the data again.

   For a detailed report, click **View Log**.

   Click **Next**.

5. On the Readiness Check screen, review the status of the readiness check. The process can take several minutes.

   If you are checking multiple components, the progress of each component displays in its own progress bar in parallel.

   When the readiness check is complete, click **Continue**.

6. On the End of Readiness screen, review the results of the readiness check (**Readiness Success** or **Readiness Failure**):

   - If the readiness check is successful, click **View Readiness Report** to review the complete report. Oracle recommends that you review the Readiness Report before you perform the actual upgrade even when the readiness check is successful. Use the **Find** option to search for a particular word or phrase within the report. The report also indicates where the completed Readiness Check Report file is located.
   - If the readiness check encounters an issue or error, click **View Log** to review the log file, identify and correct the issues, and then restart the readiness check. The log file is managed by the command-line options you set.

Understanding the Readiness Report

After performing a readiness check for your domain, review the report to determine whether you need to take any action for a successful upgrade.

The format of the readiness report file is:

`readiness_`*`timestamp`*`.txt`

where *`timestamp`* indicates the date and time of when the readiness check was run.

A readiness report contains the following information:

Table 5-7 Readiness Report Elements

Report Information	Description	Required Action
Overall Readiness Status: SUCCESS or FAILURE	The top of the report indicates whether the readiness check passed or completed with one or more errors.	If the report completed with one or more errors, search for FAIL and correct the failing issues before attempting to upgrade. You can re-run the readiness check as many times as necessary before an upgrade.
Timestamp	The date and time that the report was generated.	No action required.
Log file location *NEW_ORACLE_HOME*`/oracle_common/upgrade/logs`	The directory location of the generated log file.	No action required.
Readiness report location *NEW_ORACLE_HOME*`/oracle_common/upgrade/logs`	The directory location of the generated readiness report.	No action required.
Names of components that were checked	The names and versions of the components included in the check and status.	If your domain includes components that cannot be upgraded to this release, such as SOA Core Extension, do not attempt an upgrade.
Names of schemas that were checked	The names and current versions of the schemas included in the check and status.	Review the version numbers of your schemas. If your domain includes schemas that cannot be upgraded to this release, do not attempt an upgrade.
Individual Object Test Status: FAIL	The readiness check test detected an issue with a specific object.	Do not upgrade until all failed issues have been resolved.
Individual Object Test Status: PASS	The readiness check test detected no issues for the specific object.	If your readiness check report shows only the PASS status, you can upgrade your environment. Note, however, that the Readiness Check cannot detect issues with externals such as hardware or connectivity during an upgrade. You should always monitor the progress of your upgrade.
Completed Readiness Check of <Object> Status: FAILURE	The readiness check detected one or more errors that must be resolved for a particular object such as a schema, an index, or datatype.	Do not upgrade until all failed issues have been resolved.
Completed Readiness Check of <Object> Status: SUCCESS	The readiness check test detected no issues.	No action required.

Here is a sample Readiness Report file. Your report may not include all of these checks.

```
Upgrade readiness check completed with one or more errors.

This readiness check report was created on Tue May 30 11:15:52 EDT 2016
Log file is located at: NEW_ORACLE_HOME/oracle_common/upgrade/logs/
ua2016-05-30-11-14-06AM.log
Readiness Check Report File: NEW_ORACLE_HOME/oracle_common/upgrade/logs/
readiness2016-05-30-11-15-52AM.txt

Starting readiness check of components.

Oracle Metadata Services
   Starting readiness check of Oracle Metadata Services.
     Schema User Name: DEV11_MDS
     Database Type: Oracle Database
     Database Connect String: machinename@yourcompany.com
     VERSION Schema DEV11_MDS is currently at version 12.1.1.1.0.
Readiness checks will now be performed.
   Starting schema test:  TEST_REQUIRED_TABLES  Test that the schema
contains all the required tables
   Completed schema test: TEST_REQUIRED_TABLES --> Test that the schema
contains all the required tables +++ PASS
   Starting schema test:  TEST_REQUIRED_PROCEDURES  Test that the schema
contains all the required stored procedures
     EXCEPTION     Schema is missing a required procedure:
GETREPOSITORYFEATURES
   Completed schema test: TEST_REQUIRED_PROCEDURES --> Test that the
schema contains all the required stored procedures +++ FAIL
   Starting schema test:  TEST_REQUIRED_VIEWS  Test that the schema
contains all the required database views
   Completed schema test: TEST_REQUIRED_VIEWS --> Test that the schema
contains all the required database views +++ PASS
   Starting index test for table MDS_ATTRIBUTES:  TEST_REQUIRED_INDEXES --
> Test that the table contains all the required indexes
   Completed index test for table MDS_ATTRIBUTES: TEST_REQUIRED_INDEXES --
> Test that the table contains all the required indexes +++ PASS
   Starting index test for table MDS_COMPONENTS:  TEST_REQUIRED_INDEXES --
> Test that the table contains all the required indexes
   Completed index test for table MDS_TXN_LOCKS: TEST_REQUIRED_INDEXES -->
Test that the table contains all the required indexes +++ PASS
   Starting schema test:  TEST_REQUIRED_TRIGGERS  Test that the schema has
all the required triggers
   Completed schema test: TEST_REQUIRED_TRIGGERS --> Test that the schema
has all the required triggers +++ PASS
   Starting schema test:  TEST_MISSING_COLUMNS  Test that tables and views
are not missing any required columns
   Completed schema test: TEST_MISSING_COLUMNS --> Test that tables and
views are not missing any required columns +++ PASS
   Starting schema test:  TEST_UNEXPECTED_TABLES  Test that the schema
does not contain any unexpected tables
   Completed schema test: TEST_UNEXPECTED_TABLES --> Test that the schema
does not contain any unexpected tables +++ PASS
   Starting schema test:  TEST_UNEXPECTED_PROCEDURES  Test that the schema
```

```
does not contain any unexpected stored procedures
   Completed schema test: TEST_UNEXPECTED_PROCEDURES --> Test that the
schema does not contain any unexpected stored procedures +++ PASS
   Starting schema test:  TEST_UNEXPECTED_VIEWS  Test that the schema does
not contain any unexpected views
   Completed schema test: TEST_UNEXPECTED_VIEWS --> Test that the schema
does not contain any unexpected views +++ PASS
   Starting index test for table MDS_ATTRIBUTES:  TEST_UNEXPECTED_INDEXES
--> Test that the table does not contain any unexpected indexes
   Completed index test for table MDS_ATTRIBUTES: TEST_UNEXPECTED_INDEXES
--> Test that the table does not contain any unexpected indexes +++ PASS
   Completed index test for table MDS_LABELS: TEST_UNEXPECTED_INDEXES -->
Test that the table does not contain any unexpected indexes +++ PASS
   Starting index test for table MDS_LARGE_ATTRIBUTES:
TEST_UNEXPECTED_INDEXES --> Test that the table does not contain any
unexpected indexes
   Starting schema test:  TEST_UNEXPECTED_TRIGGERS  Test that the schema
does not contain any unexpected triggers
   Completed schema test: TEST_UNEXPECTED_TRIGGERS --> Test that the
schema does not contain any unexpected triggers +++ PASS
   Starting schema test:  TEST_UNEXPECTED_COLUMNS  Test that tables and
views do not contain any unexpected columns
   Completed schema test: TEST_UNEXPECTED_COLUMNS --> Test that tables and
views do not contain any unexpected columns +++ PASS
   Starting datatype test for table MDS_ATTRIBUTES:
TEST_COLUMN_DATATYPES_V2 --> Test that all table columns have the proper
datatypes
   Completed datatype test for table MDS_ATTRIBUTES:
TEST_COLUMN_DATATYPES_V2 --> Test that all table columns have the proper
datatypes +++ PASS
   Starting datatype test for table MDS_COMPONENTS:
TEST_COLUMN_DATATYPES_V2 --> Test that all table columns have the proper
datatypes
   Starting permissions test:  TEST_DBA_TABLE_GRANTS  Test that DBA user
has privilege to view all user tables
   Completed permissions test: TEST_DBA_TABLE_GRANTS --> Test that DBA
user has privilege to view all user tables +++ PASS
   Starting schema test:  TEST_ENOUGH_TABLESPACE  Test that the schema
tablespaces automatically extend if full
   Completed schema test: TEST_ENOUGH_TABLESPACE --> Test that the schema
tablespaces automatically extend if full +++ PASS
   Starting schema test:  TEST_USER_TABLESPACE_QUOTA  Test that tablespace
quota for this user is sufficient to perform the upgrade
   Completed schema test: TEST_USER_TABLESPACE_QUOTA --> Test that
tablespace quota for this user is sufficient to perform the upgrade +++
PASS
   Starting schema test:  TEST_ONLINE_TABLESPACE  Test that schema
tablespaces are online
   Completed schema test: TEST_ONLINE_TABLESPACE --> Test that schema
tablespaces are online +++ PASS
   Starting schema test:  TEST_DATABASE_VERSION  Test that the database
server version number is supported for upgrade
     INFO   Database product version: Oracle Database 11g Enterprise
Edition Release 11.2.0.3.0 - 64bit Production
With the Partitioning, OLAP, Data Mining and Real Application Testing
```

```
options
   Completed schema test: TEST_DATABASE_VERSION --> Test that the database
server version number is supported for upgrade +++ PASS
   Finished readiness check of Oracle Metadata Services with status:
FAILURE.
```

If you are running the 12.1.3.0 version of Oracle Fusion Middleware IAU Schemas, and those schemas were upgraded from 11*g* (11.1.1.7 and later) or 12*c* (12.1.2.0), your readiness check may fail with the following error:

```
Starting index test for table IAU_COMMON:  TEST_REQUIRED_INDEXES --> Test
that the table contains all the required indexes
     INFO Audit schema index DYN_EVENT_CATEGORY_INDEX in table IAU_COMMON is
missing the required columns or index itself is missing. This maybe caused by
a known issue, anyway, this missing index will be added in 12.2.2 upgrade.
     INFO Audit schema index DYN_EVENT_TYPE_INDEX in table IAU_COMMON is
missing the required columns or index itself is missing. This maybe caused by
a known issue, anyway, this missing index will be added in 12.2.2 upgrade.
     INFO Audit schema index DYN_TENANT_INDEX in table IAU_COMMON is missing
the required columns or index itself is missing. This maybe caused by a known
issue, anyway, this missing index will be added in 12.2.2 upgrade.
     INFO Audit schema index DYN_USER_INDEX in table IAU_COMMON is missing
the required columns or index itself is missing. This maybe caused by a known
issue, anyway, this missing index will be added in 12.2.2 upgrade.
     INFO Audit schema index DYN_COMPONENT_TYPE_INDEX in table IAU_COMMON is
missing the required columns or index itself is missing. This maybe caused by
a known issue, anyway, this missing index will be added in 12.2.2 upgrade.
     INFO Audit schema index DYN_USER_TENANT_INDEX in table IAU_COMMON is
missing the required columns or index itself is missing. This maybe caused by
a known issue, anyway, this missing index will be added in 12.2.2 upgrade.
   Completed index test for table IAU_COMMON: TEST_REQUIRED_INDEXES --> Test
that the table contains all the required indexes +++ FAIL
```

> **Note:**
>
> You can ignore the missing index error in the readiness report. This is a known issue. The corresponding missing index is added during the schema upgrade operation. This error does not occur if the schema to be upgraded was created in 12*c* using the RCU.

Stopping Servers and Processes

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

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

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

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

Step 1: Stop System Components

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

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

You can stop system components in any order.

Step 2: Stop the Managed Servers

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

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

When prompted, enter your user name and password.

Step 3: Stop Oracle Identity Management Components

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

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

Step 4: Stop the Administration Server

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

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

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

When prompted, enter your user name, password, and the URL of the Administration Server.

> **Note:**
>
> If external password storage is set up for the repository, then the server hosting the credential store should be up and running so that the work repository password can be retrieved during upgrade. See Setting Up External Password Storage in *Administering Oracle Data Integrator*.

Step 5: Stop Node Manager

To stop Node Manager, close the command shell in which it is running.

Alternatively, after setting the `nodemanager.properties` attribute `QuitEnabled` to `true` (the default is `false`), you can use WLST to connect to Node Manager and shut it down. See stopNodeManager in *WLST Command Reference for WebLogic Server*.

Upgrading Product Schemas

After stopping servers and processes, use the Upgrade Assistant to upgrade supported product schemas to the current release of Oracle Fusion Middleware.

The Upgrade Assistant allows you to upgrade individually selected schemas or all schemas associated with a domain. The option you select determines which Upgrade Assistant screens you will use.

- Starting the Upgrade Assistant
  Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 12*c* (12.2.1.3.0). Oracle recommends that you run the Upgrade Assistant as a non-SYSDBA user, completing the upgrade for one domain at a time.
- Upgrading Product Schemas Using the Upgrade Assistant
  Navigate through the screens in the Upgrade Assistant to upgrade the product schemas.
- Verifying the Schema Upgrade
  After completing all the upgrade steps, verify that the upgrade was successful by checking that the schema version in `schema_version_registry` has been properly updated.

Starting the Upgrade Assistant

Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 12*c* (12.2.1.3.0). Oracle recommends that you run the Upgrade Assistant as a non-SYSDBA user, completing the upgrade for one domain at a time.

To start the Upgrade Assistant:

> **Note:**
>
> Before you start the Upgrade Assistant, make sure that the JVM character encoding is set to UTF-8 for the platform on which the Upgrade Assistant is running. If the character encoding is not set to UTF-8, then you will not be able to download files containing Unicode characters in their names. This can cause the upgrade to fail.

1. Go to the `oracle_common/upgrade/bin` directory:
   - (UNIX) *`NEW_ORACLE_HOME`*`/oracle_common/upgrade/bin`
   - (Windows) *`NEW_ORACLE_HOME`*`\oracle_common\upgrade\bin`
2. Start the Upgrade Assistant:
   - (UNIX) `./ua`
   - (Windows) `ua.bat`

For information about other parameters that you can specify on the command line, such as logging parameters, see:

- Upgrade Assistant Parameters

Upgrade Assistant Parameters

When you start the Upgrade Assistant from the command line, you can specify additional parameters.

Table 5-8 Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-readiness`	Required for readiness checks **Note**: Readiness checks cannot be performed on standalone installations (those not managed by the WebLogic Server).	Performs the upgrade readiness check without performing an actual upgrade. Schemas and configurations are checked. Do not use this parameter if you have specified the `-examine` parameter.
`-threads`	Optional	Identifies the number of threads available for concurrent schema upgrades or readiness checks of the schemas. The value must be a positive integer in the range 1 to 8. The default is 4.

Table 5-8 (Cont.) Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-response`	Required for silent upgrades or silent readiness checks	Runs the Upgrade Assistant using inputs saved to a response file generated from the data that is entered when the Upgrade Assistant is run in GUI mode. Using this parameter runs the Upgrade Assistant in *silent mode* (without displaying Upgrade Assistant screens).
`-examine`	Optional	Performs the examine phase but does not perform an actual upgrade. Do not specify this parameter if you have specified the `-readiness` parameter.
`-logLevel` *attribute*	Optional	Sets the logging level, specifying one of the following attributes: • `TRACE` • `NOTIFICATION` • `WARNING` • `ERROR` • `INCIDENT_ERROR` The default logging level is `NOTIFICATION`. Consider setting the `-logLevel TRACE` attribute to so that more information is logged. This is useful when troubleshooting a failed upgrade. The Upgrade Assistant's log files can become very large if `-logLevel TRACE` is used.

Table 5-8 (Cont.) Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-logDir` *location*	Optional	Sets the default location of upgrade log files and temporary files. You must specify an existing, writable directory where the Upgrade Assistant creates log files and temporary files. The default locations are: (UNIX) *NEW_ORACLE_HOME*`/oracle_common/upgrade/logs` *NEW_ORACLE_HOME*`/oracle_common/upgrade/temp` (Windows) *NEW_ORACLE_HOME*`\oracle_common\upgrade\logs` *NEW_ORACLE_HOME*`\oracle_common\upgrade\temp`
`-help`	Optional	Displays all of the command-line options.

Upgrading Product Schemas Using the Upgrade Assistant

Navigate through the screens in the Upgrade Assistant to upgrade the product schemas.

Notes:

- If you are using external authentication, make sure that external authentication is changed to internal authentication before upgrading product schemas.
- **Edition-based redefinition (EBR) Users Only:** Before upgrading an Edition-Based Redefinition (EBR) enabled schema, you must connect to the database server and create an edition on the database server for 12*c*. The new edition for 12*c* must be a child of your existing 11*g* edition. See Creating an Edition on the Server for Editions-Based Redefinition.

> **Note:**
>
> Make sure that the administration and managed servers are stopped before you launch the Upgrade Assistant.

To upgrade product schemas with the Upgrade Assistant:

1. On the Welcome screen, review the introduction to the Upgrade Assistant and information about important pre-upgrade tasks. Click **Next**.

   > **Note:**
   >
   > For more information about any Upgrade Assistant screen, click **Help** on the screen.

2. On the Selected Schemas screen, select **Individually Selected Schemas**.

   > **Caution:**
   >
   > Upgrade only those schemas that are used to support your 12*c* (12.2.1.3.0) components. Do not upgrade schemas that are currently being used to support components that are not included in Oracle Fusion Middleware 12*c* (12.2.1.3.0).

   Click **Next**.

3. On the Available Components screen, select **Oracle Data Integrator** to upgrade the Master and Work Repository schema.
4. On the Prerequisites screen, acknowledge that the prerequisites have been met by selecting all the check boxes. Click **Next**.

   > **Note:**
   >
   > The Upgrade Assistant does not verify whether the prerequisites have been met.

5. On the ODI Schema screen, specify the database connection details for each schema you are upgrading:
   - Select the database type from the **Database Type** drop-down menu.
   - Enter the database connection details, and click **Connect**.
   - Select the schema you want to upgrade from the **Schema User Name** drop-down menu, and then enter the password for the schema. Be sure to use the correct schema prefix for the schemas you are upgrading.
6. On the ODI Options screen, select all of the options.

Table 5-9 ODI Options

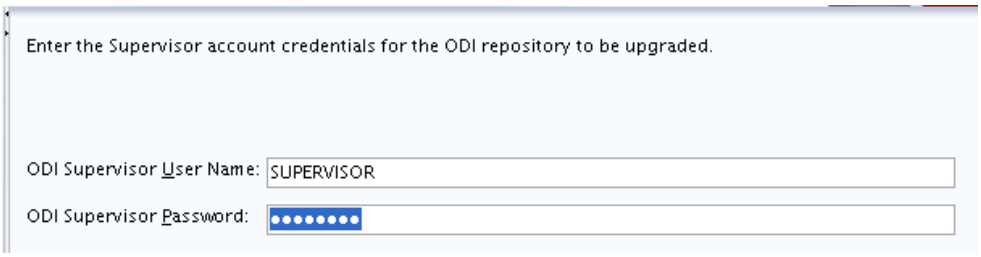
Option	Description
Replace Knowledge Modules with mandatory updates	This selection replaces standard Knowledge Modules with the newest version. Customizations to Oracle installed Knowledge Modules will be overwritten. But, if you copy an installed Knowledge Module and customize the Knowledge Module, the customizations are not lost.
Upgrade topology and security metadata	This selection replaces topology and security artifacts such as Technologies, Datatypes, Security Profiles and others with the newest version. Customizations of installed objects will be overwritten. If the object is copied and customized, then the customizations are not lost.

See Advanced Upgrade Options that are important when upgrading ODI repository from 11g to 12c.

7. On the ODI Supervisor screen, enter the Supervisor account credentials for the ODI repository to be upgraded.

   The installed Supervisor account is `SUPERVISOR`. Check with your ODI administrator for correct Supervisor account name and password, supplied when prompted by the Repository Creation Utility (RCU) when creating the Master and Work repositories for ODI.

Figure 5-2 Account credentials for the ODI repository



> **Note:**
>
> When **All Schemas Used by a Domain** is selected, the Supervisor credentials for ODI are not pre-populated in the first instance as the domain does not contain them. If there are multiple ODI schemas, the Upgrade Assistant populates the user entry using the first set of credentials.

8. On the ODI Upgrade Key screen, use the auto-generated upgrade key to convert 11*g* IDs for repository objects into unique GUIDs, or specify your own key in the **Upgrade Key** field.

Recommendations:

- Edit the auto-generated key to provide a meaningful key that is easier to remember.
- Note down the upgrade key so that the same upgrade key can be provided when the ODI objects are imported from the XML file.

ODI objects exist in ODI repositories and also in XML files exported from such repositories. For example, in metadata exchanges between repositories, which can be used.. As such, there may be multiple copies of the same object, in different repositories and XML files.

In 12*c*, ODI uses GUIDs instead of internal numeric IDs for object identification. In order to make sure the object identity is preserved after upgrade, a deterministic algorithm is applied to calculate GUIDs from the internal IDs for existing objects (note that for new objects, ODI will generate random GUIDs).

Because the internal numeric IDs are not really universally unique, and are dependent on the repository ID to achieve a pseudo-uniqueness, ODI allows the user to specify the upgrade key in order to reduce the likelihood of generating duplicated GUIDs. The upgrade key is fed into the GUID generation algorithm together with the internal numeric ID, to calculate the GUID.

Thus, choosing different upgrade keys protects objects from getting duplicate GUIDs that accidentally have the same internal numeric IDs. However, when multiple copies of the same object exists (in a repository or exported in XML files), the same GUID should be produced for all copies of the object. For this reason, the same upgrade key must be used for all upgrade operations involving the copies of that particular object.

For example, if you have a project with `1001` as the ID in the 11*g* repository, and you also have a file exported from the same repository, which contains the same project (ID = `1001`). In this case, the upgrade key used to upgrade the repository should be the same as the upgrade key used to import the XML file into the upgraded 12*c* repository. This ensures that the project object in the import file will be properly matched with the project object in the repository (when using one of `SYNONYM` import modes). However, if there is an 11*g* XML export file provided from a source containing objects created in another repository of which you have no information, there is a chance that it may contain a project that accidentally has the same internal ID (`1001`). In this case, to protect from erroneous object matching, which may corrupt the metadata, a different, custom upgrade key should be used when importing that file into the repository.

9. On the Examine screen, review the status of the Upgrade Assistant as it examines each schema, verifying that the schema is ready for upgrade. If the status is **Examine finished**, click **Next**.

   If the examine phase fails, Oracle recommends that you cancel the upgrade by clicking **No** in the Examination Failure dialog. Click **View Log** to see what caused the error and refer to Troubleshooting Your Upgrade in *Upgrading with the Upgrade Assistant* for information on resolving common upgrade errors.

> **Note:**
>
> - If you resolve any issues detected during the examine phase without proceeding with the upgrade, you can start the Upgrade Assistant again without restoring from backup. However, if you proceed by clicking **Yes** in the Examination Failure dialog box, you need to restore your pre-upgrade environment from backup before you start the Upgrade Assistant again.
> - Canceling the examination process has no effect on the schemas or configuration data; the only consequence is that the information the Upgrade Assistant has collected must be collected again in a future upgrade session.

10. The Upgrade Summary screen lists the schemas that will be upgraded and/or created.

    Verify that the correct Source and Target Versions are listed for each schema that you intend to upgrade.

    If you want to save these options to a response file to run the Upgrade Assistant again later in response (or silent) mode, click **Save Response File** and provide the location and the name of the response file. A silent upgrade performs exactly the same function that the Upgrade Assistant performs, but you do not have to manually enter the data again.

    Click **Next**.

11. On the Upgrade Progress screen, monitor the status of the upgrade.

> **Caution:**
>
> Allow the Upgrade Assistant enough time to perform the upgrade. Do not cancel the upgrade operation unless absolutely necessary. Doing so may result in an unstable environment.

    If any schemas are not upgraded successfully, refer to the Upgrade Assistant log files for more information.

> **Note:**
>
> The progress bar on this screen displays the progress of the current upgrade procedure. It does not indicate the time remaining for the upgrade.

    Click **Next**.

12. If the upgrade is successful: On the Upgrade Success screen, click **Close** to complete the upgrade and close the wizard.

If the upgrade fails: On the Upgrade Failure screen, click **View Log** to view and troubleshoot the errors. The logs are available at *NEW_ORACLE_HOME*`/oracle_common/upgrade/logs`.

> **Note:**
>
> If the upgrade fails, you must restore your pre-upgrade environment from backup, fix the issues, then restart the Upgrade Assistant.

Verifying the Schema Upgrade

After completing all the upgrade steps, verify that the upgrade was successful by checking that the schema version in `schema_version_registry` has been properly updated.

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

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

In the query result:

- Check that the number in the `VERSION` column matches the latest version number for that schema. For example, verify that the schema version number is 12.2.1.3.0.

  > **Note:**
  >
  > However, that not all schema versions will be updated. Some schemas do not require an upgrade to this release and will retain their pre-upgrade version number.

- 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.
- Synonym objects owned by `IAU_APPEND` and `IAU_VIEWER` will appear as `INVALID`, but that does not indicate a failure.

  They become invalid because the target object changes after the creation of the synonym. The synonyms objects will become valid when they are accessed. You can safely ignore these `INVALID` objects.

About Reconfiguring the Domain

Run the Reconfiguration Wizard to reconfigure your domain component configurations to 12*c* (12.2.1.3.0).

When you reconfigure a WebLogic Server domain, the following items are automatically updated, depending on the applications in the domain:

- WebLogic Server core infrastructure
- Domain version

> **Note:**
>
> Before you begin the domain reconfiguration, note the following limitations:
>
> - The Reconfiguration Wizard does not update any of your own applications that are included in the domain.
> - Transforming a non-dynamic cluster domain to a dynamic cluster domain during the upgrade process is not supported.
>
> The dynamic cluster feature is available when running the Reconfiguration Wizard, but Oracle only supports upgrading a non-dynamic cluster upgrade and then adding dynamic clusters. You cannot add dynamic cluster during the upgrade process.

Specifically, when you reconfigure a domain, the following occurs:

- The domain version number in the `config.xml` file for the domain is updated to the Administration Server's installed WebLogic Server version.
- Reconfiguration templates for all installed Oracle products are automatically selected and applied to the domain. These templates define any reconfiguration tasks that are required to make the WebLogic domain compatible with the current WebLogic Server version.
- Start scripts are updated.

  If you want to preserve your modified start scripts, be sure to back them up before starting the Reconfiguration Wizard.

> **Note:**
>
> When the domain reconfiguration process starts, you can't undo the changes that it makes. Before running the Reconfiguration Wizard, ensure that you have backed up the domain as covered in the pre-upgrade checklist. If an error or other interruption occurs while running the Reconfiguration Wizard, you must restore the domain by copying the files and directories from the backup location to the original domain directory. This is the only way to ensure that the domain has been returned to its original state before reconfiguration.

Follow these instructions to reconfigure the existing domain using the Reconfiguration Wizard. See Reconfiguring WebLogic Domains in *Upgrading Oracle WebLogic Server*.

- Backing Up the Domain
- Starting the Reconfiguration Wizard
- Reconfiguring the Domain with the Reconfiguration Wizard

Backing Up the Domain

Before running the Reconfiguration Wizard, create a backup copy of the domain directory.

To create a backup of the domain directory:

1. Copy the source domain to a separate location to preserve the contents.

   (Windows) `copy C:\domains\mydomain to C:\domains\mydomain_backup`.

   (UNIX) `cp mydomain /domains/mydomain_backup`

2. Before updating the domain on each remote Managed Server, create a backup copy of the domain directory on each remote machine.
3. Verify that the backed up versions of the domain are complete.

If domain reconfiguration fails for any reason, you must copy all files and directories from the backup directory into the original domain directory to ensure that the domain is returned entirely to its original state before reconfiguration.

Starting the Reconfiguration Wizard

> **Note:**
>
> Shut down the administration server and all collocated managed servers before starting the reconfiguration process. See Stopping Servers and Processes .

To start the Reconfiguration Wizard in graphical mode:

1. Sign in to the system on which the domain resides.
2. Open the command shell (on UNIX operating systems) or open a 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 child edition name.
4. Go to the `oracle_common/common/bin` directory:
   - (UNIX) *NEW_ORACLE_HOME*`/oracle_common/common/bin`
   - (Windows) *NEW_ORACLE_HOME*`\oracle_common\commom\bin`

5. Start the Reconfiguration Wizard with the following logging options:
   - (UNIX) `./reconfig.sh -log=log_file -log_priority=ALL`
   - (Windows) `reconfig.cmd -log=log_file -log_priority=ALL`

   where *log_file* is 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.

   The parameter `-log_priority=ALL` ensures that logs are logged in fine mode.

> **Note:**
>
> When you run this command, the following error message might appear 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
> ```

Reconfiguring the Domain with the Reconfiguration Wizard

Navigate through the screens in the Reconfiguration Wizard to reconfigure your existing domain before running the Upgrade Assistant

> **Note:**
>
> If the source is a clustered environment, run the Reconfiguration Wizard on the primary node only. Use the `pack` and `unpack` utilities to apply the changes to other cluster members in the domain.

To reconfigure the domain with the Reconfiguration Wizard:

1. On the Select Domain screen, specify the location of the domain you want to upgrade or click **Browse** to navigate and select the domain directory. Click **Next**.
2. On the Reconfiguration Setup Progress screen, view the progress of the setup process. When complete, click **Next**.

   During this process:

   - The reconfiguration templates for your installed products, including Fusion Middleware products, are automatically applied. This updates various domain configuration files such as `config.xml`, `config-groups.xml`, and `security.xml` (among others).
   - Schemas, scripts, and other such files that support your Fusion Middleware products are updated.
   - The domain upgrade is validated.

3. On the Domain Mode and JDK screen, select the JDK to use in the domain or click **Browse** to navigate to the JDK you want to use. The supported JDK version for 12*c* (12.2.1.3.0) is 1.8.0_131 and later. Click **Next**.

> **Note:**
>
> You cannot change the **Domain Mode** at this stage.

For a list of JDKs that are supported for a specific platform, see Oracle Fusion Middleware Supported System Configurations.

4. On the Database Configuration Type screen, select **RCU Data** to connect to the Server Table (_STB) schema.

   Enter the database connection details using the RCU service table (_STB) schema credentials and click **Get RCU Configuration**.

   The Reconfiguration Wizard uses this connection to automatically configure the data sources required for components in your domain.

> **Note:**
>
> By default **Oracle's Driver (Thin) for Service connections; Versions: Any** is the selected driver. If you specified an instance name in your connection details — instead of the service name — you must select **Oracle's Driver (Thin) for pooled instance connections; Versions: Any** If you do not change the driver type, then the connection will fail.

> **Note:**
>
> For any existing 11*g* datasource, the reconfiguration will preserve the existing values. For new datasources where the schema was created for 12*c* by the RCU, the default connection data will be retrieved from the _STB schema. If no connection data for a given schema is found in the _STB schema, then the default connection data is used.

If the check is successful, click **Next**. If the check fails, reenter the connection details correctly and try again.

> **Note:**
>
> If you are upgrading from 11*g*, and your database has _OPSS or _IAU 11*g* database schemas, you must manually enter database connection details for those schemas. These schemas were not required in 11*g* and had to be created manually. Users could assign any name to these schemas, therefore the Reconfiguration Wizard does not recognize them. When providing connection information for _IAU, use the IAU_APPEND user information.

5. On the JDBC Component Schema screen, verify that the DBMS/Service and the Host name is correct for each component schema and click **Next**.
6. On the JDBC Component Schema Test screen, select all the component schemas and click **Test Selected Connections** to test the connection for each schema. The result of the test is indicated in the Status column.

   When the check is complete, click **Next**.
7. On the Advanced Configuration screen, you can select all categories 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.

   > **Note:**
   >
   > The categories that are listed on the Advanced Configuration screen depend on the resources defined in the templates you selected for the domain.

   For this upgrade, select none of the options and click **Next**.
8. On the Configuration Summary screen, 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.

   To change the configuration, click **Back** to return to the appropriate screen. To reconfigure the domain, click **Reconfig**.

   > **Note:**
   >
   > The location of the domain does not change when you reconfigure it.
9. The Reconfiguration Progress screen displays the progress of the reconfiguration process.

   During this process:

   - Domain information is extracted, saved, and updated.
   - Schemas, scripts, and other such files that support your Fusion Middleware products are updated.

   When the progress bar shows 100%, click **Next**.
10. The End of Configuration screen indicates whether the reconfiguration process completed successfully or failed. It also displays the location of the domain that was reconfigured as well as the Administration Server URL (including the listen port). If the reconfiguration is successful, it displays **Oracle WebLogic Server Reconfiguration Succeeded**.

    If the reconfiguration process did not complete successfully, an error message is displayed indicates the reason. Take appropriate action to resolve the issue. If you cannot resolve the issue, contact My Oracle Support.

    Note the Domain Location and the Admin Server URL for further operations.

Upgrading Domain Component Configurations

After reconfiguring the domain, use the Upgrade Assistant to upgrade the domain *component* configurations inside the domain to match the updated domain configuration.

- Starting the Upgrade Assistant
  Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 12*c* (12.2.1.3.0). Oracle recommends that you run the Upgrade Assistant as a non-SYSDBA user, completing the upgrade for one domain at a time.
- Upgrading Domain Component Configurations Using the Upgrade Assistant
  Navigate through the screens in the Upgrade Assistant to upgrade component configurations in the WebLogic domain.

Starting the Upgrade Assistant

Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 12*c* (12.2.1.3.0). Oracle recommends that you run the Upgrade Assistant as a non-SYSDBA user, completing the upgrade for one domain at a time.

To start the Upgrade Assistant:

> **Note:**
>
> Before you start the Upgrade Assistant, make sure that the JVM character encoding is set to UTF-8 for the platform on which the Upgrade Assistant is running. If the character encoding is not set to UTF-8, then you will not be able to download files containing Unicode characters in their names. This can cause the upgrade to fail.

1. Go to the `oracle_common/upgrade/bin` directory:
   - (UNIX) *`NEW_ORACLE_HOME`*`/oracle_common/upgrade/bin`
   - (Windows) *`NEW_ORACLE_HOME`*`\oracle_common\upgrade\bin`
2. Start the Upgrade Assistant:
   - (UNIX) `./ua`
   - (Windows) `ua.bat`

For information about other parameters that you can specify on the command line, such as logging parameters, see:

- Upgrade Assistant Parameters

Upgrade Assistant Parameters

When you start the Upgrade Assistant from the command line, you can specify additional parameters.

Table 5-10 Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-readiness`	Required for readiness checks **Note**: Readiness checks cannot be performed on standalone installations (those not managed by the WebLogic Server).	Performs the upgrade readiness check without performing an actual upgrade. Schemas and configurations are checked. Do not use this parameter if you have specified the `-examine` parameter.
`-threads`	Optional	Identifies the number of threads available for concurrent schema upgrades or readiness checks of the schemas. The value must be a positive integer in the range 1 to 8. The default is 4.
`-response`	Required for silent upgrades or silent readiness checks	Runs the Upgrade Assistant using inputs saved to a response file generated from the data that is entered when the Upgrade Assistant is run in GUI mode. Using this parameter runs the Upgrade Assistant in *silent mode* (without displaying Upgrade Assistant screens).
`-examine`	Optional	Performs the examine phase but does not perform an actual upgrade. Do not specify this parameter if you have specified the `-readiness` parameter.
`-logLevel` *attribute*	Optional	Sets the logging level, specifying one of the following attributes: • `TRACE` • `NOTIFICATION` • `WARNING` • `ERROR` • `INCIDENT_ERROR` The default logging level is `NOTIFICATION`. Consider setting the `-logLevel TRACE` attribute to so that more information is logged. This is useful when troubleshooting a failed upgrade. The Upgrade Assistant's log files can become very large if `-logLevel TRACE` is used.

Table 5-10 (Cont.) Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-logDir` *location*	Optional	Sets the default location of upgrade log files and temporary files. You must specify an existing, writable directory where the Upgrade Assistant creates log files and temporary files. The default locations are: (UNIX) *NEW_ORACLE_HOME*`/oracle_common/upgrade/logs` *NEW_ORACLE_HOME*`/oracle_common/upgrade/temp` (Windows) *NEW_ORACLE_HOME*`\oracle_common\upgrade\logs` *NEW_ORACLE_HOME*`\oracle_common\upgrade\temp`
`-help`	Optional	Displays all of the command-line options.

Upgrading Domain Component Configurations Using the Upgrade Assistant

Navigate through the screens in the Upgrade Assistant to upgrade component configurations in the WebLogic domain.

After running the Reconfiguration Wizard to reconfigure the WebLogic domain to 12*c* (12.2.1.3.0), you must run the Upgrade Assistant to upgrade the domain *component* configurations to match the updated domain configuration.

To upgrade domain component configurations with the Upgrade Assistant:

1. On the Welcome screen, review an introduction to the Upgrade Assistant and information about important pre-upgrade tasks. Click **Next**.

> **Note:**
>
> For more information about any Upgrade Assistant screen, click **Help** on the screen.

2. On the next screen:

- Select **All Configurations Used By a Domain**. The screen name changes to WebLogic Components.
- In the **Domain Directory** field, enter the WebLogic domain directory path.

Click **Next**.

3. On the Component List screen, verify that the list includes all the components for which you want to upgrade configurations and click **Next**.

   If you do not see the components you want to upgrade, click **Back** to go to the previous screen and specify a different domain.

4. On the Prerequisites screen, acknowledge that the prerequisites have been met by selecting all the check boxes. Click **Next**.

> **Note:**
>
> The Upgrade Assistant does not verify whether the prerequisites have been met.

5. On the Examine screen, review the status of the Upgrade Assistant as it examines each component, verifying that the component configuration is ready for upgrade. If the status is **Examine finished**, click **Next**.

   If the examine phase fails, Oracle recommends that you cancel the upgrade by clicking **No** in the Examination Failure dialog. Click **View Log** to see what caused the error and refer to Troubleshooting Your Upgrade in *Upgrading with the Upgrade Assistant* for information on resolving common upgrade errors.

> **Note:**
>
> - If you resolve any issues detected during the examine phase without proceeding with the upgrade, you can start the Upgrade Assistant again without restoring from backup. However, if you proceed by clicking **Yes** in the Examination Failure dialog box, you need to restore your pre-upgrade environment from backup before starting the Upgrade Assistant again.
> - Canceling the examination process has no effect on the configuration data; the only consequence is that the information the Upgrade Assistant has collected must be collected again in a future upgrade session.

6. On the Upgrade Summary screen, review the summary of the options you have selected for component configuration upgrade.

   The response file collects and stores all the information that you have entered, and enables you to perform a silent upgrade at a later time. The silent upgrade performs exactly the same function that the Upgrade Assistant performs, but you do not have to manually enter the data again. If you want to save these options to a response file, click **Save Response File** and provide the location and name of the response file.

   Click **Upgrade** to start the upgrade process.

7. On the Upgrade Progress screen, monitor the status of the upgrade.

> **Caution:**
>
> Allow the Upgrade Assistant enough time to perform the upgrade. Do not cancel the upgrade operation unless absolutely necessary. Doing so may result in an unstable environment.

If any components are not upgraded successfully, refer to the Upgrade Assistant log files for more information.

> **Note:**
>
> The progress bar on this screen displays the progress of the current upgrade procedure. It does not indicate the time remaining for the upgrade.

Click **Next**.

8. If the upgrade is successful: On the Upgrade Success screen, click **Close** to complete the upgrade and close the wizard. The Post-Upgrade Actions window describes the manual tasks you must perform to make components functional in the new installation. This window appears only if a component has post-upgrade steps.

   If the upgrade fails: On the Upgrade Failure screen, click **View Log** to view and troubleshoot the errors. The logs are available at *`NEW_ORACLE_HOME`*`/oracle_common/upgrade/logs`.

> **Note:**
>
> If the upgrade fails you must restore your pre-upgrade environment from backup, fix the issues, then restart the Upgrade Assistant.

Starting Servers and Processes

After a successful upgrade, restart all processes and servers, including the Administration Server and any Managed Servers.

The components may be dependent on each other so they must be started in the correct order.

> **Note:**
>
> The procedures in this section describe how to start servers and process using the WLST command line or a script. You can also use the Oracle Fusion Middleware Control and the Oracle WebLogic Server Administration Console. See Starting and Stopping Administration and Managed Servers and Node Manager in *Administering Oracle Fusion Middleware.*

To start your Fusion Middleware environment, follow the steps below:

Step 1: Start the Administration Server

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

To start the Administration Server, use the `startWebLogic` script:

- (UNIX) *`NEW_DOMAIN_HOME`*`/bin/startWebLogic.sh`
- (Windows) *`NEW_DOMAIN_HOME`*`\bin\startWebLogic.cmd`

When prompted, enter your user name, password, and the URL of the Administration Server.

Step 2: Start Node Manager

To start Node Manager, use the `startNodeManager` script:

- (UNIX) *`NEW_DOMAIN_HOME`*`/bin/startNodeManager.sh`
- (Windows) *`NEW_DOMAIN_HOME`*`\bin\startNodeManager.cmd`

Step 3: Start Oracle Identity Management Components

Start any Oracle Identity Management components, such as Oracle Internet Directory, that form part of your environment:

- (UNIX) *`NEW_DOMAIN_HOME`*`/bin/startComponent.sh` *`component_name`*
- (Windows) *`NEW_DOMAIN_HOME`*`\bin\startComponent.cmd` *`component_name`*

Step 4: Start the Managed Servers

To start a WebLogic Server Managed Server, use the `startManagedWebLogic` script:

- (UNIX) *`NEW_DOMAIN_HOME`*`/bin/startManagedWebLogic.sh` *`managed_server_name admin_url`*
- (Windows) *`NEW_DOMAIN_HOME`*`\bin\startManagedWebLogic.cmd` *`managed_server_name admin_url`*

When prompted, enter your user name and password.

> **Note:**
>
> The startup of a Managed Server will typically start the applications that are deployed to it. Therefore, it should not be necessary to manually start applications after the Managed Server startup.

Step 5: Start System Components

To start system components, such as Oracle HTTP Server, use the `startComponent` script:

- (UNIX) *`NEW_DOMAIN_HOME`*`/bin/startComponent.sh` *`component_name`*
- (Windows) *`NEW_DOMAIN_HOME`*`\bin\startComponent.cmd` *`component_name`*

You can start system components in any order.

Step 6: Change to External Authentication

If you changed to internal authentication before upgrading product schemas, change back to external authentication after starting servers and processes.

Part III

Upgrading Oracle Data Integrator from a Previous 12*c* Release

This part of *Upgrading Oracle Data Integrator* provides information about upgrading Oracle Data Integrator from a previous 12*c* release.

> **Note:**
>
> Upgrading from a previous 12*c* release involves a different set of upgrade procedures than those used when upgrading from 11*g*.
>
> When upgrading from a previous 12*c* release, such as 12.1.2.0, 12.1.3.0, 12.2.1.0, 12.2.1.1, 12.2.1.2, and 12.2.1.2.6, you will perform a full upgrade to reach 12*c* (12.2.1.3.0).

- Upgrading an Oracle Data Integrator Standalone Agent Environment from a Previous 12c Release
  You can upgrade an Oracle Data Integrator standalone agent environment that is not configured in a WebLogic domain from a previous Oracle Fusion Middleware 12*c* release to 12*c* (12.2.1.3.0).
- Upgrading an Oracle Data Integrator Standalone Collocated Agent Environment from a Previous 12c Release
  You can upgrade an Oracle Data Integrator standalone agent environment that is configured in a WebLogic domain from a previous Oracle Fusion Middleware 12*c* release to 12*c* (12.2.1.3.0).
- Upgrading an Oracle Data Integrator Java EE Agent Environment from a Previous 12c Release
  You can upgrade an Oracle Data Integrator Java EE agent environment from a previous Oracle Fusion Middleware 12*c* release to 12*c* (12.2.1.3.0).

6

Upgrading an Oracle Data Integrator Standalone Agent Environment from a Previous 12*c* Release

You can upgrade an Oracle Data Integrator standalone agent environment that is not configured in a WebLogic domain from a previous Oracle Fusion Middleware 12*c* release to 12*c* (12.2.1.3.0).

Follow these steps to upgrade an Oracle Data Integrator standalone agent environment when it is not part of a WebLogic domain from a previous Oracle Fusion Middleware 12*c* release to 12*c* (12.2.1.3.0)

Table 6-1 Tasks for Upgrading Oracle Data Integrator

Task	Description
If you have not done so already, review the introductory topics in this guide and complete the required pre-upgrade tasks.	See: • Introduction to Upgrading Oracle Data Integrator to 12*c* (12.2.1.3.0) • Pre-Upgrade Requirements
Upgrade the Oracle Data Integrator standalone agent environment: • Install Oracle Data Integrator 12*c* (12.2.1.3.0). • Start the Upgrade Assistant to upgrade the database schemas if needed. • Start the Upgrade Assistant (again) to upgrade standalone system component configurations. • Complete and verify the upgrade.	The steps to upgrade the Oracle Data Integrator Java EE agent environment from a previous 12*c* release (12.1.2.0.0, 12.1.3.0.0, 12.2.1.0.0, 12.2.1.1.0, and 12.2.1.2.0) to 12*c* (12.2.1.3.0) are similar to upgrading from 11*g*. You do not need to run the Repository Creation Utility (RCU) to create the required 12*c* schemas if they already exist. See Upgrading an Oracle Data Integrator Standalone Agent Environment from 11*g* .

- About Oracle Data Integrator Standalone Agent Upgrade Process
  Review the flowchart and roadmap for an overview of the upgrade process for an Oracle Data Integrator standalone agent that is not configured in a WebLogic domain.
- Installing the Oracle Data Integrator Standalone Agent Environment
  Before beginning your upgrade, download the Oracle Data Integrator 12*c* (12.2.1.3.0) distribution on the target system and install it using Oracle Universal Installer.
- Stopping Servers and Processes
  Before you run the Upgrade Assistant to upgrade your schemas and configurations, you must shut down all of the pre-upgrade processes and servers, including the Administration Server and any managed servers.
- Upgrading Product Schemas
  After stopping servers and processes, use the Upgrade Assistant to upgrade supported product schemas to the current release of Oracle Fusion Middleware.

- Upgrading Standalone System Component Configurations
  Use the Upgrade Assistant to upgrade the standalone system component configurations.
- Starting Servers and Processes
  After a successful upgrade, restart all processes and servers, including the Administration Server and any Managed Servers.

About Oracle Data Integrator Standalone Agent Upgrade Process

Review the flowchart and roadmap for an overview of the upgrade process for an Oracle Data Integrator standalone agent that is not configured in a WebLogic domain.

Figure 6-1 Oracle Data Integrator Standalone Agent Upgrade Process Flowchart

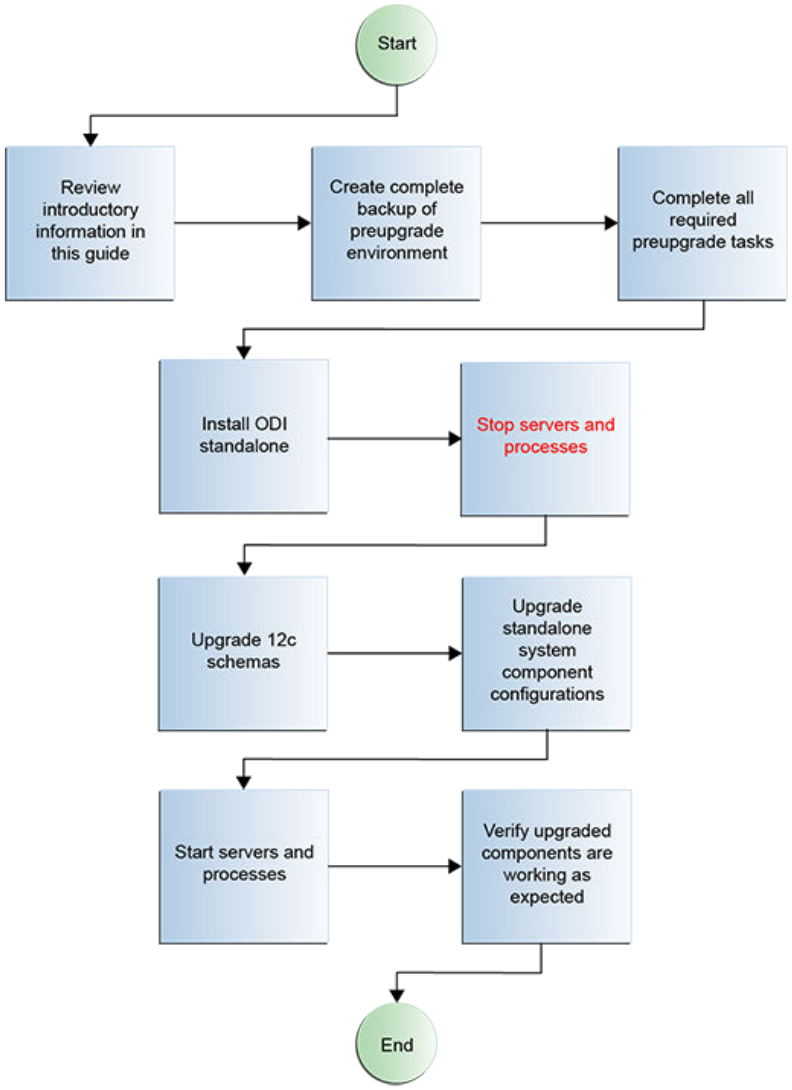


Table 6-2 Tasks for Upgrading Oracle Data Integrator Standalone Agent from a Previous 12*c* Release

Task	Description
Required If you have not done so already, review the introductory topics in this guide and complete the required pre-upgrade tasks.	See: • Introduction to Upgrading Oracle Data Integrator to 12*c* (12.2.1.3.0) • Pre-Upgrade Requirements
Required Install Oracle Data Integrator Standalone 12*c* (12.2.1.3.0) in a new Oracle home.	Install the product software in a *new* Oracle home. See Installing Oracle Data Integrator Standalone Agent Environment.
Required Shut down the 12*c* environment (stop all Administration and Managed Servers).	**WARNING:** Failure to shut down your servers during an upgrade may lead to data corruption. See Stopping Servers and Processes.
Required Start the Upgrade Assistant to upgrade the database schemas and to migrate all active (in flight) instance data.	See Upgrading Product Schemas. **Note:** The upgrade of active instance data is started automatically when running the Upgrade Assistant. Once the data is successfully upgraded to the new 12*c* (12.2.1.3.0) environment, you can close the Upgrade Assistant. The closed instances will continue to upgrade through a background process.
Required Start the Upgrade Assistant (again) to upgrade standalone system component configurations.	Run the Upgrade Assistant to upgrade the standalone agent's component configurations. See Upgrading Standalone System Component Configurations.
Required Restart the servers and the 12*c* (12.2.1.3.0) instance.	When the upgrade process is complete, restart the 12*c* (12.2.1.3.0) instance. See Starting Servers and Processes.
Required Verify the upgrade.	Ensure all of the upgraded components are working as expected before deleting your backups.

Installing the Oracle Data Integrator Standalone Agent Environment

Before beginning your upgrade, download the Oracle Data Integrator 12*c* (12.2.1.3.0) distribution on the target system and install it using Oracle Universal Installer.

To install the 12*c* (12.2.1.3.0) distribution:

1. Sign in to the target system.
2. Download the following 12*c* (12.2.1.3.0) product distribution from Oracle Technology Network or Oracle Software Delivery Cloud to your target system:
   - Oracle Data Integrator (`fmw_12.2.1.3.0_odi_Disk1_1of2.zip` and `fmw_12.2.1.3.0_odi_Disk1_2of2.zip`)
3. Change to the directory where you downloaded the 12*c* (12.2.1.3.0) product distribution.
4. Unzip the installer `fmw_12.2.1.3.0_odi_Disk1_1of2.zip` and `fmw_12.2.1.3.0_odi_Disk1_2of2.zip` files.
5. Enter the following command to start the installer for your product distribution and repeat the steps above to navigate through the installer screens:

   (UNIX) *JDK_HOME*`/bin/java -jar fmw_12.2.1.3.0_odi_generic.jar`

   (Windows) *JDK_HOME*`\bin\java -jar fmw_12.2.1.3.0_odi_generic.jar`
6. On UNIX operating systems, the Installation Inventory Setup screen appears if this is the first time you are installing an Oracle product on this host.

   Specify the location where you want to create your central inventory. Make sure that the operating system group name selected on this screen has write permissions to the central inventory location, and click **Next**.

   > **Note:**
   >
   > The Installation Inventory Setup screen does not appear on Windows operating systems.
7. On the Welcome screen, review the information to make sure that you have met all the prerequisites. Click **Next**.
8. On the Auto Updates screen, select an option:
   - **Skip Auto Updates**: If you do not want your system to check for software updates at this time.
   - **Select patches from directory**: To navigate to a local directory if you downloaded patch files.
   - **Search My Oracle Support for Updates**: To automatically download software updates if you have a My Oracle Support account. You must enter Oracle Support credentials then click **Search**. To configure a proxy server for the installer to access My Oracle Support, click **Proxy Settings**. Click **Test Connection** to test the connection.

Click **Next**.

9. On the Installation Location screen, specify the location for the Oracle home directory and click **Next**.

   For more information about Oracle Fusion Middleware directory structure, see Understanding Directories for Installation and Configuration in *Oracle Fusion Middleware Planning an Installation of Oracle Fusion Middleware*.

10. On the Installation Type screen, select **Standalone Installation**.

    Click **Next**.

11. The Prerequisite Checks screen analyzes the host computer to ensure that the specific operating system prerequisites have been met.

    To view the list of tasks that are verified, select **View Successful Tasks**. To view log details, select **View Log**. If any prerequisite check fails, then an error message appears at the bottom of the screen. Fix the error and click **Rerun** to try again. To ignore the error or the warning message and continue with the installation, click **Skip** (not recommended).

12. On the Installation Summary screen, verify the installation options that you selected.

    If you want to save these options to a response file, click **Save Response File** and enter the response file location and name. The response file collects and stores all the information that you have entered, and enables you to perform a silent installation (from the command line) at a later time.
    Click **Install** to begin the installation.

13. On the Installation Progress screen, when the progress bar displays 100%, click **Finish** to dismiss the installer, or click **Next** to see a summary.

14. The Installation Complete screen displays the Installation Location and the Feature Sets that are installed. Review this information and click **Finish** to close the installer.

Stopping Servers and Processes

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

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

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

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

Step 1: Stop System Components

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

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

You can stop system components in any order.

Step 2: Stop the Managed Servers

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

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

When prompted, enter your user name and password.

Step 3: Stop Oracle Identity Management Components

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

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

Step 4: Stop the Administration Server

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

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

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

When prompted, enter your user name, password, and the URL of the Administration Server.

> **Note:**
>
> If external password storage is set up for the repository, then the server hosting the credential store should be up and running so that the work repository password can be retrieved during upgrade. See Setting Up External Password Storage in *Administering Oracle Data Integrator*.

Step 5: Stop Node Manager

To stop Node Manager, close the command shell in which it is running.

Alternatively, after setting the `nodemanager.properties` attribute `QuitEnabled` to `true` (the default is `false`), you can use WLST to connect to Node Manager and shut it down. See stopNodeManager in *WLST Command Reference for WebLogic Server*.

Upgrading Product Schemas

After stopping servers and processes, use the Upgrade Assistant to upgrade supported product schemas to the current release of Oracle Fusion Middleware.

The Upgrade Assistant allows you to upgrade individually selected schemas or all schemas associated with a domain. The option you select determines which Upgrade Assistant screens you will use.

- Starting the Upgrade Assistant
  Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 12*c* (12.2.1.3.0). Oracle recommends that you run the Upgrade Assistant as a non-SYSDBA user, completing the upgrade for one domain at a time.
- Upgrading Product Schemas Using the Upgrade Assistant
  Navigate through the screens in the Upgrade Assistant to upgrade the product schemas.
- Verifying the Schema Upgrade
  After completing all the upgrade steps, verify that the upgrade was successful by checking that the schema version in `schema_version_registry` has been properly updated.

Starting the Upgrade Assistant

Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 12*c* (12.2.1.3.0). Oracle recommends that you run the Upgrade Assistant as a non-SYSDBA user, completing the upgrade for one domain at a time.

To start the Upgrade Assistant:

> **Note:**
>
> Before you start the Upgrade Assistant, make sure that the JVM character encoding is set to UTF-8 for the platform on which the Upgrade Assistant is running. If the character encoding is not set to UTF-8, then you will not be able to download files containing Unicode characters in their names. This can cause the upgrade to fail.

1. Go to the `oracle_common/upgrade/bin` directory:
   - (UNIX) *`NEW_ORACLE_HOME`*`/oracle_common/upgrade/bin`
   - (Windows) *`NEW_ORACLE_HOME`*`\oracle_common\upgrade\bin`
2. Start the Upgrade Assistant:
   - (UNIX) `./ua`

- (Windows) `ua.bat`

For information about other parameters that you can specify on the command line, such as logging parameters, see:

- Upgrade Assistant Parameters

Upgrade Assistant Parameters

When you start the Upgrade Assistant from the command line, you can specify additional parameters.

Table 6-3 Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-readiness`	Required for readiness checks **Note**: Readiness checks cannot be performed on standalone installations (those not managed by the WebLogic Server).	Performs the upgrade readiness check without performing an actual upgrade. Schemas and configurations are checked. Do not use this parameter if you have specified the `-examine` parameter.
`-threads`	Optional	Identifies the number of threads available for concurrent schema upgrades or readiness checks of the schemas. The value must be a positive integer in the range 1 to 8. The default is 4.
`-response`	Required for silent upgrades or silent readiness checks	Runs the Upgrade Assistant using inputs saved to a response file generated from the data that is entered when the Upgrade Assistant is run in GUI mode. Using this parameter runs the Upgrade Assistant in *silent mode* (without displaying Upgrade Assistant screens).
`-examine`	Optional	Performs the examine phase but does not perform an actual upgrade. Do not specify this parameter if you have specified the `-readiness` parameter.

Table 6-3 (Cont.) Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-logLevel` *attribute*	Optional	Sets the logging level, specifying one of the following attributes: • `TRACE` • `NOTIFICATION` • `WARNING` • `ERROR` • `INCIDENT_ERROR` The default logging level is `NOTIFICATION`. Consider setting the `-logLevel TRACE` attribute to so that more information is logged. This is useful when troubleshooting a failed upgrade. The Upgrade Assistant's log files can become very large if `-logLevel TRACE` is used.
`-logDir` *location*	Optional	Sets the default location of upgrade log files and temporary files. You must specify an existing, writable directory where the Upgrade Assistant creates log files and temporary files. The default locations are: (UNIX) *NEW_ORACLE_HOME*`/oracle_common/upgrade/logs` *NEW_ORACLE_HOME*`/oracle_common/upgrade/temp` (Windows) *NEW_ORACLE_HOME*`\oracle_common\upgrade\logs` *NEW_ORACLE_HOME*`\oracle_common\upgrade\temp`
`-help`	Optional	Displays all of the command-line options.

Upgrading Product Schemas Using the Upgrade Assistant

Navigate through the screens in the Upgrade Assistant to upgrade the product schemas.

> **Notes:**
>
> - If you are using external authentication, make sure that external authentication is changed to internal authentication before upgrading product schemas.
> - **Edition-based redefinition (EBR) Users Only:** Before upgrading an Edition-Based Redefinition (EBR) enabled schema, you must connect to the database server and create an edition on the database server for 12*c*. The new edition for 12*c* must be a child of your existing 12*c* edition. See Creating an Edition on the Server for Editions-Based Redefinition.

> **Note:**
>
> Make sure that the administration and managed servers are stopped before you launch the Upgrade Assistant.

To upgrade product schemas with the Upgrade Assistant:

1. On the Welcome screen, review the introduction to the Upgrade Assistant and information about important pre-upgrade tasks. Click **Next**.

   > **Note:**
   >
   > For more information about any Upgrade Assistant screen, click **Help** on the screen.

2. On the Selected Schemas screen, select **Individually Selected Schemas**.

   > **Caution:**
   >
   > Upgrade only those schemas that are used to support your 12*c* (12.2.1.3.0) components. Do not upgrade schemas that are currently being used to support components that are not included in Oracle Fusion Middleware 12*c* (12.2.1.3.0).

   Click **Next**.

3. On the Available Components screen, select **Oracle Data Integrator** to upgrade the Master and Work Repository schema.

4. On the Prerequisites screen, acknowledge that the prerequisites have been met by selecting all the check boxes. Click **Next**.

> **Note:**
>
> The Upgrade Assistant does not verify whether the prerequisites have been met.

5. On the ODI Schema screen, specify the database connection details for each schema you are upgrading:
   - Select the database type from the **Database Type** drop-down menu.
   - Enter the database connection details, and click **Connect**.
   - Select the schema you want to upgrade from the **Schema User Name** drop-down menu, and then enter the password for the schema. Be sure to use the correct schema prefix for the schemas you are upgrading.
6. On the ODI Options screen, select all of the options.

Table 6-4 ODI Options

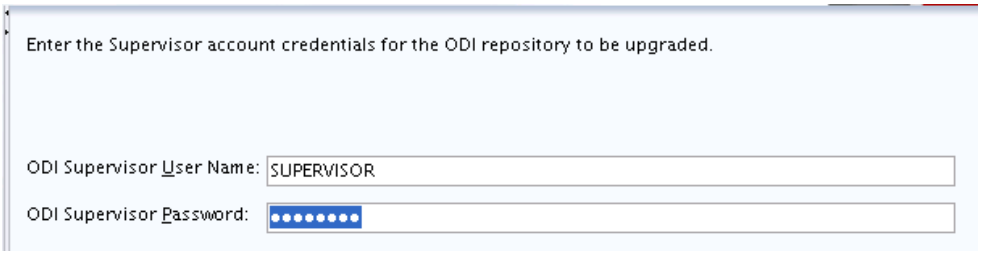
Option	Description
Replace Knowledge Modules with mandatory updates	This selection replaces standard Knowledge Modules with the newest version. Customizations to Oracle installed Knowledge Modules will be overwritten. But if you copy an installed Knowledge Module and customize the Knowledge Module, the customizations are not lost.
Upgrade topology and security metadata	This selection replaces topology and security artifacts such as Technologies, Datatypes, Security Profiles and others with the newest version. Customizations of installed objects will be overwritten. If the object is copied and customized, then the customizations are not lost.

See Advanced Upgrade Options.

7. On the ODI Supervisor screen, enter the Supervisor account credentials for the ODI repository to be upgraded.

   The installed Supervisor account is `SUPERVISOR`. Check with your ODI administrator for proper Supervisor account name and password, supplied when prompted by the Repository Creation Utility (RCU) when creating the Master and Work repositories for ODI.

Figure 6-2 Account credentials for the ODI repository



> **Note:**
>
> When **All Schemas Used by a Domain** is selected, the Supervisor credentials for ODI are not pre-populated in the first instance as the domain does not contain them. If there are multiple ODI schemas, the Upgrade Assistant populates the user entry using the first set of credentials.

8. On the Examine screen, review the status of the Upgrade Assistant as it examines each schema, verifying that the schema is ready for upgrade. If the status is **Examine finished**, click **Next**.

   If the examine phase fails, Oracle recommends that you cancel the upgrade by clicking **No** in the Examination Failure dialog. Click **View Log** to see what caused the error and refer to Troubleshooting Your Upgrade in *Upgrading with the Upgrade Assistant* for information on resolving common upgrade errors.

   > **Note:**
   >
   > - If you resolve any issues detected during the examine phase without proceeding with the upgrade, you can start the Upgrade Assistant again without restoring from backup. However, if you proceed by clicking **Yes** in the Examination Failure dialog box, you need to restore your pre-upgrade environment from backup before you start the Upgrade Assistant again.
   > - Canceling the examination process has no effect on the schemas or configuration data; the only consequence is that the information the Upgrade Assistant has collected must be collected again in a future upgrade session.

9. The Upgrade Summary screen lists the schemas that will be upgraded and/or created.

   Verify that the correct Source and Target Versions are listed for each schema that you intend to upgrade.

   If you want to save these options to a response file to run the Upgrade Assistant again later in response (or silent) mode, click **Save Response File** and provide the location and the name of the response file. A silent upgrade performs exactly the same function that the Upgrade Assistant performs, but you do not have to manually enter the data again.

   Click **Next**.

10. On the Upgrade Progress screen, monitor the status of the upgrade.

    > **Caution:**
    >
    > Allow the Upgrade Assistant enough time to perform the upgrade. Do not cancel the upgrade operation unless absolutely necessary. Doing so may result in an unstable environment.

If any schemas are not upgraded successfully, refer to the Upgrade Assistant log files for more information.

> **Note:**
>
> The progress bar on this screen displays the progress of the current upgrade procedure. It does not indicate the time remaining for the upgrade.

Click **Next**.

11. If the upgrade is successful: On the Upgrade Success screen, click **Close** to complete the upgrade and close the wizard.

    If the upgrade fails: On the Upgrade Failure screen, click **View Log** to view and troubleshoot the errors. The logs are available at *NEW_ORACLE_HOME*`/oracle_common/upgrade/logs`.

> **Note:**
>
> If the upgrade fails, you must restore your pre-upgrade environment from backup, fix the issues, then restart the Upgrade Assistant.

Verifying the Schema Upgrade

After completing all the upgrade steps, verify that the upgrade was successful by checking that the schema version in `schema_version_registry` has been properly updated.

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

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

In the query result:

- Check that the number in the `VERSION` column matches the latest version number for that schema. For example, verify that the schema version number is 12.2.1.3.0.

> **Note:**
>
> However, that not all schema versions will be updated. Some schemas do not require an upgrade to this release and will retain their pre-upgrade version number.

- 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.
- Synonym objects owned by `IAU_APPEND` and `IAU_VIEWER` will appear as `INVALID`, but that does not indicate a failure.

  They become invalid because the target object changes after the creation of the synonym. The synonyms objects will become valid when they are accessed. You can safely ignore these `INVALID` objects.

Upgrading Standalone System Component Configurations

Use the Upgrade Assistant to upgrade the standalone system component configurations.

- About Reconfiguring the Domain
  Run the Reconfiguration Wizard to reconfigure your domain component configurations to 12*c* (12.2.1.3.0).
- Starting the Upgrade Assistant
  Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 12*c* (12.2.1.3.0). Oracle recommends that you run the Upgrade Assistant as a non-SYSDBA user, completing the upgrade for one domain at a time.
- Upgrading Standalone System Component Configurations Using the Upgrade Assistant
  Navigate through the screens in the Upgrade Assistant to upgrade standalone system component configurations.

About Reconfiguring the Domain

Run the Reconfiguration Wizard to reconfigure your domain component configurations to 12*c* (12.2.1.3.0).

When you reconfigure a WebLogic Server domain, the following items are automatically updated, depending on the applications in the domain:

- WebLogic Server core infrastructure
- Domain version

> **Note:**
>
> Before you begin the domain reconfiguration, note the following limitations:
>
> - The Reconfiguration Wizard does not update any of your own applications that are included in the domain.
> - Transforming a non-dynamic cluster domain to a dynamic cluster domain during the upgrade process is not supported.
>
> The dynamic cluster feature is available when running the Reconfiguration Wizard, but Oracle only supports upgrading a non-dynamic cluster upgrade and then adding dynamic clusters. You cannot add dynamic cluster during the upgrade process.

Specifically, when you reconfigure a domain, the following occurs:

- The domain version number in the `config.xml` file for the domain is updated to the Administration Server's installed WebLogic Server version.
- Reconfiguration templates for all installed Oracle products are automatically selected and applied to the domain. These templates define any reconfiguration tasks that are required to make the WebLogic domain compatible with the current WebLogic Server version.
- Start scripts are updated.

  If you want to preserve your modified start scripts, be sure to back them up before starting the Reconfiguration Wizard.

> **Note:**
>
> When the domain reconfiguration process starts, you can't undo the changes that it makes. Before running the Reconfiguration Wizard, ensure that you have backed up the domain as covered in the pre-upgrade checklist. If an error or other interruption occurs while running the Reconfiguration Wizard, you must restore the domain by copying the files and directories from the backup location to the original domain directory. This is the only way to ensure that the domain has been returned to its original state before reconfiguration.

Follow these instructions to reconfigure the existing domain using the Reconfiguration Wizard. See Reconfiguring WebLogic Domains in *Upgrading Oracle WebLogic Server*.

- Backing Up the Domain
- Starting the Reconfiguration Wizard
- Reconfiguring the Domain with the Reconfiguration Wizard

Backing Up the Domain

Before running the Reconfiguration Wizard, create a backup copy of the domain directory.

To create a backup of the domain directory:

1. Copy the source domain to a separate location to preserve the contents.

   (Windows) `copy C:\domains\mydomain to C:\domains\mydomain_backup`.

   (UNIX) `cp mydomain /domains/mydomain_backup`

2. Before updating the domain on each remote Managed Server, create a backup copy of the domain directory on each remote machine.
3. Verify that the backed up versions of the domain are complete.

If domain reconfiguration fails for any reason, you must copy all files and directories from the backup directory into the original domain directory to ensure that the domain is returned entirely to its original state before reconfiguration.

Starting the Reconfiguration Wizard

> **Note:**
>
> Shut down the administration server and all collocated managed servers before starting the reconfiguration process. See Stopping Servers and Processes .

To start the Reconfiguration Wizard in graphical mode:

1. Sign in to the system on which the domain resides.
2. Open the command shell (on UNIX operating systems) or open a 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 child edition name.
4. Go to the `oracle_common/common/bin` directory:
   - (UNIX) *NEW_ORACLE_HOME*`/oracle_common/common/bin`
   - (Windows) *NEW_ORACLE_HOME*`\oracle_common\commom\bin`
5. Start the Reconfiguration Wizard with the following logging options:
   - (UNIX) `./reconfig.sh -log=`*log_file*` -log_priority=ALL`
   - (Windows) `reconfig.cmd -log=`*log_file*` -log_priority=ALL`

   where *log_file* is 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.

   The parameter `-log_priority=ALL` ensures that logs are logged in fine mode.

> **Note:**
>
> When you run this command, the following error message might appear 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
> ```

Reconfiguring the Domain with the Reconfiguration Wizard

Navigate through the screens in the Reconfiguration Wizard to reconfigure your existing domain before running the Upgrade Assistant

> **Note:**
>
> If the source is a clustered environment, run the Reconfiguration Wizard on the primary node only. Use the `pack` and `unpack` utilities to apply the changes to other cluster members in the domain.

To reconfigure the domain with the Reconfiguration Wizard:

1. On the Select Domain screen, specify the location of the domain you want to upgrade or click **Browse** to navigate and select the domain directory. Click **Next**.
2. On the Reconfiguration Setup Progress screen, view the progress of the setup process. When complete, click **Next**.

   During this process:

   - The reconfiguration templates for your installed products, including Fusion Middleware products, are automatically applied. This updates various domain configuration files such as `config.xml`, `config-groups.xml`, and `security.xml` (among others).
   - Schemas, scripts, and other such files that support your Fusion Middleware products are updated.
   - The domain upgrade is validated.
3. On the Domain Mode and JDK screen, select the JDK to use in the domain or click **Browse** to navigate to the JDK you want to use. The supported JDK version for 12*c* (12.2.1.3.0) is 1.8.0_131 and later. Click **Next**.

   > **Note:**
   >
   > You cannot change the **Domain Mode** at this stage.

   For a list of JDKs that are supported for a specific platform, see Oracle Fusion Middleware Supported System Configurations.

4. On the Database Configuration Type screen, select **RCU Data** to connect to the Server Table (_STB) schema.

   Enter the database connection details using the RCU service table (_STB) schema credentials and click **Get RCU Configuration**.

   The Reconfiguration Wizard uses this connection to automatically configure the data sources required for components in your domain.

   > **Note:**
   >
   > By default **Oracle's Driver (Thin) for Service connections; Versions: Any** is the selected driver. If you specified an instance name in your connection details — instead of the service name — you must select **Oracle's Driver (Thin) for pooled instance connections; Versions: Any** If you do not change the driver type, then the connection will fail.

   > **Note:**
   >
   > For any existing 11*g* datasource, the reconfiguration will preserve the existing values. For new datasources where the schema was created for 12*c* by the RCU, the default connection data will be retrieved from the _STB schema. If no connection data for a given schema is found in the _STB schema, then the default connection data is used.

   If the check is successful, click **Next**. If the check fails, reenter the connection details correctly and try again.

   > **Note:**
   >
   > If you are upgrading from 11*g*, and your database has _OPSS or _IAU 11*g* database schemas, you must manually enter database connection details for those schemas. These schemas were not required in 11*g* and had to be created manually. Users could assign any name to these schemas, therefore the Reconfiguration Wizard does not recognize them. When providing connection information for _IAU, use the IAU_APPEND user information.

5. On the JDBC Component Schema screen, verify that the DBMS/Service and the Host name is correct for each component schema and click **Next**.
6. On the JDBC Component Schema Test screen, select all the component schemas and click **Test Selected Connections** to test the connection for each schema. The result of the test is indicated in the Status column.

   When the check is complete, click **Next**.
7. On the Advanced Configuration screen, you can select all categories 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.

> **Note:**
>
> The categories that are listed on the Advanced Configuration screen depend on the resources defined in the templates you selected for the domain.

For this upgrade, select none of the options and click **Next**.

8. On the Configuration Summary screen, 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.

   To change the configuration, click **Back** to return to the appropriate screen. To reconfigure the domain, click **Reconfig**.

   > **Note:**
   >
   > The location of the domain does not change when you reconfigure it.

9. The Reconfiguration Progress screen displays the progress of the reconfiguration process.

   During this process:

   - Domain information is extracted, saved, and updated.
   - Schemas, scripts, and other such files that support your Fusion Middleware products are updated.

   When the progress bar shows 100%, click **Next**.

10. The End of Configuration screen indicates whether the reconfiguration process completed successfully or failed. It also displays the location of the domain that was reconfigured as well as the Administration Server URL (including the listen port). If the reconfiguration is successful, it displays **Oracle WebLogic Server Reconfiguration Succeeded**.

    If the reconfiguration process did not complete successfully, an error message is displayed indicates the reason. Take appropriate action to resolve the issue. If you cannot resolve the issue, contact My Oracle Support.

    Note the Domain Location and the Admin Server URL for further operations.

Starting the Upgrade Assistant

Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 12*c* (12.2.1.3.0). Oracle recommends that you run the Upgrade Assistant as a non-SYSDBA user, completing the upgrade for one domain at a time.

To start the Upgrade Assistant:

> **Note:**
>
> Before you start the Upgrade Assistant, make sure that the JVM character encoding is set to UTF-8 for the platform on which the Upgrade Assistant is running. If the character encoding is not set to UTF-8, then you will not be able to download files containing Unicode characters in their names. This can cause the upgrade to fail.

1. Go to the `oracle_common/upgrade/bin` directory:
   - (UNIX) *`NEW_ORACLE_HOME`*`/oracle_common/upgrade/bin`
   - (Windows) *`NEW_ORACLE_HOME`*`\oracle_common\upgrade\bin`
2. Start the Upgrade Assistant:
   - (UNIX) `./ua`
   - (Windows) `ua.bat`

For information about other parameters that you can specify on the command line, such as logging parameters, see:

- Upgrade Assistant Parameters

Upgrade Assistant Parameters

When you start the Upgrade Assistant from the command line, you can specify additional parameters.

Table 6-5 Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-readiness`	Required for readiness checks **Note**: Readiness checks cannot be performed on standalone installations (those not managed by the WebLogic Server).	Performs the upgrade readiness check without performing an actual upgrade. Schemas and configurations are checked. Do not use this parameter if you have specified the `-examine` parameter.
`-threads`	Optional	Identifies the number of threads available for concurrent schema upgrades or readiness checks of the schemas. The value must be a positive integer in the range 1 to 8. The default is 4.

Table 6-5 (Cont.) Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-response`	Required for silent upgrades or silent readiness checks	Runs the Upgrade Assistant using inputs saved to a response file generated from the data that is entered when the Upgrade Assistant is run in GUI mode. Using this parameter runs the Upgrade Assistant in *silent mode* (without displaying Upgrade Assistant screens).
`-examine`	Optional	Performs the examine phase but does not perform an actual upgrade. Do not specify this parameter if you have specified the `-readiness` parameter.
`-logLevel` *attribute*	Optional	Sets the logging level, specifying one of the following attributes: • `TRACE` • `NOTIFICATION` • `WARNING` • `ERROR` • `INCIDENT_ERROR` The default logging level is `NOTIFICATION`. Consider setting the `-logLevel TRACE` attribute to so that more information is logged. This is useful when troubleshooting a failed upgrade. The Upgrade Assistant's log files can become very large if `-logLevel TRACE` is used.

Table 6-5 (Cont.) Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-logDir` *location*	Optional	Sets the default location of upgrade log files and temporary files. You must specify an existing, writable directory where the Upgrade Assistant creates log files and temporary files. The default locations are: (UNIX) *NEW_ORACLE_HOME*`/oracle_common/upgrade/logs` *NEW_ORACLE_HOME*`/oracle_common/upgrade/temp` (Windows) *NEW_ORACLE_HOME*`\oracle_common\upgrade\logs` *NEW_ORACLE_HOME*`\oracle_common\upgrade\temp`
`-help`	Optional	Displays all of the command-line options.

Upgrading Standalone System Component Configurations Using the Upgrade Assistant

Navigate through the screens in the Upgrade Assistant to upgrade standalone system component configurations.

To upgrade standalone system component configurations with the Upgrade Assistant:

1. On the Welcome screen, review an introduction to the Upgrade Assistant and information about important pre-upgrade tasks. Click **Next**.

> **Note:**
>
> For more information about any Upgrade Assistant screen, click **Help** on the screen.

2. On the next screen:
   - Select **Standalone System Component Configurations**, then select **Update an Existing Domain**.

- In the **Domain Location** field, select the location of the existing standalone domain that you want to update.
- Click **Next**.

3. On the Component List screen, verify that the list includes all the components for which you want to upgrade configurations and click **Next**.

   If you do not see the components you want to upgrade, click **Back** to go to the previous screen and specify a different domain.

4. On the Prerequisites screen, acknowledge that the prerequisites have been met by selecting all the check boxes. Click **Next**.

   > **Note:**
   >
   > The Upgrade Assistant does not verify whether the prerequisites have been met.

5. On the Instance Directories screen, specify the location of one or more Oracle instance directories to be upgraded.
6. On the Node Manager screen, specify the credentials of the Node Manager that will be used to create a domain during the upgrade of standalone system components.
7. On the Examine screen, review the status of the Upgrade Assistant as it examines each standalone component, verifying that the standalone component configuration is ready for upgrade. If the status is **Examine finished**, click **Next**.

   If the examine phase fails, Oracle recommends that you cancel the upgrade by clicking **No** in the Examination Failure dialog. Click **View Log** to see what caused the error and refer to Troubleshooting Your Upgrade in *Upgrading with the Upgrade Assistant*for information on resolving common upgrade errors.

   > **Note:**
   >
   > - If you resolve any issues detected during the examine phase without proceeding with the upgrade, you can start the Upgrade Assistant again without restoring from backup. However, if you proceed by clicking **Yes** in the Examination Failure dialog box, you need to restore your pre-upgrade environment from backup before starting the Upgrade Assistant again.
   > - Canceling the examination process has no effect on the configuration data; the only consequence is that the information the Upgrade Assistant has collected must be collected again in a future upgrade session.

8. On the Upgrade Summary screen, review the summary of the options you have selected for component configuration upgrade.

   The response file collects and stores all the information that you have entered, and enables you to perform a silent upgrade at a later time. The silent upgrade performs exactly the same function that the Upgrade Assistant performs, but you do not have to manually enter the data again. If you want to save these options to

a response file, click **Save Response File** and provide the location and name of the response file.
Click **Upgrade** to start the upgrade process.

9. On the Upgrade Progress screen, monitor the status of the upgrade.

> **Caution:**
>
> Allow the Upgrade Assistant enough time to perform the upgrade. Do not cancel the upgrade operation unless absolutely necessary. Doing so may result in an unstable environment.

If any components are not upgraded successfully, refer to the Upgrade Assistant log files for more information.

> **Note:**
>
> The progress bar on this screen displays the progress of the current upgrade procedure. It does not indicate the time remaining for the upgrade.

Click **Next**.

10. If the upgrade is successful: On the Upgrade Success screen, click **Close** to complete the upgrade and close the wizard. The Post-Upgrade Actions window describes the manual tasks you must perform to make components functional in the new installation. This window appears only if a component has post-upgrade steps.

    If the upgrade fails: On the Upgrade Failure screen, click **View Log** to view and troubleshoot the errors. The logs are available at *ORACLE_HOME*`/oracle_common/upgrade/logs`. Note If the upgrade fails you must restore your pre-upgrade environment from backup, fix the issues, then restart the Upgrade Assistant.

Starting Servers and Processes

After a successful upgrade, restart all processes and servers, including the Administration Server and any Managed Servers.

The components may be dependent on each other so they must be started in the correct order.

> **Note:**
>
> The procedures in this section describe how to start servers and process using the WLST command line or a script. You can also use the Oracle Fusion Middleware Control and the Oracle WebLogic Server Administration Console. See Starting and Stopping Administration and Managed Servers and Node Manager in *Administering Oracle Fusion Middleware.*

To start your Fusion Middleware environment, follow the steps below:

Step 1: Start the Administration Server

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

To start the Administration Server, use the `startWebLogic` script:

- (UNIX) *`NEW_DOMAIN_HOME`*`/bin/startWebLogic.sh`
- (Windows) *`NEW_DOMAIN_HOME`*`\bin\startWebLogic.cmd`

When prompted, enter your user name, password, and the URL of the Administration Server.

Step 2: Start Node Manager

To start Node Manager, use the `startNodeManager` script:

- (UNIX) *`NEW_DOMAIN_HOME`*`/bin/startNodeManager.sh`
- (Windows) *`NEW_DOMAIN_HOME`*`\bin\startNodeManager.cmd`

Step 3: Start Oracle Identity Management Components

Start any Oracle Identity Management components, such as Oracle Internet Directory, that form part of your environment:

- (UNIX) *`NEW_DOMAIN_HOME`*`/bin/startComponent.sh` *`component_name`*
- (Windows) *`NEW_DOMAIN_HOME`*`\bin\startComponent.cmd` *`component_name`*

Step 4: Start the Managed Servers

To start a WebLogic Server Managed Server, use the `startManagedWebLogic` script:

- (UNIX) *`NEW_DOMAIN_HOME`*`/bin/startManagedWebLogic.sh` *`managed_server_name admin_url`*
- (Windows) *`NEW_DOMAIN_HOME`*`\bin\startManagedWebLogic.cmd` *`managed_server_name admin_url`*

When prompted, enter your user name and password.

> **Note:**
>
> The startup of a Managed Server will typically start the applications that are deployed to it. Therefore, it should not be necessary to manually start applications after the Managed Server startup.

Step 5: Start System Components

To start system components, such as Oracle HTTP Server, use the `startComponent` script:

- (UNIX) *`NEW_DOMAIN_HOME`*`/bin/startComponent.sh` *`component_name`*
- (Windows) *`NEW_DOMAIN_HOME`*`\bin\startComponent.cmd` *`component_name`*

You can start system components in any order.

Step 6: Change to External Authentication

If you changed to internal authentication before upgrading product schemas, change back to external authentication after starting servers and processes.

7

Upgrading an Oracle Data Integrator Standalone Collocated Agent Environment from a Previous 12*c* Release

You can upgrade an Oracle Data Integrator standalone agent environment that is configured in a WebLogic domain from a previous Oracle Fusion Middleware 12*c* release to 12*c* (12.2.1.3.0).

- About Oracle Data Integrator Standalone Collocated Agent Upgrade Process
  Review the process flowchart for an overview of the upgrade process for an Oracle Data Integrator standalone agent that is configured in a WebLogic domain.
- Installing Oracle Data Integrator Standalone Collocated Agent Environment
  Before beginning your upgrade, download Oracle Data Integrator 12*c* (12.2.1.3.0) distribution on the target system and install it using Oracle Universal Installer.
- Running a Pre-Upgrade Readiness Check
  To identify potential issues with the upgrade, Oracle recommends that you run a readiness check before you start the upgrade process. Be aware that the readiness check may not be able to discover all potential issues with your upgrade. An upgrade may still fail, even if the readiness check reports success.
- Stopping Servers and Processes
  Before you run the Upgrade Assistant to upgrade your schemas and configurations, you must shut down all of the pre-upgrade processes and servers, including the Administration Server and any managed servers.
- Upgrading Product Schemas
  After stopping servers and processes, use the Upgrade Assistant to upgrade supported product schemas to the current release of Oracle Fusion Middleware.
- About Reconfiguring the Domain
  Run the Reconfiguration Wizard to reconfigure your domain component configurations to 12*c* (12.2.1.3.0).
- Upgrading Domain Component Configurations
  After reconfiguring the domain, use the Upgrade Assistant to upgrade the domain *component* configurations inside the domain to match the updated domain configuration.
- Starting Servers and Processes
  After a successful upgrade, restart all processes and servers, including the Administration Server and any Managed Servers.

About Oracle Data Integrator Standalone Collocated Agent Upgrade Process

Review the process flowchart for an overview of the upgrade process for an Oracle Data Integrator standalone agent that is configured in a WebLogic domain.

Figure 7-1 Oracle Data Integrator Standalone Collocated Agent Upgrade Process Flowchart

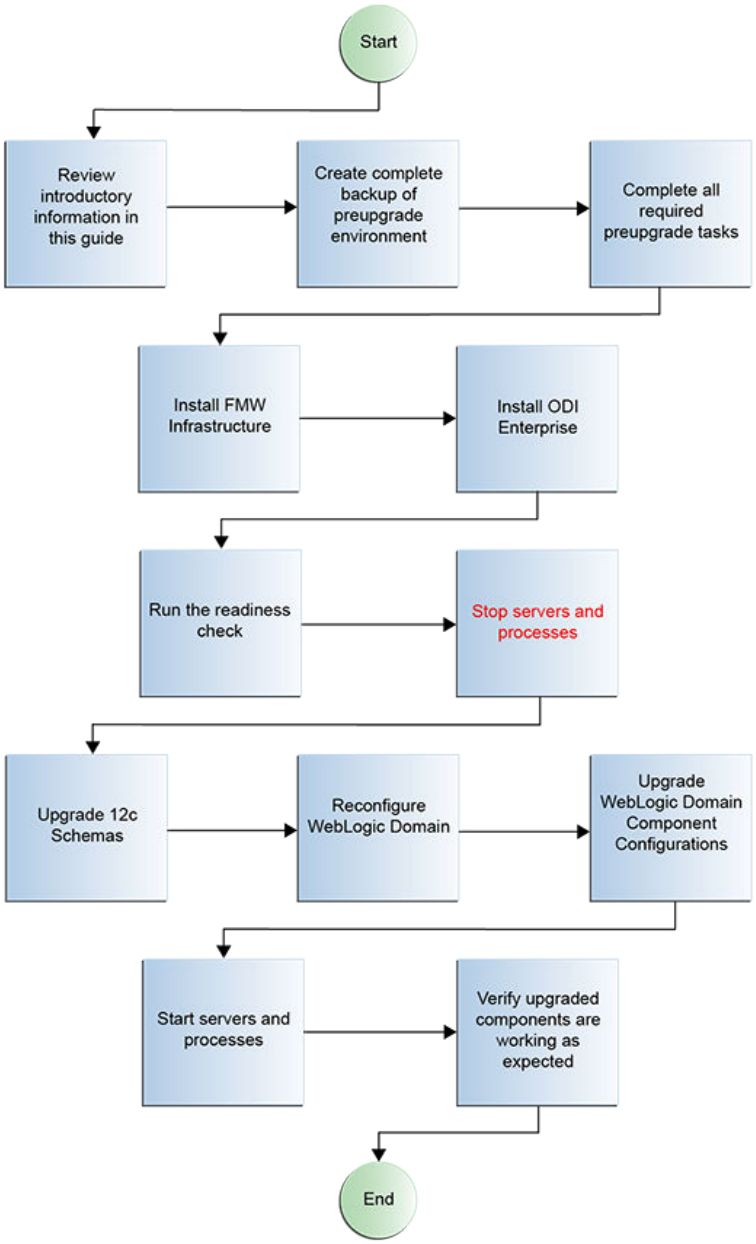


Table 7-1 Tasks for Upgrading Oracle Data Integrator Standalone Collocated Agent from a Previous 12*c* Release

Task	Description
Required If you have not done so already, review the introductory topics in this guide and complete the required pre-upgrade tasks.	See: • Introduction to Upgrading Oracle Data Integrator to 12*c* (12.2.1.3.0) • Pre-Upgrade Requirements
Required Install Oracle Data Integrator 12*c* (12.2.1.3.0) in a new Oracle home.	See Installing Oracle Data Integrator Standalone Collocated Agent Environment.
Optional Run a pre-upgrade readiness check.	See Running a Pre-Upgrade Readiness Check.
Required Shut down the 12*c* environment (stop all Administration and Managed Servers).	**WARNING:** Failure to shut down your servers during an upgrade may lead to data corruption. See Stopping Servers and Processes.
Required Start the Upgrade Assistant to upgrade the database schemas and to migrate all active (in flight) instance data.	See Upgrading Product Schemas. **Note:** The upgrade of active instance data is started automatically when running the Upgrade Assistant. Once the data is successfully upgraded to the new 12*c* (12.2.1.3.0) environment, you can close the Upgrade Assistant. The closed instances will continue to upgrade through a background process.
Required Start the Reconfiguration Wizard to reconfigure the domain and node manager.	Run the Configuration Wizard to update the existing domain to use the newly installed software. See Reconfiguring the Domain.
Required Start the Upgrade Assistant (again) to upgrade domain configurations.	Run the Upgrade Assistant to update the reconfigured domain's component configurations. See Upgrading Domain Component Configurations.

Table 7-1 (Cont.) Tasks for Upgrading Oracle Data Integrator Standalone Collocated Agent from a Previous 12*c* Release

Task	Description
Required Restart the servers and the 12*c* (12.2.1.3.0) instance.	When the upgrade process is complete, restart the 12*c* (12.2.1.3.0) instance. See Starting Servers and Processes.
Required Verify the upgrade.	Ensure all of the upgraded components are working as expected before deleting your backups.

Installing Oracle Data Integrator Standalone Collocated Agent Environment

Before beginning your upgrade, download Oracle Data Integrator 12*c* (12.2.1.3.0) distribution on the target system and install it using Oracle Universal Installer.

> **Note:**
>
> The ODI Enterprise installation process will automatically install Oracle Fusion Middleware Infrastructure if it is not already installed.

To install Oracle Data Integrator standalone collocated agent environment:

1. Sign in to the target system.
2. Download the following from Oracle Technology Network or Oracle Software Delivery Cloud to your target system:
   - Oracle Data Integrator (`fmw_12.2.1.3.0_odi_Disk1_1of2.zip` and `fmw_12.2.1.3.0_odi_Disk1_2of2.zip`)
3. Change to the directory where you downloaded the 12*c* (12.2.1.3.0) product distribution.
4. Unzip the installer `fmw_12.2.1.3.0_odi_Disk1_1of2.zip` and `fmw_12.2.1.3.0_odi_Disk1_2of2.zip` files.
5. Start the ODI installation:

   (UNIX) *JDK_HOME*`/bin/java -jar fmw_12.2.1.3.0_odi_generic.jar`

   (Windows) *JDK_HOME*`\bin\java -jar fmw_12.2.1.3.0_odi_generic.jar`
6. On UNIX operating systems, the Installation Inventory Setup screen appears if this is the first time you are installing an Oracle product on this host.

   Specify the location where you want to create your central inventory. Make sure that the operating system group name selected on this screen has write permissions to the central inventory location, and click **Next**.

> **Note:**
>
> The Installation Inventory Setup screen does not appear on Windows operating systems.

7. On the Welcome screen, review the information to make sure that you have met all the prerequisites. Click **Next**.
8. On the Auto Updates screen, select an option:
   - **Skip Auto Updates**: If you do not want your system to check for software updates at this time.
   - **Select patches from directory**: To navigate to a local directory if you downloaded patch files.
   - **Search My Oracle Support for Updates**: To automatically download software updates if you have a My Oracle Support account. You must enter Oracle Support credentials then click **Search**. To configure a proxy server for the installer to access My Oracle Support, click **Proxy Settings**. Click **Test Connection** to test the connection.

   Click **Next**.
9. On the Installation Location screen, specify the location for the Oracle home directory and click **Next**.

   For more information about Oracle Fusion Middleware directory structure, see Understanding Directories for Installation and Configuration in *Oracle Fusion Middleware Planning an Installation of Oracle Fusion Middleware*.
10. On the Installation Type screen, select **Enterprise Installation**.

    Click **Next**.
11. The Prerequisite Checks screen analyzes the host computer to ensure that the specific operating system prerequisites have been met.

    To view the list of tasks that are verified, select **View Successful Tasks**. To view log details, select **View Log**. If any prerequisite check fails, then an error message appears at the bottom of the screen. Fix the error and click **Rerun** to try again. To ignore the error or the warning message and continue with the installation, click **Skip** (not recommended).
12. On the Installation Summary screen, verify the installation options that you selected.

    If you want to save these options to a response file, click **Save Response File** and enter the response file location and name. The response file collects and stores all the information that you have entered, and enables you to perform a silent installation (from the command line) at a later time.
    Click **Install** to begin the installation.
13. On the Installation Progress screen, when the progress bar displays 100%, click **Finish** to dismiss the installer, or click **Next** to see a summary.
14. The Installation Complete screen displays the Installation Location and the Feature Sets that are installed. Review this information and click **Finish** to close the installer.

Running a Pre-Upgrade Readiness Check

To identify potential issues with the upgrade, Oracle recommends that you run a readiness check before you start the upgrade process. Be aware that the readiness check may not be able to discover all potential issues with your upgrade. An upgrade may still fail, even if the readiness check reports success.

- About Running a Pre-Upgrade Readiness Check
  You can run the Upgrade Assistant in `-readiness` mode to detect issues before you perform the actual upgrade. You can run the readiness check in GUI mode using the Upgrade Assistant or in silent mode using a response file.
- Starting the Upgrade Assistant in Readiness Mode
  Use the `-readiness` parameter to start the Upgrade Assistant in readiness mode.
- Performing a Readiness Check with the Upgrade Assistant
  Navigate through the screens in the Upgrade Assistant to complete the pre-upgrade readiness check.
- Understanding the Readiness Report
  After performing a readiness check for your domain, review the report to determine whether you need to take any action for a successful upgrade.

About Running a Pre-Upgrade Readiness Check

You can run the Upgrade Assistant in `-readiness` mode to detect issues before you perform the actual upgrade. You can run the readiness check in GUI mode using the Upgrade Assistant or in silent mode using a response file.

The Upgrade Assistant readiness check performs a read-only, pre-upgrade review of your Fusion Middleware schemas and WebLogic domain configurations that are at a supported starting point. The review is a read-only operation.

The readiness check generates a formatted, time-stamped readiness report so you can address potential issues before you attempt the actual upgrade. If no issues are detected, you can begin the upgrade process. Oracle recommends that you read this report thoroughly before performing an upgrade.

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

You can run the readiness check any number of times before performing any actual upgrade. However, do not run the readiness check after an upgrade has been performed, as the report results may differ from the result of pre-upgrade readiness checks.

> **Note:**
>
> To prevent performance from being affected, Oracle recommends that you run the readiness check during off-peak hours.

Starting the Upgrade Assistant in Readiness Mode

Use the `-readiness` parameter to start the Upgrade Assistant in readiness mode.

To perform a readiness check on your pre-upgrade environment with the Upgrade Assistant:

1. Go to the `oracle_common/upgrade/bin` directory:
   - (UNIX) *`NEW_ORACLE_HOME`*`/oracle_common/upgrade/bin`
   - (Windows) *`NEW_ORACLE_HOME`*`\oracle_common\upgrade\bin`
2. Start the Upgrade Assistant.
   - (UNIX) `./ua -readiness`
   - (Windows) `ua.bat -readiness`

> **Note:**
>
> If the `DISPLAY` environment variable is not set up properly to allow for GUI mode, you may encounter the following error:
>
> ```
> Xlib: connection to ":1.0" refused by server
> Xlib: No protocol specified
> ```
>
> To resolve this issue, set the `DISPLAY` environment variable to the system name or IP address of your local workstation, and rerun Upgrade Assistant.
>
> If you continue to receive these errors after setting `DISPLAY`, try launching another GUI tool, such as `vncconfig`. If you see the same errors, your `DISPLAY` environment variable may still not be set correctly.

For information about other parameters that you can specify on the command line, see:

- Upgrade Assistant Parameters

Upgrade Assistant Parameters

When you start the Upgrade Assistant from the command line, you can specify additional parameters.

Table 7-2 Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-readiness`	Required for readiness checks **Note**: Readiness checks cannot be performed on standalone installations (those not managed by the WebLogic Server).	Performs the upgrade readiness check without performing an actual upgrade. Schemas and configurations are checked. Do not use this parameter if you have specified the `-examine` parameter.
`-threads`	Optional	Identifies the number of threads available for concurrent schema upgrades or readiness checks of the schemas. The value must be a positive integer in the range 1 to 8. The default is 4.
`-response`	Required for silent upgrades or silent readiness checks	Runs the Upgrade Assistant using inputs saved to a response file generated from the data that is entered when the Upgrade Assistant is run in GUI mode. Using this parameter runs the Upgrade Assistant in *silent mode* (without displaying Upgrade Assistant screens).
`-examine`	Optional	Performs the examine phase but does not perform an actual upgrade. Do not specify this parameter if you have specified the `-readiness` parameter.
`-logLevel` *`attribute`*	Optional	Sets the logging level, specifying one of the following attributes: • `TRACE` • `NOTIFICATION` • `WARNING` • `ERROR` • `INCIDENT_ERROR` The default logging level is `NOTIFICATION`. Consider setting the `-logLevel TRACE` attribute to so that more information is logged. This is useful when troubleshooting a failed upgrade. The Upgrade Assistant's log files can become very large if `-logLevel TRACE` is used.

Table 7-2 (Cont.) Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-logDir` *location*	Optional	Sets the default location of upgrade log files and temporary files. You must specify an existing, writable directory where the Upgrade Assistant creates log files and temporary files. The default locations are: (UNIX) *NEW_ORACLE_HOME*`/oracle_common/upgrade/logs` *NEW_ORACLE_HOME*`/oracle_common/upgrade/temp` (Windows) *NEW_ORACLE_HOME*`\oracle_common\upgrade\logs` *NEW_ORACLE_HOME*`\oracle_common\upgrade\temp`
`-help`	Optional	Displays all of the command-line options.

Performing a Readiness Check with the Upgrade Assistant

Navigate through the screens in the Upgrade Assistant to complete the pre-upgrade readiness check.

Readiness checks are performed only on schemas or component configurations that are at a supported upgrade starting point.

To complete the readiness check:

1. On the Welcome screen, review information about the readiness check. Click **Next**.
2. On the Readiness Check Type screen, select the readiness check that you want to perform:
   - **Individually Selected Schemas** allows you to select individual schemas for review before upgrade. The readiness check reports whether a schema is supported for an upgrade or where an upgrade is needed.
     When you select this option, the screen name changes to Selected Schemas.
   - **Domain Based** allows the Upgrade Assistant to discover and select all upgrade-eligible schemas or component configurations in the domain specified in the **Domain Directory** field.

When you select this option, the screen name changes to Schemas and Configuration.

Leave the default selection if you want the Upgrade Assistant to check all schemas and component configurations at the same time, or select a specific option:

- **Include checks for all schemas** to discover and review all components that have a schema available to upgrade.
- **Include checks for all configurations** to review component configurations for a managed WebLogic Server domain.

Click **Next**.

3. If you selected **Individually Selected Schemas**: On the Available Components screen, select the components that have a schema available to upgrade for which you want to perform a readiness check.

   If you selected **Domain Based**: On the Component List screen, review the list of components that are present in your domain for which you want to perform a readiness check.

   If you select a component that has dependent components, those components are automatically selected. For example, if you select Oracle Platform Security Services, Oracle Audit Services is automatically selected.

   Depending on the components you select, additional screens may display. For example, you may need to:

   - Specify the domain directory.
   - Specify schema credentials to connect to the selected schema: **Database Type**, **DBA User Name**, and **DBA Password**. Then click **Connect**.

     > **Note:**
     >
     > Oracle database is the default database type. Make sure that you select the correct database type before you continue. If you discover that you selected the wrong database type, do not go back to this screen to change it to the correct type. Instead, close the Upgrade Assistant and restart the readiness check with the correct database type selected to ensure that the correct database type is applied to all schemas.

   - Select the **Schema User Name** option and specify the **Schema Password**.

   Click **Next** to start the readiness check.

4. On the Readiness Summary screen, review the summary of the readiness checks that will be performed based on your selections.

   If you want to save your selections to a response file to run the Upgrade Assistant again later in response (or silent) mode, click **Save Response File** and provide the location and name of the response file. A silent upgrade performs exactly the same function that the Upgrade Assistant performs, but you do not have to manually enter the data again.

   For a detailed report, click **View Log**.

   Click **Next**.

5. On the Readiness Check screen, review the status of the readiness check. The process can take several minutes.

   If you are checking multiple components, the progress of each component displays in its own progress bar in parallel.

   When the readiness check is complete, click **Continue**.

6. On the End of Readiness screen, review the results of the readiness check (**Readiness Success** or **Readiness Failure**):

   - If the readiness check is successful, click **View Readiness Report** to review the complete report. Oracle recommends that you review the Readiness Report before you perform the actual upgrade even when the readiness check is successful. Use the **Find** option to search for a particular word or phrase within the report. The report also indicates where the completed Readiness Check Report file is located.
   - If the readiness check encounters an issue or error, click **View Log** to review the log file, identify and correct the issues, and then restart the readiness check. The log file is managed by the command-line options you set.

Understanding the Readiness Report

After performing a readiness check for your domain, review the report to determine whether you need to take any action for a successful upgrade.

The format of the readiness report file is:

`readiness_`*`timestamp`*`.txt`

where *`timestamp`* indicates the date and time of when the readiness check was run.

A readiness report contains the following information:

Table 7-3 Readiness Report Elements

Report Information	Description	Required Action
Overall Readiness Status: SUCCESS or FAILURE	The top of the report indicates whether the readiness check passed or completed with one or more errors.	If the report completed with one or more errors, search for FAIL and correct the failing issues before attempting to upgrade. You can re-run the readiness check as many times as necessary before an upgrade.
Timestamp	The date and time that the report was generated.	No action required.
Log file location *`NEW_ORACLE_HOME`*`/oracle_common/upgrade/logs`	The directory location of the generated log file.	No action required.
Readiness report location *`NEW_ORACLE_HOME`*`/oracle_common/upgrade/logs`	The directory location of the generated readiness report.	No action required.

Table 7-3 (Cont.) Readiness Report Elements

Report Information	Description	Required Action
Names of components that were checked	The names and versions of the components included in the check and status.	If your domain includes components that cannot be upgraded to this release, such as SOA Core Extension, do not attempt an upgrade.
Names of schemas that were checked	The names and current versions of the schemas included in the check and status.	Review the version numbers of your schemas. If your domain includes schemas that cannot be upgraded to this release, do not attempt an upgrade.
Individual Object Test Status: FAIL	The readiness check test detected an issue with a specific object.	Do not upgrade until all failed issues have been resolved.
Individual Object Test Status: PASS	The readiness check test detected no issues for the specific object.	If your readiness check report shows only the PASS status, you can upgrade your environment. Note, however, that the Readiness Check cannot detect issues with externals such as hardware or connectivity during an upgrade. You should always monitor the progress of your upgrade.
Completed Readiness Check of <Object> Status: FAILURE	The readiness check detected one or more errors that must be resolved for a particular object such as a schema, an index, or datatype.	Do not upgrade until all failed issues have been resolved.
Completed Readiness Check of <Object> Status: SUCCESS	The readiness check test detected no issues.	No action required.

Here is a sample Readiness Report file. Your report may not include all of these checks.

```
Upgrade readiness check completed with one or more errors.

This readiness check report was created on Tue May 30 11:15:52 EDT 2016
Log file is located at: NEW_ORACLE_HOME/oracle_common/upgrade/logs/
ua2016-05-30-11-14-06AM.log
Readiness Check Report File: NEW_ORACLE_HOME/oracle_common/upgrade/logs/
readiness2016-05-30-11-15-52AM.txt

Starting readiness check of components.

Oracle Metadata Services
   Starting readiness check of Oracle Metadata Services.
     Schema User Name: DEV11_MDS
     Database Type: Oracle Database
     Database Connect String: machinename@yourcompany.com
     VERSION Schema DEV11_MDS is currently at version 12.1.1.1.0.
Readiness checks will now be performed.
   Starting schema test:  TEST_REQUIRED_TABLES  Test that the schema
contains all the required tables
```

```
   Completed schema test: TEST_REQUIRED_TABLES --> Test that the schema
contains all the required tables +++ PASS
   Starting schema test:  TEST_REQUIRED_PROCEDURES  Test that the schema
contains all the required stored procedures
     EXCEPTION     Schema is missing a required procedure:
GETREPOSITORYFEATURES
   Completed schema test: TEST_REQUIRED_PROCEDURES --> Test that the
schema contains all the required stored procedures +++ FAIL
   Starting schema test:  TEST_REQUIRED_VIEWS  Test that the schema
contains all the required database views
   Completed schema test: TEST_REQUIRED_VIEWS --> Test that the schema
contains all the required database views +++ PASS
   Starting index test for table MDS_ATTRIBUTES:  TEST_REQUIRED_INDEXES --
> Test that the table contains all the required indexes
   Completed index test for table MDS_ATTRIBUTES: TEST_REQUIRED_INDEXES --
> Test that the table contains all the required indexes +++ PASS
   Starting index test for table MDS_COMPONENTS:  TEST_REQUIRED_INDEXES --
> Test that the table contains all the required indexes
   Completed index test for table MDS_TXN_LOCKS: TEST_REQUIRED_INDEXES -->
Test that the table contains all the required indexes +++ PASS
   Starting schema test:  TEST_REQUIRED_TRIGGERS  Test that the schema has
all the required triggers
   Completed schema test: TEST_REQUIRED_TRIGGERS --> Test that the schema
has all the required triggers +++ PASS
   Starting schema test:  TEST_MISSING_COLUMNS  Test that tables and views
are not missing any required columns
   Completed schema test: TEST_MISSING_COLUMNS --> Test that tables and
views are not missing any required columns +++ PASS
   Starting schema test:  TEST_UNEXPECTED_TABLES  Test that the schema
does not contain any unexpected tables
   Completed schema test: TEST_UNEXPECTED_TABLES --> Test that the schema
does not contain any unexpected tables +++ PASS
   Starting schema test:  TEST_UNEXPECTED_PROCEDURES  Test that the schema
does not contain any unexpected stored procedures
   Completed schema test: TEST_UNEXPECTED_PROCEDURES --> Test that the
schema does not contain any unexpected stored procedures +++ PASS
   Starting schema test:  TEST_UNEXPECTED_VIEWS  Test that the schema does
not contain any unexpected views
   Completed schema test: TEST_UNEXPECTED_VIEWS --> Test that the schema
does not contain any unexpected views +++ PASS
   Starting index test for table MDS_ATTRIBUTES:  TEST_UNEXPECTED_INDEXES
--> Test that the table does not contain any unexpected indexes
   Completed index test for table MDS_ATTRIBUTES: TEST_UNEXPECTED_INDEXES
--> Test that the table does not contain any unexpected indexes +++ PASS
   Completed index test for table MDS_LABELS: TEST_UNEXPECTED_INDEXES -->
Test that the table does not contain any unexpected indexes +++ PASS
   Starting index test for table MDS_LARGE_ATTRIBUTES:
TEST_UNEXPECTED_INDEXES --> Test that the table does not contain any
unexpected indexes
   Starting schema test:  TEST_UNEXPECTED_TRIGGERS  Test that the schema
does not contain any unexpected triggers
   Completed schema test: TEST_UNEXPECTED_TRIGGERS --> Test that the
schema does not contain any unexpected triggers +++ PASS
   Starting schema test:  TEST_UNEXPECTED_COLUMNS  Test that tables and
views do not contain any unexpected columns
```

```
   Completed schema test: TEST_UNEXPECTED_COLUMNS --> Test that tables and
views do not contain any unexpected columns +++ PASS
   Starting datatype test for table MDS_ATTRIBUTES:
TEST_COLUMN_DATATYPES_V2 --> Test that all table columns have the proper
datatypes
   Completed datatype test for table MDS_ATTRIBUTES:
TEST_COLUMN_DATATYPES_V2 --> Test that all table columns have the proper
datatypes +++ PASS
   Starting datatype test for table MDS_COMPONENTS:
TEST_COLUMN_DATATYPES_V2 --> Test that all table columns have the proper
datatypes
   Starting permissions test:  TEST_DBA_TABLE_GRANTS  Test that DBA user
has privilege to view all user tables
   Completed permissions test: TEST_DBA_TABLE_GRANTS --> Test that DBA
user has privilege to view all user tables +++ PASS
   Starting schema test:  TEST_ENOUGH_TABLESPACE  Test that the schema
tablespaces automatically extend if full
   Completed schema test: TEST_ENOUGH_TABLESPACE --> Test that the schema
tablespaces automatically extend if full +++ PASS
   Starting schema test:  TEST_USER_TABLESPACE_QUOTA  Test that tablespace
quota for this user is sufficient to perform the upgrade
   Completed schema test: TEST_USER_TABLESPACE_QUOTA --> Test that
tablespace quota for this user is sufficient to perform the upgrade +++
PASS
   Starting schema test:  TEST_ONLINE_TABLESPACE  Test that schema
tablespaces are online
   Completed schema test: TEST_ONLINE_TABLESPACE --> Test that schema
tablespaces are online +++ PASS
   Starting schema test:  TEST_DATABASE_VERSION  Test that the database
server version number is supported for upgrade
     INFO   Database product version: Oracle Database 11g Enterprise
Edition Release 11.2.0.3.0 - 64bit Production
With the Partitioning, OLAP, Data Mining and Real Application Testing
options
   Completed schema test: TEST_DATABASE_VERSION --> Test that the database
server version number is supported for upgrade +++ PASS
   Finished readiness check of Oracle Metadata Services with status:
FAILURE.
```

If you are running the 12.1.3.0 version of Oracle Fusion Middleware IAU Schemas, and those schemas were upgraded from 11*g* (11.1.1.7 and later) or 12*c* (12.1.2.0), your readiness check may fail with the following error:

```
Starting index test for table IAU_COMMON:  TEST_REQUIRED_INDEXES --> Test
that the table contains all the required indexes
     INFO Audit schema index DYN_EVENT_CATEGORY_INDEX in table IAU_COMMON is
missing the required columns or index itself is missing. This maybe caused by
a known issue, anyway, this missing index will be added in 12.2.2 upgrade.
     INFO Audit schema index DYN_EVENT_TYPE_INDEX in table IAU_COMMON is
missing the required columns or index itself is missing. This maybe caused by
a known issue, anyway, this missing index will be added in 12.2.2 upgrade.
     INFO Audit schema index DYN_TENANT_INDEX in table IAU_COMMON is missing
the required columns or index itself is missing. This maybe caused by a known
issue, anyway, this missing index will be added in 12.2.2 upgrade.
     INFO Audit schema index DYN_USER_INDEX in table IAU_COMMON is missing
```

```
the required columns or index itself is missing. This maybe caused by a known
issue, anyway, this missing index will be added in 12.2.2 upgrade.
     INFO Audit schema index DYN_COMPONENT_TYPE_INDEX in table IAU_COMMON is
missing the required columns or index itself is missing. This maybe caused by
a known issue, anyway, this missing index will be added in 12.2.2 upgrade.
     INFO Audit schema index DYN_USER_TENANT_INDEX in table IAU_COMMON is
missing the required columns or index itself is missing. This maybe caused by
a known issue, anyway, this missing index will be added in 12.2.2 upgrade.
   Completed index test for table IAU_COMMON: TEST_REQUIRED_INDEXES --> Test
that the table contains all the required indexes +++ FAIL
```

> **Note:**
>
> You can ignore the missing index error in the readiness report. This is a known issue. The corresponding missing index is added during the schema upgrade operation. This error does not occur if the schema to be upgraded was created in 12*c* using the RCU.

Stopping Servers and Processes

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

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

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

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

Step 1: Stop System Components

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

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

You can stop system components in any order.

Step 2: Stop the Managed Servers

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

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

When prompted, enter your user name and password.

Step 3: Stop Oracle Identity Management Components

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

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

Step 4: Stop the Administration Server

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

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

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

When prompted, enter your user name, password, and the URL of the Administration Server.

> **Note:**
>
> If external password storage is set up for the repository, then the server hosting the credential store should be up and running so that the work repository password can be retrieved during upgrade. See Setting Up External Password Storage in *Administering Oracle Data Integrator*.

Step 5: Stop Node Manager

To stop Node Manager, close the command shell in which it is running.

Alternatively, after setting the `nodemanager.properties` attribute `QuitEnabled` to `true` (the default is `false`), you can use WLST to connect to Node Manager and shut it down. See stopNodeManager in *WLST Command Reference for WebLogic Server*.

Upgrading Product Schemas

After stopping servers and processes, use the Upgrade Assistant to upgrade supported product schemas to the current release of Oracle Fusion Middleware.

The Upgrade Assistant allows you to upgrade individually selected schemas or all schemas associated with a domain. The option you select determines which Upgrade Assistant screens you will use.

- Starting the Upgrade Assistant
  Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 12*c* (12.2.1.3.0). Oracle recommends that you run the Upgrade Assistant as a non-SYSDBA user, completing the upgrade for one domain at a time.
- Upgrading Product Schemas Using the Upgrade Assistant
  Navigate through the screens in the Upgrade Assistant to upgrade the product schemas.
- Verifying the Schema Upgrade
  After completing all the upgrade steps, verify that the upgrade was successful by checking that the schema version in `schema_version_registry` has been properly updated.

Starting the Upgrade Assistant

Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 12*c* (12.2.1.3.0). Oracle recommends that you run the Upgrade Assistant as a non-SYSDBA user, completing the upgrade for one domain at a time.

To start the Upgrade Assistant:

> **Note:**
>
> Before you start the Upgrade Assistant, make sure that the JVM character encoding is set to UTF-8 for the platform on which the Upgrade Assistant is running. If the character encoding is not set to UTF-8, then you will not be able to download files containing Unicode characters in their names. This can cause the upgrade to fail.

1. Go to the `oracle_common/upgrade/bin` directory:
   - (UNIX) *`NEW_ORACLE_HOME`*`/oracle_common/upgrade/bin`
   - (Windows) *`NEW_ORACLE_HOME`*`\oracle_common\upgrade\bin`
2. Start the Upgrade Assistant:
   - (UNIX) `./ua`
   - (Windows) `ua.bat`

For information about other parameters that you can specify on the command line, such as logging parameters, see:

- Upgrade Assistant Parameters

Upgrade Assistant Parameters

When you start the Upgrade Assistant from the command line, you can specify additional parameters.

Table 7-4 Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-readiness`	Required for readiness checks **Note**: Readiness checks cannot be performed on standalone installations (those not managed by the WebLogic Server).	Performs the upgrade readiness check without performing an actual upgrade. Schemas and configurations are checked. Do not use this parameter if you have specified the `-examine` parameter.
`-threads`	Optional	Identifies the number of threads available for concurrent schema upgrades or readiness checks of the schemas. The value must be a positive integer in the range 1 to 8. The default is 4.
`-response`	Required for silent upgrades or silent readiness checks	Runs the Upgrade Assistant using inputs saved to a response file generated from the data that is entered when the Upgrade Assistant is run in GUI mode. Using this parameter runs the Upgrade Assistant in *silent mode* (without displaying Upgrade Assistant screens).
`-examine`	Optional	Performs the examine phase but does not perform an actual upgrade. Do not specify this parameter if you have specified the `-readiness` parameter.

Table 7-4 (Cont.) Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-logLevel` *attribute*	Optional	Sets the logging level, specifying one of the following attributes: • `TRACE` • `NOTIFICATION` • `WARNING` • `ERROR` • `INCIDENT_ERROR` The default logging level is `NOTIFICATION`. Consider setting the `-logLevel TRACE` attribute to so that more information is logged. This is useful when troubleshooting a failed upgrade. The Upgrade Assistant's log files can become very large if `-logLevel TRACE` is used.
`-logDir` *location*	Optional	Sets the default location of upgrade log files and temporary files. You must specify an existing, writable directory where the Upgrade Assistant creates log files and temporary files. The default locations are: (UNIX) *NEW_ORACLE_HOME*`/oracle_common/upgrade/logs` *NEW_ORACLE_HOME*`/oracle_common/upgrade/temp` (Windows) *NEW_ORACLE_HOME*`\oracle_common\upgrade\logs` *NEW_ORACLE_HOME*`\oracle_common\upgrade\temp`
`-help`	Optional	Displays all of the command-line options.

Upgrading Product Schemas Using the Upgrade Assistant

Navigate through the screens in the Upgrade Assistant to upgrade the product schemas.

> **Notes:**
>
> - If you are using external authentication, make sure that external authentication is changed to internal authentication before upgrading product schemas.
> - **Edition-based redefinition (EBR) Users Only:** Before upgrading an Edition-Based Redefinition (EBR) enabled schema, you must connect to the database server and create an edition on the database server for 12*c*. The new edition for 12*c* must be a child of your existing 12*c* edition. See Creating an Edition on the Server for Editions-Based Redefinition.

> **Note:**
>
> Make sure that the administration and managed servers are stopped before you launch the Upgrade Assistant.

To upgrade product schemas with the Upgrade Assistant:

1. On the Welcome screen, review the introduction to the Upgrade Assistant and information about important pre-upgrade tasks. Click **Next**.

   > **Note:**
   >
   > For more information about any Upgrade Assistant screen, click **Help** on the screen.

2. On the Selected Schemas screen, select **Individually Selected Schemas**.

   > **Caution:**
   >
   > Upgrade only those schemas that are used to support your 12*c* (12.2.1.3.0) components. Do not upgrade schemas that are currently being used to support components that are not included in Oracle Fusion Middleware 12*c* (12.2.1.3.0).

   Click **Next**.

3. On the Available Components screen, select **Oracle Data Integrator** to upgrade the Master and Work Repository schema.

4. On the Prerequisites screen, acknowledge that the prerequisites have been met by selecting all the check boxes. Click **Next**.

> **Note:**
>
> The Upgrade Assistant does not verify whether the prerequisites have been met.

5. On the ODI Schema screen, specify the database connection details for each schema you are upgrading:
   - Select the database type from the **Database Type** drop-down menu.
   - Enter the database connection details, and click **Connect**.
   - Select the schema you want to upgrade from the **Schema User Name** drop-down menu, and then enter the password for the schema. Be sure to use the correct schema prefix for the schemas you are upgrading.
6. On the ODI Options screen, select all of the options.

Table 7-5 ODI Options

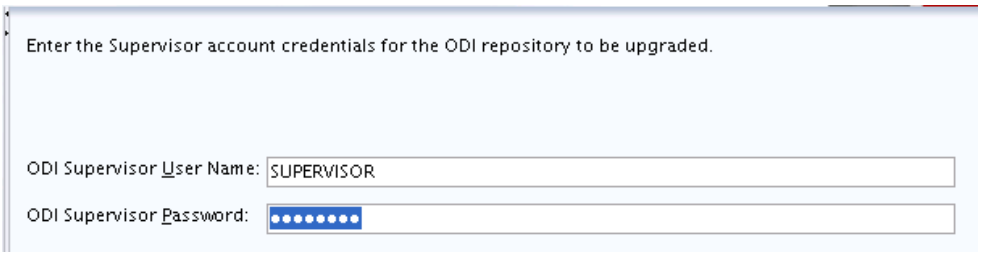
Option	Description
Replace Knowledge Modules with mandatory updates	This selection replaces standard Knowledge Modules with the newest version. Customizations to Oracle installed Knowledge Modules will be overwritten. But if you copy an installed Knowledge Module and customize the Knowledge Module, the customizations are not lost.
Upgrade topology and security metadata	This selection replaces topology and security artifacts such as Technologies, Datatypes, Security Profiles and others with the newest version. Customizations of installed objects will be overwritten. If the object is copied and customized, then the customizations are not lost.

See Advanced Upgrade Options.

7. On the ODI Supervisor screen, enter the Supervisor account credentials for the ODI repository to be upgraded.

   The installed Supervisor account is `SUPERVISOR`. Check with your ODI administrator for proper Supervisor account name and password, supplied when prompted by the Repository Creation Utility (RCU) when creating the Master and Work repositories for ODI.

Figure 7-2 Account credentials for the ODI repository



> **Note:**
>
> When **All Schemas Used by a Domain** is selected, the Supervisor credentials for ODI are not pre-populated in the first instance as the domain does not contain them. If there are multiple ODI schemas, the Upgrade Assistant populates the user entry using the first set of credentials.

8. On the Examine screen, review the status of the Upgrade Assistant as it examines each schema, verifying that the schema is ready for upgrade. If the status is **Examine finished**, click **Next**.

   If the examine phase fails, Oracle recommends that you cancel the upgrade by clicking **No** in the Examination Failure dialog. Click **View Log** to see what caused the error and refer to Troubleshooting Your Upgrade in *Upgrading with the Upgrade Assistant* for information on resolving common upgrade errors.

   > **Note:**
   >
   > - If you resolve any issues detected during the examine phase without proceeding with the upgrade, you can start the Upgrade Assistant again without restoring from backup. However, if you proceed by clicking **Yes** in the Examination Failure dialog box, you need to restore your pre-upgrade environment from backup before you start the Upgrade Assistant again.
   > - Canceling the examination process has no effect on the schemas or configuration data; the only consequence is that the information the Upgrade Assistant has collected must be collected again in a future upgrade session.

9. The Upgrade Summary screen lists the schemas that will be upgraded and/or created.

   Verify that the correct Source and Target Versions are listed for each schema that you intend to upgrade.

   If you want to save these options to a response file to run the Upgrade Assistant again later in response (or silent) mode, click **Save Response File** and provide the location and the name of the response file. A silent upgrade performs exactly the same function that the Upgrade Assistant performs, but you do not have to manually enter the data again.

   Click **Next**.

10. On the Upgrade Progress screen, monitor the status of the upgrade.

    > **Caution:**
    >
    > Allow the Upgrade Assistant enough time to perform the upgrade. Do not cancel the upgrade operation unless absolutely necessary. Doing so may result in an unstable environment.

If any schemas are not upgraded successfully, refer to the Upgrade Assistant log files for more information.

> **Note:**
>
> The progress bar on this screen displays the progress of the current upgrade procedure. It does not indicate the time remaining for the upgrade.

Click **Next**.

11. If the upgrade is successful: On the Upgrade Success screen, click **Close** to complete the upgrade and close the wizard.

    If the upgrade fails: On the Upgrade Failure screen, click **View Log** to view and troubleshoot the errors. The logs are available at *NEW_ORACLE_HOME*`/oracle_common/upgrade/logs`.

> **Note:**
>
> If the upgrade fails, you must restore your pre-upgrade environment from backup, fix the issues, then restart the Upgrade Assistant.

Verifying the Schema Upgrade

After completing all the upgrade steps, verify that the upgrade was successful by checking that the schema version in `schema_version_registry` has been properly updated.

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

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

In the query result:

- Check that the number in the `VERSION` column matches the latest version number for that schema. For example, verify that the schema version number is 12.2.1.3.0.

> **Note:**
>
> However, that not all schema versions will be updated. Some schemas do not require an upgrade to this release and will retain their pre-upgrade version number.

- 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.
- Synonym objects owned by `IAU_APPEND` and `IAU_VIEWER` will appear as `INVALID`, but that does not indicate a failure.

  They become invalid because the target object changes after the creation of the synonym. The synonyms objects will become valid when they are accessed. You can safely ignore these `INVALID` objects.

About Reconfiguring the Domain

Run the Reconfiguration Wizard to reconfigure your domain component configurations to 12*c* (12.2.1.3.0).

When you reconfigure a WebLogic Server domain, the following items are automatically updated, depending on the applications in the domain:

- WebLogic Server core infrastructure
- Domain version

> **Note:**
>
> Before you begin the domain reconfiguration, note the following limitations:
>
> - The Reconfiguration Wizard does not update any of your own applications that are included in the domain.
> - Transforming a non-dynamic cluster domain to a dynamic cluster domain during the upgrade process is not supported.
>
>   The dynamic cluster feature is available when running the Reconfiguration Wizard, but Oracle only supports upgrading a non-dynamic cluster upgrade and then adding dynamic clusters. You cannot add dynamic cluster during the upgrade process.

Specifically, when you reconfigure a domain, the following occurs:

- The domain version number in the `config.xml` file for the domain is updated to the Administration Server's installed WebLogic Server version.
- Reconfiguration templates for all installed Oracle products are automatically selected and applied to the domain. These templates define any reconfiguration tasks that are required to make the WebLogic domain compatible with the current WebLogic Server version.

- Start scripts are updated.

  If you want to preserve your modified start scripts, be sure to back them up before starting the Reconfiguration Wizard.

> **Note:**
>
> When the domain reconfiguration process starts, you can't undo the changes that it makes. Before running the Reconfiguration Wizard, ensure that you have backed up the domain as covered in the pre-upgrade checklist. If an error or other interruption occurs while running the Reconfiguration Wizard, you must restore the domain by copying the files and directories from the backup location to the original domain directory. This is the only way to ensure that the domain has been returned to its original state before reconfiguration.

Follow these instructions to reconfigure the existing domain using the Reconfiguration Wizard. See Reconfiguring WebLogic Domains in *Upgrading Oracle WebLogic Server*.

- Backing Up the Domain
- Starting the Reconfiguration Wizard
- Reconfiguring the Domain with the Reconfiguration Wizard

Backing Up the Domain

Before running the Reconfiguration Wizard, create a backup copy of the domain directory.

To create a backup of the domain directory:

1. Copy the source domain to a separate location to preserve the contents.

   (Windows) `copy C:\domains\mydomain to C:\domains\mydomain_backup`.

   (UNIX) `cp mydomain /domains/mydomain_backup`

2. Before updating the domain on each remote Managed Server, create a backup copy of the domain directory on each remote machine.
3. Verify that the backed up versions of the domain are complete.

If domain reconfiguration fails for any reason, you must copy all files and directories from the backup directory into the original domain directory to ensure that the domain is returned entirely to its original state before reconfiguration.

Starting the Reconfiguration Wizard

> **Note:**
>
> Shut down the administration server and all collocated managed servers before starting the reconfiguration process. See Stopping Servers and Processes .

To start the Reconfiguration Wizard in graphical mode:

1. Sign in to the system on which the domain resides.
2. Open the command shell (on UNIX operating systems) or open a 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 child edition name.
4. Go to the `oracle_common/common/bin` directory:
   - (UNIX) *NEW_ORACLE_HOME*`/oracle_common/common/bin`
   - (Windows) *NEW_ORACLE_HOME*`\oracle_common\commom\bin`
5. Start the Reconfiguration Wizard with the following logging options:
   - (UNIX) `./reconfig.sh -log=`*log_file*` -log_priority=ALL`
   - (Windows) `reconfig.cmd -log=`*log_file*` -log_priority=ALL`

   where *log_file* is 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.

   The parameter `-log_priority=ALL` ensures that logs are logged in fine mode.

> **Note:**
>
> When you run this command, the following error message might appear 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*

Reconfiguring the Domain with the Reconfiguration Wizard

Navigate through the screens in the Reconfiguration Wizard to reconfigure your existing domain before running the Upgrade Assistant

> **Note:**
>
> If the source is a clustered environment, run the Reconfiguration Wizard on the primary node only. Use the `pack` and `unpack` utilities to apply the changes to other cluster members in the domain.

To reconfigure the domain with the Reconfiguration Wizard:

1. On the Select Domain screen, specify the location of the domain you want to upgrade or click **Browse** to navigate and select the domain directory. Click **Next**.
2. On the Reconfiguration Setup Progress screen, view the progress of the setup process. When complete, click **Next**.

   During this process:

   - The reconfiguration templates for your installed products, including Fusion Middleware products, are automatically applied. This updates various domain configuration files such as `config.xml`, `config-groups.xml`, and `security.xml` (among others).
   - Schemas, scripts, and other such files that support your Fusion Middleware products are updated.
   - The domain upgrade is validated.
3. On the Domain Mode and JDK screen, select the JDK to use in the domain or click **Browse** to navigate to the JDK you want to use. The supported JDK version for 12*c* (12.2.1.3.0) is 1.8.0_131 and later. Click **Next**.

   > **Note:**
   >
   > You cannot change the **Domain Mode** at this stage.

   For a list of JDKs that are supported for a specific platform, see Oracle Fusion Middleware Supported System Configurations.
4. On the Database Configuration Type screen, select **RCU Data** to connect to the Server Table (_STB) schema.

   Enter the database connection details using the RCU service table (_STB) schema credentials and click **Get RCU Configuration**.

   The Reconfiguration Wizard uses this connection to automatically configure the data sources required for components in your domain.

   > **Note:**
   >
   > By default **Oracle's Driver (Thin) for Service connections; Versions: Any** is the selected driver. If you specified an instance name in your connection details — instead of the service name — you must select **Oracle's Driver (Thin) for pooled instance connections; Versions: Any** If you do not change the driver type, then the connection will fail.

> **Note:**
>
> For any existing 11*g* datasource, the reconfiguration will preserve the existing values. For new datasources where the schema was created for 12*c* by the RCU, the default connection data will be retrieved from the _STB schema. If no connection data for a given schema is found in the _STB schema, then the default connection data is used.

If the check is successful, click **Next**. If the check fails, reenter the connection details correctly and try again.

> **Note:**
>
> If you are upgrading from 11*g*, and your database has _OPSS or _IAU 11*g* database schemas, you must manually enter database connection details for those schemas. These schemas were not required in 11*g* and had to be created manually. Users could assign any name to these schemas, therefore the Reconfiguration Wizard does not recognize them. When providing connection information for _IAU, use the IAU_APPEND user information.

5. On the JDBC Component Schema screen, verify that the DBMS/Service and the Host name is correct for each component schema and click **Next**.
6. On the JDBC Component Schema Test screen, select all the component schemas and click **Test Selected Connections** to test the connection for each schema. The result of the test is indicated in the Status column.

   When the check is complete, click **Next**.
7. On the Advanced Configuration screen, you can select all categories 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.

   > **Note:**
   >
   > The categories that are listed on the Advanced Configuration screen depend on the resources defined in the templates you selected for the domain.

   For this upgrade, select none of the options and click **Next**.
8. On the Configuration Summary screen, 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.

   To change the configuration, click **Back** to return to the appropriate screen. To reconfigure the domain, click **Reconfig**.

> **Note:**
>
> The location of the domain does not change when you reconfigure it.

9. The Reconfiguration Progress screen displays the progress of the reconfiguration process.

   During this process:

   - Domain information is extracted, saved, and updated.
   - Schemas, scripts, and other such files that support your Fusion Middleware products are updated.

   When the progress bar shows 100%, click **Next**.

10. The End of Configuration screen indicates whether the reconfiguration process completed successfully or failed. It also displays the location of the domain that was reconfigured as well as the Administration Server URL (including the listen port). If the reconfiguration is successful, it displays **Oracle WebLogic Server Reconfiguration Succeeded**.

    If the reconfiguration process did not complete successfully, an error message is displayed indicates the reason. Take appropriate action to resolve the issue. If you cannot resolve the issue, contact My Oracle Support.

    Note the Domain Location and the Admin Server URL for further operations.

Upgrading Domain Component Configurations

After reconfiguring the domain, use the Upgrade Assistant to upgrade the domain *component* configurations inside the domain to match the updated domain configuration.

- Starting the Upgrade Assistant
  Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 12*c* (12.2.1.3.0). Oracle recommends that you run the Upgrade Assistant as a non-SYSDBA user, completing the upgrade for one domain at a time.
- Upgrading Domain Component Configurations Using the Upgrade Assistant
  Navigate through the screens in the Upgrade Assistant to upgrade component configurations in the WebLogic domain.

Starting the Upgrade Assistant

Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 12*c* (12.2.1.3.0). Oracle recommends that you run the Upgrade Assistant as a non-SYSDBA user, completing the upgrade for one domain at a time.

To start the Upgrade Assistant:

> **Note:**
>
> Before you start the Upgrade Assistant, make sure that the JVM character encoding is set to UTF-8 for the platform on which the Upgrade Assistant is running. If the character encoding is not set to UTF-8, then you will not be able to download files containing Unicode characters in their names. This can cause the upgrade to fail.

1. Go to the `oracle_common/upgrade/bin` directory:
   - (UNIX) *`NEW_ORACLE_HOME`*`/oracle_common/upgrade/bin`
   - (Windows) *`NEW_ORACLE_HOME`*`\oracle_common\upgrade\bin`
2. Start the Upgrade Assistant:
   - (UNIX) `./ua`
   - (Windows) `ua.bat`

For information about other parameters that you can specify on the command line, such as logging parameters, see:

- Upgrade Assistant Parameters

Upgrade Assistant Parameters

When you start the Upgrade Assistant from the command line, you can specify additional parameters.

Table 7-6 Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-readiness`	Required for readiness checks **Note**: Readiness checks cannot be performed on standalone installations (those not managed by the WebLogic Server).	Performs the upgrade readiness check without performing an actual upgrade. Schemas and configurations are checked. Do not use this parameter if you have specified the `-examine` parameter.
`-threads`	Optional	Identifies the number of threads available for concurrent schema upgrades or readiness checks of the schemas. The value must be a positive integer in the range 1 to 8. The default is 4.

Table 7-6 (Cont.) Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-response`	Required for silent upgrades or silent readiness checks	Runs the Upgrade Assistant using inputs saved to a response file generated from the data that is entered when the Upgrade Assistant is run in GUI mode. Using this parameter runs the Upgrade Assistant in *silent mode* (without displaying Upgrade Assistant screens).
`-examine`	Optional	Performs the examine phase but does not perform an actual upgrade. Do not specify this parameter if you have specified the `-readiness` parameter.
`-logLevel` *`attribute`*	Optional	Sets the logging level, specifying one of the following attributes: • `TRACE` • `NOTIFICATION` • `WARNING` • `ERROR` • `INCIDENT_ERROR` The default logging level is `NOTIFICATION`. Consider setting the `-logLevel TRACE` attribute to so that more information is logged. This is useful when troubleshooting a failed upgrade. The Upgrade Assistant's log files can become very large if `-logLevel TRACE` is used.

Table 7-6 (Cont.) Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-logDir` *location*	Optional	Sets the default location of upgrade log files and temporary files. You must specify an existing, writable directory where the Upgrade Assistant creates log files and temporary files. The default locations are: (UNIX) *NEW_ORACLE_HOME*`/oracle_common/upgrade/logs` *NEW_ORACLE_HOME*`/oracle_common/upgrade/temp` (Windows) *NEW_ORACLE_HOME*`\oracle_common\upgrade\logs` *NEW_ORACLE_HOME*`\oracle_common\upgrade\temp`
`-help`	Optional	Displays all of the command-line options.

Upgrading Domain Component Configurations Using the Upgrade Assistant

Navigate through the screens in the Upgrade Assistant to upgrade component configurations in the WebLogic domain.

After running the Reconfiguration Wizard to reconfigure the WebLogic domain to 12*c* (12.2.1.3.0), you must run the Upgrade Assistant to upgrade the domain *component* configurations to match the updated domain configuration.

To upgrade domain component configurations with the Upgrade Assistant:

1. On the Welcome screen, review an introduction to the Upgrade Assistant and information about important pre-upgrade tasks. Click **Next**.

> **Note:**
>
> For more information about any Upgrade Assistant screen, click **Help** on the screen.

2. On the next screen:

- Select **All Configurations Used By a Domain**. The screen name changes to WebLogic Components.
- In the **Domain Directory** field, enter the WebLogic domain directory path.

Click **Next**.

3. On the Component List screen, verify that the list includes all the components for which you want to upgrade configurations and click **Next**.

   If you do not see the components you want to upgrade, click **Back** to go to the previous screen and specify a different domain.

4. On the Prerequisites screen, acknowledge that the prerequisites have been met by selecting all the check boxes. Click **Next**.

   > **Note:**
   >
   > The Upgrade Assistant does not verify whether the prerequisites have been met.

5. On the Examine screen, review the status of the Upgrade Assistant as it examines each component, verifying that the component configuration is ready for upgrade. If the status is **Examine finished**, click **Next**.

   If the examine phase fails, Oracle recommends that you cancel the upgrade by clicking **No** in the Examination Failure dialog. Click **View Log** to see what caused the error and refer to Troubleshooting Your Upgrade in *Upgrading with the Upgrade Assistant* for information on resolving common upgrade errors.

   > **Note:**
   >
   > - If you resolve any issues detected during the examine phase without proceeding with the upgrade, you can start the Upgrade Assistant again without restoring from backup. However, if you proceed by clicking **Yes** in the Examination Failure dialog box, you need to restore your pre-upgrade environment from backup before starting the Upgrade Assistant again.
   > - Canceling the examination process has no effect on the configuration data; the only consequence is that the information the Upgrade Assistant has collected must be collected again in a future upgrade session.

6. On the Upgrade Summary screen, review the summary of the options you have selected for component configuration upgrade.

   The response file collects and stores all the information that you have entered, and enables you to perform a silent upgrade at a later time. The silent upgrade performs exactly the same function that the Upgrade Assistant performs, but you do not have to manually enter the data again. If you want to save these options to a response file, click **Save Response File** and provide the location and name of the response file.

   Click **Upgrade** to start the upgrade process.

7. On the Upgrade Progress screen, monitor the status of the upgrade.

> **Caution:**
>
> Allow the Upgrade Assistant enough time to perform the upgrade. Do not cancel the upgrade operation unless absolutely necessary. Doing so may result in an unstable environment.

If any components are not upgraded successfully, refer to the Upgrade Assistant log files for more information.

> **Note:**
>
> The progress bar on this screen displays the progress of the current upgrade procedure. It does not indicate the time remaining for the upgrade.

Click **Next**.

8. If the upgrade is successful: On the Upgrade Success screen, click **Close** to complete the upgrade and close the wizard. The Post-Upgrade Actions window describes the manual tasks you must perform to make components functional in the new installation. This window appears only if a component has post-upgrade steps.

   If the upgrade fails: On the Upgrade Failure screen, click **View Log** to view and troubleshoot the errors. The logs are available at *`NEW_ORACLE_HOME`*`/oracle_common/upgrade/logs`.

> **Note:**
>
> If the upgrade fails you must restore your pre-upgrade environment from backup, fix the issues, then restart the Upgrade Assistant.

Starting Servers and Processes

After a successful upgrade, restart all processes and servers, including the Administration Server and any Managed Servers.

The components may be dependent on each other so they must be started in the correct order.

> **Note:**
>
> The procedures in this section describe how to start servers and process using the WLST command line or a script. You can also use the Oracle Fusion Middleware Control and the Oracle WebLogic Server Administration Console. See Starting and Stopping Administration and Managed Servers and Node Manager in *Administering Oracle Fusion Middleware.*

To start your Fusion Middleware environment, follow the steps below:

Step 1: Start the Administration Server

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

To start the Administration Server, use the `startWebLogic` script:

- (UNIX) *`NEW_DOMAIN_HOME`*`/bin/startWebLogic.sh`
- (Windows) *`NEW_DOMAIN_HOME`*`\bin\startWebLogic.cmd`

When prompted, enter your user name, password, and the URL of the Administration Server.

Step 2: Start Node Manager

To start Node Manager, use the `startNodeManager` script:

- (UNIX) *`NEW_DOMAIN_HOME`*`/bin/startNodeManager.sh`
- (Windows) *`NEW_DOMAIN_HOME`*`\bin\startNodeManager.cmd`

Step 3: Start Oracle Identity Management Components

Start any Oracle Identity Management components, such as Oracle Internet Directory, that form part of your environment:

- (UNIX) *`NEW_DOMAIN_HOME`*`/bin/startComponent.sh` *`component_name`*
- (Windows) *`NEW_DOMAIN_HOME`*`\bin\startComponent.cmd` *`component_name`*

Step 4: Start the Managed Servers

To start a WebLogic Server Managed Server, use the `startManagedWebLogic` script:

- (UNIX) *`NEW_DOMAIN_HOME`*`/bin/startManagedWebLogic.sh` *`managed_server_name admin_url`*
- (Windows) *`NEW_DOMAIN_HOME`*`\bin\startManagedWebLogic.cmd` *`managed_server_name admin_url`*

When prompted, enter your user name and password.

> **Note:**
>
> The startup of a Managed Server will typically start the applications that are deployed to it. Therefore, it should not be necessary to manually start applications after the Managed Server startup.

Step 5: Start System Components

To start system components, such as Oracle HTTP Server, use the `startComponent` script:

- (UNIX) *`NEW_DOMAIN_HOME`*`/bin/startComponent.sh` *`component_name`*
- (Windows) *`NEW_DOMAIN_HOME`*`\bin\startComponent.cmd` *`component_name`*

You can start system components in any order.

Step 6: Change to External Authentication

If you changed to internal authentication before upgrading product schemas, change back to external authentication after starting servers and processes.

8

Upgrading an Oracle Data Integrator Java EE Agent Environment from a Previous 12*c* Release

You can upgrade an Oracle Data Integrator Java EE agent environment from a previous Oracle Fusion Middleware 12*c* release to 12*c* (12.2.1.3.0).

- About Oracle Data Integrator Java EE Agent Upgrade Process
  Review the process flowchart for an overview of the upgrade process for an Oracle Data Integrator Java EE agent.
- Installing Oracle Data Integrator Java EE Environment
  Before beginning your upgrade, download Oracle Data Integrator 12*c* (12.2.1.3.0) distribution on the target system and install it using Oracle Universal Installer.
- Running a Pre-Upgrade Readiness Check
  To identify potential issues with the upgrade, Oracle recommends that you run a readiness check before you start the upgrade process. Be aware that the readiness check may not be able to discover all potential issues with your upgrade. An upgrade may still fail, even if the readiness check reports success.
- Stopping Servers and Processes
  Before you run the Upgrade Assistant to upgrade your schemas and configurations, you must shut down all of the pre-upgrade processes and servers, including the Administration Server and any managed servers.
- Upgrading Product Schemas
  After stopping servers and processes, use the Upgrade Assistant to upgrade supported product schemas to the current release of Oracle Fusion Middleware.
- About Reconfiguring the Domain
  Run the Reconfiguration Wizard to reconfigure your domain component configurations to 12*c* (12.2.1.3.0).
- Upgrading Domain Component Configurations
  After reconfiguring the domain, use the Upgrade Assistant to upgrade the domain *component* configurations inside the domain to match the updated domain configuration.
- Starting Servers and Processes
  After a successful upgrade, restart all processes and servers, including the Administration Server and any Managed Servers.

About Oracle Data Integrator Java EE Agent Upgrade Process

Review the process flowchart for an overview of the upgrade process for an Oracle Data Integrator Java EE agent.

Figure 8-1 Oracle Data Integrator Java EE Agent Upgrade Process Flowchart

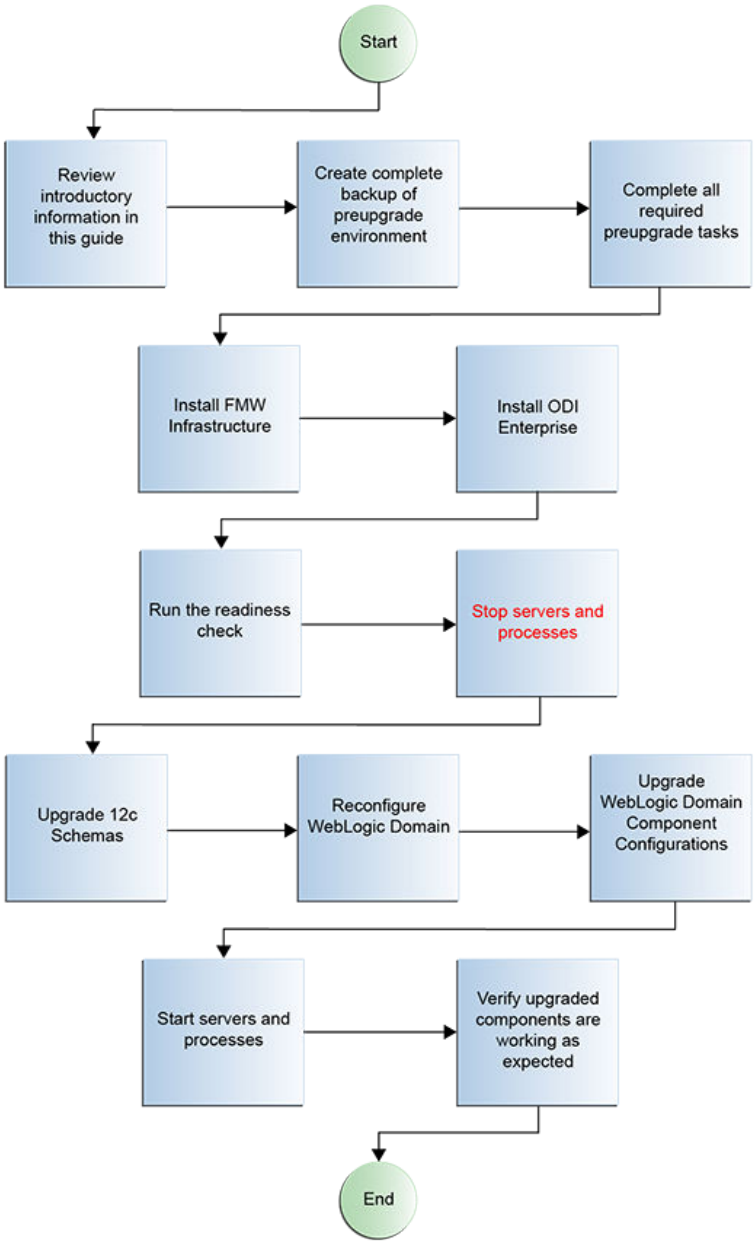


Table 8-1 Tasks for Upgrading Oracle Data Integrator Java EE Agent from a Previous 12*c* Release

Task	Description
Required If you have not done so already, review the introductory topics in this guide and complete the required pre-upgrade tasks.	See: • Introduction to Upgrading Oracle Data Integrator to 12*c* (12.2.1.3.0) • Pre-Upgrade Requirements
Required Install Oracle Fusion Middleware Infrastructure and Oracle Data Integrator 12*c* (12.2.1.3.0) in the new Oracle home.	See Installing Oracle Data Integrator Java EE Environment.
Optional Run a pre-upgrade readiness check.	See Running a Pre-Upgrade Readiness Check.
Required Shut down the 12*c* environment (stop all Administration and Managed Servers).	**WARNING:** Failure to shut down your servers during an upgrade may lead to data corruption. See Stopping Servers and Processes.
Required Start the Upgrade Assistant to upgrade the database schemas and to migrate all active (in flight) instance data.	See Upgrading Product Schemas. **Note:** The upgrade of active instance data is started automatically when running the Upgrade Assistant. Once the data is successfully upgraded to the new 12*c* (12.2.1.3.0) environment, you can close the Upgrade Assistant. The closed instances will continue to upgrade through a background process.
Required Start the Reconfiguration Wizard to reconfigure the domain.	Run the Configuration Wizard to update the existing domain to use the newly installed software. See Reconfiguring the Domain.
Required if JRF component upgrade needed Start the Upgrade Assistant (again) to upgrade domain component configurations.	Run the Upgrade Assistant to update the reconfigured domain's component configurations. See Upgrading Domain Component Configurations.

Table 8-1 (Cont.) Tasks for Upgrading Oracle Data Integrator Java EE Agent from a Previous 12*c* Release

Task	Description
Required Restart the servers and the 12*c* (12.2.1.3.0) instance.	When the upgrade process is complete, restart the 12*c* (12.2.1.3.0) instance. See Starting Servers and Processes.
Required Verify the upgrade.	Ensure all of the upgraded components are working as expected before deleting your backups.

Installing Oracle Data Integrator Java EE Environment

Before beginning your upgrade, download Oracle Data Integrator 12*c* (12.2.1.3.0) distribution on the target system and install it using Oracle Universal Installer.

> **Note:**
>
> The ODI Enterprise installation process will automatically install Oracle Fusion Middleware Infrastructure if it is not already installed.

To install Oracle Data Integrator Java EE environment:

1. Sign in to the target system.
2. Download the following from Oracle Technology Network or Oracle Software Delivery Cloud to your target system:
   - Oracle Data Integrator (`fmw_12.2.1.3.0_odi_Disk1_1of2.zip` and `fmw_12.2.1.3.0_odi_Disk1_2of2.zip`)
3. Change to the directory where you downloaded the 12*c* (12.2.1.3.0) product distribution.
4. Unzip the installer `fmw_12.2.1.3.0_odi_Disk1_1of2.zip` and `fmw_12.2.1.3.0_odi_Disk1_2of2.zip` files.
5. Start the ODI installation:

   (UNIX) *JDK_HOME*`/bin/java -jar fmw_12.2.1.3.0_odi_generic.jar`

   (Windows) *JDK_HOME*`\bin\java -jar fmw_12.2.1.3.0_odi_generic.jar`
6. On UNIX operating systems, the Installation Inventory Setup screen appears if this is the first time you are installing an Oracle product on this host.

   Specify the location where you want to create your central inventory. Make sure that the operating system group name selected on this screen has write permissions to the central inventory location, and click **Next**.

> **Note:**
>
> The Installation Inventory Setup screen does not appear on Windows operating systems.

7. On the Welcome screen, review the information to make sure that you have met all the prerequisites. Click **Next**.
8. On the Auto Updates screen, select an option:
   - **Skip Auto Updates**: If you do not want your system to check for software updates at this time.
   - **Select patches from directory**: To navigate to a local directory if you downloaded patch files.
   - **Search My Oracle Support for Updates**: To automatically download software updates if you have a My Oracle Support account. You must enter Oracle Support credentials then click **Search**. To configure a proxy server for the installer to access My Oracle Support, click **Proxy Settings**. Click **Test Connection** to test the connection.

   Click **Next**.
9. On the Installation Location screen, specify the location for the Oracle home directory and click **Next**.

   For more information about Oracle Fusion Middleware directory structure, see Understanding Directories for Installation and Configuration in *Oracle Fusion Middleware Planning an Installation of Oracle Fusion Middleware*.
10. On the Installation Type screen, select **Enterprise Installation**.

    Click **Next**.
11. The Prerequisite Checks screen analyzes the host computer to ensure that the specific operating system prerequisites have been met.

    To view the list of tasks that are verified, select **View Successful Tasks**. To view log details, select **View Log**. If any prerequisite check fails, then an error message appears at the bottom of the screen. Fix the error and click **Rerun** to try again. To ignore the error or the warning message and continue with the installation, click **Skip** (not recommended).
12. On the Installation Summary screen, verify the installation options that you selected.

    If you want to save these options to a response file, click **Save Response File** and enter the response file location and name. The response file collects and stores all the information that you have entered, and enables you to perform a silent installation (from the command line) at a later time.
    Click **Install** to begin the installation.
13. On the Installation Progress screen, when the progress bar displays 100%, click **Finish** to dismiss the installer, or click **Next** to see a summary.
14. The Installation Complete screen displays the Installation Location and the Feature Sets that are installed. Review this information and click **Finish** to close the installer.

Running a Pre-Upgrade Readiness Check

To identify potential issues with the upgrade, Oracle recommends that you run a readiness check before you start the upgrade process. Be aware that the readiness check may not be able to discover all potential issues with your upgrade. An upgrade may still fail, even if the readiness check reports success.

- About Running a Pre-Upgrade Readiness Check
  You can run the Upgrade Assistant in `-readiness` mode to detect issues before you perform the actual upgrade. You can run the readiness check in GUI mode using the Upgrade Assistant or in silent mode using a response file.
- Starting the Upgrade Assistant in Readiness Mode
  Use the `-readiness` parameter to start the Upgrade Assistant in readiness mode.
- Performing a Readiness Check with the Upgrade Assistant
  Navigate through the screens in the Upgrade Assistant to complete the pre-upgrade readiness check.
- Understanding the Readiness Report
  After performing a readiness check for your domain, review the report to determine whether you need to take any action for a successful upgrade.

About Running a Pre-Upgrade Readiness Check

You can run the Upgrade Assistant in `-readiness` mode to detect issues before you perform the actual upgrade. You can run the readiness check in GUI mode using the Upgrade Assistant or in silent mode using a response file.

The Upgrade Assistant readiness check performs a read-only, pre-upgrade review of your Fusion Middleware schemas and WebLogic domain configurations that are at a supported starting point. The review is a read-only operation.

The readiness check generates a formatted, time-stamped readiness report so you can address potential issues before you attempt the actual upgrade. If no issues are detected, you can begin the upgrade process. Oracle recommends that you read this report thoroughly before performing an upgrade.

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

You can run the readiness check any number of times before performing any actual upgrade. However, do not run the readiness check after an upgrade has been performed, as the report results may differ from the result of pre-upgrade readiness checks.

> **Note:**
>
> To prevent performance from being affected, Oracle recommends that you run the readiness check during off-peak hours.

Starting the Upgrade Assistant in Readiness Mode

Use the `-readiness` parameter to start the Upgrade Assistant in readiness mode.

To perform a readiness check on your pre-upgrade environment with the Upgrade Assistant:

1. Go to the `oracle_common/upgrade/bin` directory:
   - (UNIX) *`NEW_ORACLE_HOME`*`/oracle_common/upgrade/bin`
   - (Windows) *`NEW_ORACLE_HOME`*`\oracle_common\upgrade\bin`
2. Start the Upgrade Assistant.
   - (UNIX) `./ua -readiness`
   - (Windows) `ua.bat -readiness`

> **Note:**
>
> If the `DISPLAY` environment variable is not set up properly to allow for GUI mode, you may encounter the following error:
>
> ```
> Xlib: connection to ":1.0" refused by server
> Xlib: No protocol specified
> ```
>
> To resolve this issue, set the `DISPLAY` environment variable to the system name or IP address of your local workstation, and rerun Upgrade Assistant.
>
> If you continue to receive these errors after setting `DISPLAY`, try launching another GUI tool, such as `vncconfig`. If you see the same errors, your `DISPLAY` environment variable may still not be set correctly.

For information about other parameters that you can specify on the command line, see:

- Upgrade Assistant Parameters

Upgrade Assistant Parameters

When you start the Upgrade Assistant from the command line, you can specify additional parameters.

Table 8-2 Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-readiness`	Required for readiness checks **Note**: Readiness checks cannot be performed on standalone installations (those not managed by the WebLogic Server).	Performs the upgrade readiness check without performing an actual upgrade. Schemas and configurations are checked. Do not use this parameter if you have specified the `-examine` parameter.
`-threads`	Optional	Identifies the number of threads available for concurrent schema upgrades or readiness checks of the schemas. The value must be a positive integer in the range 1 to 8. The default is 4.
`-response`	Required for silent upgrades or silent readiness checks	Runs the Upgrade Assistant using inputs saved to a response file generated from the data that is entered when the Upgrade Assistant is run in GUI mode. Using this parameter runs the Upgrade Assistant in *silent mode* (without displaying Upgrade Assistant screens).
`-examine`	Optional	Performs the examine phase but does not perform an actual upgrade. Do not specify this parameter if you have specified the `-readiness` parameter.
`-logLevel` *`attribute`*	Optional	Sets the logging level, specifying one of the following attributes: • `TRACE` • `NOTIFICATION` • `WARNING` • `ERROR` • `INCIDENT_ERROR` The default logging level is `NOTIFICATION`. Consider setting the `-logLevel TRACE` attribute to so that more information is logged. This is useful when troubleshooting a failed upgrade. The Upgrade Assistant's log files can become very large if `-logLevel TRACE` is used.

Table 8-2 (Cont.) Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-logDir` *location*	Optional	Sets the default location of upgrade log files and temporary files. You must specify an existing, writable directory where the Upgrade Assistant creates log files and temporary files. The default locations are: (UNIX) *NEW_ORACLE_HOME*`/oracle_common/upgrade/logs` *NEW_ORACLE_HOME*`/oracle_common/upgrade/temp` (Windows) *NEW_ORACLE_HOME*`\oracle_common\upgrade\logs` *NEW_ORACLE_HOME*`\oracle_common\upgrade\temp`
`-help`	Optional	Displays all of the command-line options.

Performing a Readiness Check with the Upgrade Assistant

Navigate through the screens in the Upgrade Assistant to complete the pre-upgrade readiness check.

Readiness checks are performed only on schemas or component configurations that are at a supported upgrade starting point.

To complete the readiness check:

1. On the Welcome screen, review information about the readiness check. Click **Next**.
2. On the Readiness Check Type screen, select the readiness check that you want to perform:
   - **Individually Selected Schemas** allows you to select individual schemas for review before upgrade. The readiness check reports whether a schema is supported for an upgrade or where an upgrade is needed.
     When you select this option, the screen name changes to Selected Schemas.
   - **Domain Based** allows the Upgrade Assistant to discover and select all upgrade-eligible schemas or component configurations in the domain specified in the **Domain Directory** field.

When you select this option, the screen name changes to Schemas and Configuration.

Leave the default selection if you want the Upgrade Assistant to check all schemas and component configurations at the same time, or select a specific option:

- **Include checks for all schemas** to discover and review all components that have a schema available to upgrade.
- **Include checks for all configurations** to review component configurations for a managed WebLogic Server domain.

Click **Next**.

3. If you selected **Individually Selected Schemas**: On the Available Components screen, select the components that have a schema available to upgrade for which you want to perform a readiness check.

   If you selected **Domain Based**: On the Component List screen, review the list of components that are present in your domain for which you want to perform a readiness check.

   If you select a component that has dependent components, those components are automatically selected. For example, if you select Oracle Platform Security Services, Oracle Audit Services is automatically selected.

   Depending on the components you select, additional screens may display. For example, you may need to:

   - Specify the domain directory.
   - Specify schema credentials to connect to the selected schema: **Database Type**, **DBA User Name**, and **DBA Password**. Then click **Connect**.

     > **Note:**
     >
     > Oracle database is the default database type. Make sure that you select the correct database type before you continue. If you discover that you selected the wrong database type, do not go back to this screen to change it to the correct type. Instead, close the Upgrade Assistant and restart the readiness check with the correct database type selected to ensure that the correct database type is applied to all schemas.

   - Select the **Schema User Name** option and specify the **Schema Password**.

   Click **Next** to start the readiness check.

4. On the Readiness Summary screen, review the summary of the readiness checks that will be performed based on your selections.

   If you want to save your selections to a response file to run the Upgrade Assistant again later in response (or silent) mode, click **Save Response File** and provide the location and name of the response file. A silent upgrade performs exactly the same function that the Upgrade Assistant performs, but you do not have to manually enter the data again.

   For a detailed report, click **View Log**.

   Click **Next**.

5. On the Readiness Check screen, review the status of the readiness check. The process can take several minutes.

   If you are checking multiple components, the progress of each component displays in its own progress bar in parallel.

   When the readiness check is complete, click **Continue**.

6. On the End of Readiness screen, review the results of the readiness check (**Readiness Success** or **Readiness Failure**):

   - If the readiness check is successful, click **View Readiness Report** to review the complete report. Oracle recommends that you review the Readiness Report before you perform the actual upgrade even when the readiness check is successful. Use the **Find** option to search for a particular word or phrase within the report. The report also indicates where the completed Readiness Check Report file is located.
   - If the readiness check encounters an issue or error, click **View Log** to review the log file, identify and correct the issues, and then restart the readiness check. The log file is managed by the command-line options you set.

Understanding the Readiness Report

After performing a readiness check for your domain, review the report to determine whether you need to take any action for a successful upgrade.

The format of the readiness report file is:

`readiness_`*`timestamp`*`.txt`

where *`timestamp`* indicates the date and time of when the readiness check was run.

A readiness report contains the following information:

Table 8-3 Readiness Report Elements

Report Information	Description	Required Action
Overall Readiness Status: SUCCESS or FAILURE	The top of the report indicates whether the readiness check passed or completed with one or more errors.	If the report completed with one or more errors, search for FAIL and correct the failing issues before attempting to upgrade. You can re-run the readiness check as many times as necessary before an upgrade.
Timestamp	The date and time that the report was generated.	No action required.
Log file location *`NEW_ORACLE_HOME`*`/oracle_common/upgrade/logs`	The directory location of the generated log file.	No action required.
Readiness report location *`NEW_ORACLE_HOME`*`/oracle_common/upgrade/logs`	The directory location of the generated readiness report.	No action required.

Table 8-3 (Cont.) Readiness Report Elements

Report Information	Description	Required Action
Names of components that were checked	The names and versions of the components included in the check and status.	If your domain includes components that cannot be upgraded to this release, such as SOA Core Extension, do not attempt an upgrade.
Names of schemas that were checked	The names and current versions of the schemas included in the check and status.	Review the version numbers of your schemas. If your domain includes schemas that cannot be upgraded to this release, do not attempt an upgrade.
Individual Object Test Status: FAIL	The readiness check test detected an issue with a specific object.	Do not upgrade until all failed issues have been resolved.
Individual Object Test Status: PASS	The readiness check test detected no issues for the specific object.	If your readiness check report shows only the PASS status, you can upgrade your environment. Note, however, that the Readiness Check cannot detect issues with externals such as hardware or connectivity during an upgrade. You should always monitor the progress of your upgrade.
Completed Readiness Check of <Object> Status: FAILURE	The readiness check detected one or more errors that must be resolved for a particular object such as a schema, an index, or datatype.	Do not upgrade until all failed issues have been resolved.
Completed Readiness Check of <Object> Status: SUCCESS	The readiness check test detected no issues.	No action required.

Here is a sample Readiness Report file. Your report may not include all of these checks.

```
Upgrade readiness check completed with one or more errors.

This readiness check report was created on Tue May 30 11:15:52 EDT 2016
Log file is located at: NEW_ORACLE_HOME/oracle_common/upgrade/logs/
ua2016-05-30-11-14-06AM.log
Readiness Check Report File: NEW_ORACLE_HOME/oracle_common/upgrade/logs/
readiness2016-05-30-11-15-52AM.txt

Starting readiness check of components.

Oracle Metadata Services
   Starting readiness check of Oracle Metadata Services.
     Schema User Name: DEV11_MDS
     Database Type: Oracle Database
     Database Connect String: machinename@yourcompany.com
     VERSION Schema DEV11_MDS is currently at version 12.1.1.1.0.
Readiness checks will now be performed.
   Starting schema test:  TEST_REQUIRED_TABLES  Test that the schema
contains all the required tables
```

```
   Completed schema test: TEST_REQUIRED_TABLES --> Test that the schema
contains all the required tables +++ PASS
   Starting schema test:  TEST_REQUIRED_PROCEDURES  Test that the schema
contains all the required stored procedures
     EXCEPTION     Schema is missing a required procedure:
GETREPOSITORYFEATURES
   Completed schema test: TEST_REQUIRED_PROCEDURES --> Test that the
schema contains all the required stored procedures +++ FAIL
   Starting schema test:  TEST_REQUIRED_VIEWS  Test that the schema
contains all the required database views
   Completed schema test: TEST_REQUIRED_VIEWS --> Test that the schema
contains all the required database views +++ PASS
   Starting index test for table MDS_ATTRIBUTES:  TEST_REQUIRED_INDEXES --
> Test that the table contains all the required indexes
   Completed index test for table MDS_ATTRIBUTES: TEST_REQUIRED_INDEXES --
> Test that the table contains all the required indexes +++ PASS
   Starting index test for table MDS_COMPONENTS:  TEST_REQUIRED_INDEXES --
> Test that the table contains all the required indexes
   Completed index test for table MDS_TXN_LOCKS: TEST_REQUIRED_INDEXES -->
Test that the table contains all the required indexes +++ PASS
   Starting schema test:  TEST_REQUIRED_TRIGGERS  Test that the schema has
all the required triggers
   Completed schema test: TEST_REQUIRED_TRIGGERS --> Test that the schema
has all the required triggers +++ PASS
   Starting schema test:  TEST_MISSING_COLUMNS  Test that tables and views
are not missing any required columns
   Completed schema test: TEST_MISSING_COLUMNS --> Test that tables and
views are not missing any required columns +++ PASS
   Starting schema test:  TEST_UNEXPECTED_TABLES  Test that the schema
does not contain any unexpected tables
   Completed schema test: TEST_UNEXPECTED_TABLES --> Test that the schema
does not contain any unexpected tables +++ PASS
   Starting schema test:  TEST_UNEXPECTED_PROCEDURES  Test that the schema
does not contain any unexpected stored procedures
   Completed schema test: TEST_UNEXPECTED_PROCEDURES --> Test that the
schema does not contain any unexpected stored procedures +++ PASS
   Starting schema test:  TEST_UNEXPECTED_VIEWS  Test that the schema does
not contain any unexpected views
   Completed schema test: TEST_UNEXPECTED_VIEWS --> Test that the schema
does not contain any unexpected views +++ PASS
   Starting index test for table MDS_ATTRIBUTES:  TEST_UNEXPECTED_INDEXES
--> Test that the table does not contain any unexpected indexes
   Completed index test for table MDS_ATTRIBUTES: TEST_UNEXPECTED_INDEXES
--> Test that the table does not contain any unexpected indexes +++ PASS
   Completed index test for table MDS_LABELS: TEST_UNEXPECTED_INDEXES -->
Test that the table does not contain any unexpected indexes +++ PASS
   Starting index test for table MDS_LARGE_ATTRIBUTES:
TEST_UNEXPECTED_INDEXES --> Test that the table does not contain any
unexpected indexes
   Starting schema test:  TEST_UNEXPECTED_TRIGGERS  Test that the schema
does not contain any unexpected triggers
   Completed schema test: TEST_UNEXPECTED_TRIGGERS --> Test that the
schema does not contain any unexpected triggers +++ PASS
   Starting schema test:  TEST_UNEXPECTED_COLUMNS  Test that tables and
views do not contain any unexpected columns
```

```
   Completed schema test: TEST_UNEXPECTED_COLUMNS --> Test that tables and
views do not contain any unexpected columns +++ PASS
   Starting datatype test for table MDS_ATTRIBUTES:
TEST_COLUMN_DATATYPES_V2 --> Test that all table columns have the proper
datatypes
   Completed datatype test for table MDS_ATTRIBUTES:
TEST_COLUMN_DATATYPES_V2 --> Test that all table columns have the proper
datatypes +++ PASS
   Starting datatype test for table MDS_COMPONENTS:
TEST_COLUMN_DATATYPES_V2 --> Test that all table columns have the proper
datatypes
   Starting permissions test:  TEST_DBA_TABLE_GRANTS  Test that DBA user
has privilege to view all user tables
   Completed permissions test: TEST_DBA_TABLE_GRANTS --> Test that DBA
user has privilege to view all user tables +++ PASS
   Starting schema test:  TEST_ENOUGH_TABLESPACE  Test that the schema
tablespaces automatically extend if full
   Completed schema test: TEST_ENOUGH_TABLESPACE --> Test that the schema
tablespaces automatically extend if full +++ PASS
   Starting schema test:  TEST_USER_TABLESPACE_QUOTA  Test that tablespace
quota for this user is sufficient to perform the upgrade
   Completed schema test: TEST_USER_TABLESPACE_QUOTA --> Test that
tablespace quota for this user is sufficient to perform the upgrade +++
PASS
   Starting schema test:  TEST_ONLINE_TABLESPACE  Test that schema
tablespaces are online
   Completed schema test: TEST_ONLINE_TABLESPACE --> Test that schema
tablespaces are online +++ PASS
   Starting schema test:  TEST_DATABASE_VERSION  Test that the database
server version number is supported for upgrade
     INFO   Database product version: Oracle Database 11g Enterprise
Edition Release 11.2.0.3.0 - 64bit Production
With the Partitioning, OLAP, Data Mining and Real Application Testing
options
   Completed schema test: TEST_DATABASE_VERSION --> Test that the database
server version number is supported for upgrade +++ PASS
   Finished readiness check of Oracle Metadata Services with status:
FAILURE.
```

If you are running the 12.1.3.0 version of Oracle Fusion Middleware IAU Schemas, and those schemas were upgraded from 11*g* (11.1.1.7 and later) or 12*c* (12.1.2.0), your readiness check may fail with the following error:

```
Starting index test for table IAU_COMMON:  TEST_REQUIRED_INDEXES --> Test
that the table contains all the required indexes
     INFO Audit schema index DYN_EVENT_CATEGORY_INDEX in table IAU_COMMON is
missing the required columns or index itself is missing. This maybe caused by
a known issue, anyway, this missing index will be added in 12.2.2 upgrade.
     INFO Audit schema index DYN_EVENT_TYPE_INDEX in table IAU_COMMON is
missing the required columns or index itself is missing. This maybe caused by
a known issue, anyway, this missing index will be added in 12.2.2 upgrade.
     INFO Audit schema index DYN_TENANT_INDEX in table IAU_COMMON is missing
the required columns or index itself is missing. This maybe caused by a known
issue, anyway, this missing index will be added in 12.2.2 upgrade.
     INFO Audit schema index DYN_USER_INDEX in table IAU_COMMON is missing
```

```
the required columns or index itself is missing. This maybe caused by a known
issue, anyway, this missing index will be added in 12.2.2 upgrade.
     INFO Audit schema index DYN_COMPONENT_TYPE_INDEX in table IAU_COMMON is
missing the required columns or index itself is missing. This maybe caused by
a known issue, anyway, this missing index will be added in 12.2.2 upgrade.
     INFO Audit schema index DYN_USER_TENANT_INDEX in table IAU_COMMON is
missing the required columns or index itself is missing. This maybe caused by
a known issue, anyway, this missing index will be added in 12.2.2 upgrade.
   Completed index test for table IAU_COMMON: TEST_REQUIRED_INDEXES --> Test
that the table contains all the required indexes +++ FAIL
```

> **Note:**
>
> You can ignore the missing index error in the readiness report. This is a known issue. The corresponding missing index is added during the schema upgrade operation. This error does not occur if the schema to be upgraded was created in 12*c* using the RCU.

Stopping Servers and Processes

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

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

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

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

Step 1: Stop System Components

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

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

You can stop system components in any order.

Step 2: Stop the Managed Servers

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

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

When prompted, enter your user name and password.

Step 3: Stop Oracle Identity Management Components

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

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

Step 4: Stop the Administration Server

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

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

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

When prompted, enter your user name, password, and the URL of the Administration Server.

> **Note:**
>
> If external password storage is set up for the repository, then the server hosting the credential store should be up and running so that the work repository password can be retrieved during upgrade. See Setting Up External Password Storage in *Administering Oracle Data Integrator*.

Step 5: Stop Node Manager

To stop Node Manager, close the command shell in which it is running.

Alternatively, after setting the `nodemanager.properties` attribute `QuitEnabled` to `true` (the default is `false`), you can use WLST to connect to Node Manager and shut it down. See stopNodeManager in *WLST Command Reference for WebLogic Server*.

Upgrading Product Schemas

After stopping servers and processes, use the Upgrade Assistant to upgrade supported product schemas to the current release of Oracle Fusion Middleware.

The Upgrade Assistant allows you to upgrade individually selected schemas or all schemas associated with a domain. The option you select determines which Upgrade Assistant screens you will use.

- Starting the Upgrade Assistant
  Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 12*c* (12.2.1.3.0). Oracle recommends that you run the Upgrade Assistant as a non-SYSDBA user, completing the upgrade for one domain at a time.
- Upgrading Product Schemas Using the Upgrade Assistant
  Navigate through the screens in the Upgrade Assistant to upgrade the product schemas.
- Verifying the Schema Upgrade
  After completing all the upgrade steps, verify that the upgrade was successful by checking that the schema version in `schema_version_registry` has been properly updated.

Starting the Upgrade Assistant

Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 12*c* (12.2.1.3.0). Oracle recommends that you run the Upgrade Assistant as a non-SYSDBA user, completing the upgrade for one domain at a time.

To start the Upgrade Assistant:

> **Note:**
>
> Before you start the Upgrade Assistant, make sure that the JVM character encoding is set to UTF-8 for the platform on which the Upgrade Assistant is running. If the character encoding is not set to UTF-8, then you will not be able to download files containing Unicode characters in their names. This can cause the upgrade to fail.

1. Go to the `oracle_common/upgrade/bin` directory:
   - (UNIX) *`NEW_ORACLE_HOME`*`/oracle_common/upgrade/bin`
   - (Windows) *`NEW_ORACLE_HOME`*`\oracle_common\upgrade\bin`
2. Start the Upgrade Assistant:
   - (UNIX) `./ua`
   - (Windows) `ua.bat`

For information about other parameters that you can specify on the command line, such as logging parameters, see:

- Upgrade Assistant Parameters

Upgrade Assistant Parameters

When you start the Upgrade Assistant from the command line, you can specify additional parameters.

Table 8-4 Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-readiness`	Required for readiness checks **Note**: Readiness checks cannot be performed on standalone installations (those not managed by the WebLogic Server).	Performs the upgrade readiness check without performing an actual upgrade. Schemas and configurations are checked. Do not use this parameter if you have specified the `-examine` parameter.
`-threads`	Optional	Identifies the number of threads available for concurrent schema upgrades or readiness checks of the schemas. The value must be a positive integer in the range 1 to 8. The default is 4.
`-response`	Required for silent upgrades or silent readiness checks	Runs the Upgrade Assistant using inputs saved to a response file generated from the data that is entered when the Upgrade Assistant is run in GUI mode. Using this parameter runs the Upgrade Assistant in *silent mode* (without displaying Upgrade Assistant screens).
`-examine`	Optional	Performs the examine phase but does not perform an actual upgrade. Do not specify this parameter if you have specified the `-readiness` parameter.

Table 8-4 (Cont.) Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-logLevel` *attribute*	Optional	Sets the logging level, specifying one of the following attributes: • `TRACE` • `NOTIFICATION` • `WARNING` • `ERROR` • `INCIDENT_ERROR` The default logging level is `NOTIFICATION`. Consider setting the `-logLevel TRACE` attribute to so that more information is logged. This is useful when troubleshooting a failed upgrade. The Upgrade Assistant's log files can become very large if `-logLevel TRACE` is used.
`-logDir` *location*	Optional	Sets the default location of upgrade log files and temporary files. You must specify an existing, writable directory where the Upgrade Assistant creates log files and temporary files. The default locations are: (UNIX) *NEW_ORACLE_HOME*`/oracle_common/upgrade/logs` *NEW_ORACLE_HOME*`/oracle_common/upgrade/temp` (Windows) *NEW_ORACLE_HOME*`\oracle_common\upgrade\logs` *NEW_ORACLE_HOME*`\oracle_common\upgrade\temp`
`-help`	Optional	Displays all of the command-line options.

Upgrading Product Schemas Using the Upgrade Assistant

Navigate through the screens in the Upgrade Assistant to upgrade the product schemas.

> **Notes:**
>
> - If you are using external authentication, make sure that external authentication is changed to internal authentication before upgrading product schemas.
> - **Edition-based redefinition (EBR) Users Only:** Before upgrading an Edition-Based Redefinition (EBR) enabled schema, you must connect to the database server and create an edition on the database server for 12*c*. The new edition for 12*c* must be a child of your existing 12*c* edition. See Creating an Edition on the Server for Editions-Based Redefinition.

> **Note:**
>
> Make sure that the administration and managed servers are stopped before you launch the Upgrade Assistant.

To upgrade product schemas with the Upgrade Assistant:

1. On the Welcome screen, review the introduction to the Upgrade Assistant and information about important pre-upgrade tasks. Click **Next**.

   > **Note:**
   >
   > For more information about any Upgrade Assistant screen, click **Help** on the screen.

2. On the Selected Schemas screen, select **Individually Selected Schemas**.

   > **Caution:**
   >
   > Upgrade only those schemas that are used to support your 12*c* (12.2.1.3.0) components. Do not upgrade schemas that are currently being used to support components that are not included in Oracle Fusion Middleware 12*c* (12.2.1.3.0).

   Click **Next**.

3. On the Available Components screen, select **Oracle Data Integrator** to upgrade the Master and Work Repository schema.

4. On the Prerequisites screen, acknowledge that the prerequisites have been met by selecting all the check boxes. Click **Next**.

> **Note:**
>
> The Upgrade Assistant does not verify whether the prerequisites have been met.

5. On the ODI Schema screen, specify the database connection details for each schema you are upgrading:
   - Select the database type from the **Database Type** drop-down menu.
   - Enter the database connection details, and click **Connect**.
   - Select the schema you want to upgrade from the **Schema User Name** drop-down menu, and then enter the password for the schema. Be sure to use the correct schema prefix for the schemas you are upgrading.
6. On the ODI Options screen, select all of the options.

Table 8-5 ODI Options

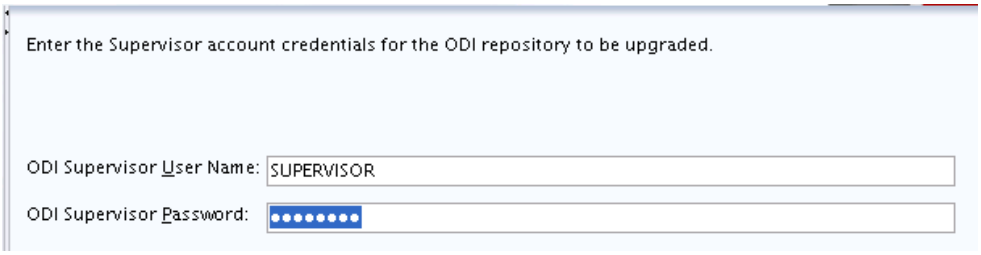
Option	Description
Replace Knowledge Modules with mandatory updates	This selection replaces standard Knowledge Modules with the newest version. Customizations to Oracle installed Knowledge Modules will be overwritten. But if you copy an installed Knowledge Module and customize the Knowledge Module, the customizations are not lost.
Upgrade topology and security metadata	This selection replaces topology and security artifacts such as Technologies, Datatypes, Security Profiles and others with the newest version. Customizations of installed objects will be overwritten. If the object is copied and customized, then the customizations are not lost.

See Advanced Upgrade Options.

7. On the ODI Supervisor screen, enter the Supervisor account credentials for the ODI repository to be upgraded.

   The installed Supervisor account is `SUPERVISOR`. Check with your ODI administrator for proper Supervisor account name and password, supplied when prompted by the Repository Creation Utility (RCU) when creating the Master and Work repositories for ODI.

Figure 8-2 Account credentials for the ODI repository



> **Note:**
>
> When **All Schemas Used by a Domain** is selected, the Supervisor credentials for ODI are not pre-populated in the first instance as the domain does not contain them. If there are multiple ODI schemas, the Upgrade Assistant populates the user entry using the first set of credentials.

8. On the Examine screen, review the status of the Upgrade Assistant as it examines each schema, verifying that the schema is ready for upgrade. If the status is **Examine finished**, click **Next**.

   If the examine phase fails, Oracle recommends that you cancel the upgrade by clicking **No** in the Examination Failure dialog. Click **View Log** to see what caused the error and refer to Troubleshooting Your Upgrade in *Upgrading with the Upgrade Assistant* for information on resolving common upgrade errors.

> **Note:**
>
> - If you resolve any issues detected during the examine phase without proceeding with the upgrade, you can start the Upgrade Assistant again without restoring from backup. However, if you proceed by clicking **Yes** in the Examination Failure dialog box, you need to restore your pre-upgrade environment from backup before you start the Upgrade Assistant again.
> - Canceling the examination process has no effect on the schemas or configuration data; the only consequence is that the information the Upgrade Assistant has collected must be collected again in a future upgrade session.

9. The Upgrade Summary screen lists the schemas that will be upgraded and/or created.

   Verify that the correct Source and Target Versions are listed for each schema that you intend to upgrade.

   If you want to save these options to a response file to run the Upgrade Assistant again later in response (or silent) mode, click **Save Response File** and provide the location and the name of the response file. A silent upgrade performs exactly the same function that the Upgrade Assistant performs, but you do not have to manually enter the data again.

   Click **Next**.

10. On the Upgrade Progress screen, monitor the status of the upgrade.

> **Caution:**
>
> Allow the Upgrade Assistant enough time to perform the upgrade. Do not cancel the upgrade operation unless absolutely necessary. Doing so may result in an unstable environment.

If any schemas are not upgraded successfully, refer to the Upgrade Assistant log files for more information.

> **Note:**
>
> The progress bar on this screen displays the progress of the current upgrade procedure. It does not indicate the time remaining for the upgrade.

Click **Next**.

11. If the upgrade is successful: On the Upgrade Success screen, click **Close** to complete the upgrade and close the wizard.

    If the upgrade fails: On the Upgrade Failure screen, click **View Log** to view and troubleshoot the errors. The logs are available at *NEW_ORACLE_HOME*`/oracle_common/upgrade/logs`.

> **Note:**
>
> If the upgrade fails, you must restore your pre-upgrade environment from backup, fix the issues, then restart the Upgrade Assistant.

Verifying the Schema Upgrade

After completing all the upgrade steps, verify that the upgrade was successful by checking that the schema version in `schema_version_registry` has been properly updated.

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

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

In the query result:

- Check that the number in the `VERSION` column matches the latest version number for that schema. For example, verify that the schema version number is 12.2.1.3.0.

> **Note:**
>
> However, that not all schema versions will be updated. Some schemas do not require an upgrade to this release and will retain their pre-upgrade version number.

- 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.
- Synonym objects owned by `IAU_APPEND` and `IAU_VIEWER` will appear as `INVALID`, but that does not indicate a failure.

  They become invalid because the target object changes after the creation of the synonym. The synonyms objects will become valid when they are accessed. You can safely ignore these `INVALID` objects.

About Reconfiguring the Domain

Run the Reconfiguration Wizard to reconfigure your domain component configurations to 12*c* (12.2.1.3.0).

When you reconfigure a WebLogic Server domain, the following items are automatically updated, depending on the applications in the domain:

- WebLogic Server core infrastructure
- Domain version

> **Note:**
>
> Before you begin the domain reconfiguration, note the following limitations:
>
> - The Reconfiguration Wizard does not update any of your own applications that are included in the domain.
> - Transforming a non-dynamic cluster domain to a dynamic cluster domain during the upgrade process is not supported.
>
>   The dynamic cluster feature is available when running the Reconfiguration Wizard, but Oracle only supports upgrading a non-dynamic cluster upgrade and then adding dynamic clusters. You cannot add dynamic cluster during the upgrade process.

Specifically, when you reconfigure a domain, the following occurs:

- The domain version number in the `config.xml` file for the domain is updated to the Administration Server's installed WebLogic Server version.
- Reconfiguration templates for all installed Oracle products are automatically selected and applied to the domain. These templates define any reconfiguration tasks that are required to make the WebLogic domain compatible with the current WebLogic Server version.

- Start scripts are updated.

  If you want to preserve your modified start scripts, be sure to back them up before starting the Reconfiguration Wizard.

> **Note:**
>
> When the domain reconfiguration process starts, you can't undo the changes that it makes. Before running the Reconfiguration Wizard, ensure that you have backed up the domain as covered in the pre-upgrade checklist. If an error or other interruption occurs while running the Reconfiguration Wizard, you must restore the domain by copying the files and directories from the backup location to the original domain directory. This is the only way to ensure that the domain has been returned to its original state before reconfiguration.

Follow these instructions to reconfigure the existing domain using the Reconfiguration Wizard. See Reconfiguring WebLogic Domains in *Upgrading Oracle WebLogic Server*.

- Backing Up the Domain
- Starting the Reconfiguration Wizard
- Reconfiguring the Domain with the Reconfiguration Wizard

Backing Up the Domain

Before running the Reconfiguration Wizard, create a backup copy of the domain directory.

To create a backup of the domain directory:

1. Copy the source domain to a separate location to preserve the contents.

   (Windows) `copy C:\domains\mydomain to C:\domains\mydomain_backup`.

   (UNIX) `cp mydomain /domains/mydomain_backup`

2. Before updating the domain on each remote Managed Server, create a backup copy of the domain directory on each remote machine.
3. Verify that the backed up versions of the domain are complete.

If domain reconfiguration fails for any reason, you must copy all files and directories from the backup directory into the original domain directory to ensure that the domain is returned entirely to its original state before reconfiguration.

Starting the Reconfiguration Wizard

> **Note:**
>
> Shut down the administration server and all collocated managed servers before starting the reconfiguration process. See Stopping Servers and Processes .

To start the Reconfiguration Wizard in graphical mode:

1. Sign in to the system on which the domain resides.
2. Open the command shell (on UNIX operating systems) or open a 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 child edition name.
4. Go to the `oracle_common/common/bin` directory:
   - (UNIX) *NEW_ORACLE_HOME*`/oracle_common/common/bin`
   - (Windows) *NEW_ORACLE_HOME*`\oracle_common\commom\bin`
5. Start the Reconfiguration Wizard with the following logging options:
   - (UNIX) `./reconfig.sh -log=`*log_file*` -log_priority=ALL`
   - (Windows) `reconfig.cmd -log=`*log_file*` -log_priority=ALL`

   where *log_file* is 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.

   The parameter `-log_priority=ALL` ensures that logs are logged in fine mode.

> **Note:**
>
> When you run this command, the following error message might appear 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*

Reconfiguring the Domain with the Reconfiguration Wizard

Navigate through the screens in the Reconfiguration Wizard to reconfigure your existing domain before running the Upgrade Assistant

> **Note:**
>
> If the source is a clustered environment, run the Reconfiguration Wizard on the primary node only. Use the `pack` and `unpack` utilities to apply the changes to other cluster members in the domain.

To reconfigure the domain with the Reconfiguration Wizard:

1. On the Select Domain screen, specify the location of the domain you want to upgrade or click **Browse** to navigate and select the domain directory. Click **Next**.
2. On the Reconfiguration Setup Progress screen, view the progress of the setup process. When complete, click **Next**.

   During this process:

   - The reconfiguration templates for your installed products, including Fusion Middleware products, are automatically applied. This updates various domain configuration files such as `config.xml`, `config-groups.xml`, and `security.xml` (among others).
   - Schemas, scripts, and other such files that support your Fusion Middleware products are updated.
   - The domain upgrade is validated.
3. On the Domain Mode and JDK screen, select the JDK to use in the domain or click **Browse** to navigate to the JDK you want to use. The supported JDK version for 12*c* (12.2.1.3.0) is 1.8.0_131 and later. Click **Next**.

   > **Note:**
   >
   > You cannot change the **Domain Mode** at this stage.

   For a list of JDKs that are supported for a specific platform, see Oracle Fusion Middleware Supported System Configurations.
4. On the Database Configuration Type screen, select **RCU Data** to connect to the Server Table (_STB) schema.

   Enter the database connection details using the RCU service table (_STB) schema credentials and click **Get RCU Configuration**.

   The Reconfiguration Wizard uses this connection to automatically configure the data sources required for components in your domain.

   > **Note:**
   >
   > By default **Oracle's Driver (Thin) for Service connections; Versions: Any** is the selected driver. If you specified an instance name in your connection details — instead of the service name — you must select **Oracle's Driver (Thin) for pooled instance connections; Versions: Any** If you do not change the driver type, then the connection will fail.

> **Note:**
>
> For any existing 11*g* datasource, the reconfiguration will preserve the existing values. For new datasources where the schema was created for 12*c* by the RCU, the default connection data will be retrieved from the _STB schema. If no connection data for a given schema is found in the _STB schema, then the default connection data is used.

If the check is successful, click **Next**. If the check fails, reenter the connection details correctly and try again.

> **Note:**
>
> If you are upgrading from 11*g*, and your database has _OPSS or _IAU 11*g* database schemas, you must manually enter database connection details for those schemas. These schemas were not required in 11*g* and had to be created manually. Users could assign any name to these schemas, therefore the Reconfiguration Wizard does not recognize them. When providing connection information for _IAU, use the IAU_APPEND user information.

5. On the JDBC Component Schema screen, verify that the DBMS/Service and the Host name is correct for each component schema and click **Next**.
6. On the JDBC Component Schema Test screen, select all the component schemas and click **Test Selected Connections** to test the connection for each schema. The result of the test is indicated in the Status column.

   When the check is complete, click **Next**.
7. On the Advanced Configuration screen, you can select all categories 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.

   > **Note:**
   >
   > The categories that are listed on the Advanced Configuration screen depend on the resources defined in the templates you selected for the domain.

   For this upgrade, select none of the options and click **Next**.
8. On the Configuration Summary screen, 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.

   To change the configuration, click **Back** to return to the appropriate screen. To reconfigure the domain, click **Reconfig**.

> **Note:**
>
> The location of the domain does not change when you reconfigure it.

9. The Reconfiguration Progress screen displays the progress of the reconfiguration process.

   During this process:

   - Domain information is extracted, saved, and updated.
   - Schemas, scripts, and other such files that support your Fusion Middleware products are updated.

   When the progress bar shows 100%, click **Next**.

10. The End of Configuration screen indicates whether the reconfiguration process completed successfully or failed. It also displays the location of the domain that was reconfigured as well as the Administration Server URL (including the listen port). If the reconfiguration is successful, it displays **Oracle WebLogic Server Reconfiguration Succeeded**.

    If the reconfiguration process did not complete successfully, an error message is displayed indicates the reason. Take appropriate action to resolve the issue. If you cannot resolve the issue, contact My Oracle Support.

    Note the Domain Location and the Admin Server URL for further operations.

Upgrading Domain Component Configurations

After reconfiguring the domain, use the Upgrade Assistant to upgrade the domain *component* configurations inside the domain to match the updated domain configuration.

- Starting the Upgrade Assistant
  Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 12*c* (12.2.1.3.0). Oracle recommends that you run the Upgrade Assistant as a non-SYSDBA user, completing the upgrade for one domain at a time.
- Upgrading Domain Component Configurations Using the Upgrade Assistant
  Navigate through the screens in the Upgrade Assistant to upgrade component configurations in the WebLogic domain.

Starting the Upgrade Assistant

Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 12*c* (12.2.1.3.0). Oracle recommends that you run the Upgrade Assistant as a non-SYSDBA user, completing the upgrade for one domain at a time.

To start the Upgrade Assistant:

> **Note:**
>
> Before you start the Upgrade Assistant, make sure that the JVM character encoding is set to UTF-8 for the platform on which the Upgrade Assistant is running. If the character encoding is not set to UTF-8, then you will not be able to download files containing Unicode characters in their names. This can cause the upgrade to fail.

1. Go to the `oracle_common/upgrade/bin` directory:
   - (UNIX) *`NEW_ORACLE_HOME`*`/oracle_common/upgrade/bin`
   - (Windows) *`NEW_ORACLE_HOME`*`\oracle_common\upgrade\bin`
2. Start the Upgrade Assistant:
   - (UNIX) `./ua`
   - (Windows) `ua.bat`

For information about other parameters that you can specify on the command line, such as logging parameters, see:

- Upgrade Assistant Parameters

Upgrade Assistant Parameters

When you start the Upgrade Assistant from the command line, you can specify additional parameters.

Table 8-6 Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-readiness`	Required for readiness checks **Note**: Readiness checks cannot be performed on standalone installations (those not managed by the WebLogic Server).	Performs the upgrade readiness check without performing an actual upgrade. Schemas and configurations are checked. Do not use this parameter if you have specified the `-examine` parameter.
`-threads`	Optional	Identifies the number of threads available for concurrent schema upgrades or readiness checks of the schemas. The value must be a positive integer in the range 1 to 8. The default is 4.

Table 8-6 (Cont.) Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-response`	Required for silent upgrades or silent readiness checks	Runs the Upgrade Assistant using inputs saved to a response file generated from the data that is entered when the Upgrade Assistant is run in GUI mode. Using this parameter runs the Upgrade Assistant in *silent mode* (without displaying Upgrade Assistant screens).
`-examine`	Optional	Performs the examine phase but does not perform an actual upgrade. Do not specify this parameter if you have specified the `-readiness` parameter.
`-logLevel` *`attribute`*	Optional	Sets the logging level, specifying one of the following attributes: • `TRACE` • `NOTIFICATION` • `WARNING` • `ERROR` • `INCIDENT_ERROR` The default logging level is `NOTIFICATION`. Consider setting the `-logLevel TRACE` attribute to so that more information is logged. This is useful when troubleshooting a failed upgrade. The Upgrade Assistant's log files can become very large if `-logLevel TRACE` is used.

Table 8-6 (Cont.) Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-logDir` *location*	Optional	Sets the default location of upgrade log files and temporary files. You must specify an existing, writable directory where the Upgrade Assistant creates log files and temporary files. The default locations are: (UNIX) *NEW_ORACLE_HOME*`/oracle_common/upgrade/logs` *NEW_ORACLE_HOME*`/oracle_common/upgrade/temp` (Windows) *NEW_ORACLE_HOME*`\oracle_common\upgrade\logs` *NEW_ORACLE_HOME*`\oracle_common\upgrade\temp`
`-help`	Optional	Displays all of the command-line options.

Upgrading Domain Component Configurations Using the Upgrade Assistant

Navigate through the screens in the Upgrade Assistant to upgrade component configurations in the WebLogic domain.

After running the Reconfiguration Wizard to reconfigure the WebLogic domain to 12*c* (12.2.1.3.0), you must run the Upgrade Assistant to upgrade the domain *component* configurations to match the updated domain configuration.

To upgrade domain component configurations with the Upgrade Assistant:

1. On the Welcome screen, review an introduction to the Upgrade Assistant and information about important pre-upgrade tasks. Click **Next**.

> **Note:**
>
> For more information about any Upgrade Assistant screen, click **Help** on the screen.

2. On the next screen:

- Select **All Configurations Used By a Domain**. The screen name changes to WebLogic Components.
- In the **Domain Directory** field, enter the WebLogic domain directory path.

Click **Next**.

3. On the Component List screen, verify that the list includes all the components for which you want to upgrade configurations and click **Next**.

   If you do not see the components you want to upgrade, click **Back** to go to the previous screen and specify a different domain.

4. On the Prerequisites screen, acknowledge that the prerequisites have been met by selecting all the check boxes. Click **Next**.

   > **Note:**
   >
   > The Upgrade Assistant does not verify whether the prerequisites have been met.

5. On the Examine screen, review the status of the Upgrade Assistant as it examines each component, verifying that the component configuration is ready for upgrade. If the status is **Examine finished**, click **Next**.

   If the examine phase fails, Oracle recommends that you cancel the upgrade by clicking **No** in the Examination Failure dialog. Click **View Log** to see what caused the error and refer to Troubleshooting Your Upgrade in *Upgrading with the Upgrade Assistant* for information on resolving common upgrade errors.

   > **Note:**
   >
   > - If you resolve any issues detected during the examine phase without proceeding with the upgrade, you can start the Upgrade Assistant again without restoring from backup. However, if you proceed by clicking **Yes** in the Examination Failure dialog box, you need to restore your pre-upgrade environment from backup before starting the Upgrade Assistant again.
   > - Canceling the examination process has no effect on the configuration data; the only consequence is that the information the Upgrade Assistant has collected must be collected again in a future upgrade session.

6. On the Upgrade Summary screen, review the summary of the options you have selected for component configuration upgrade.

   The response file collects and stores all the information that you have entered, and enables you to perform a silent upgrade at a later time. The silent upgrade performs exactly the same function that the Upgrade Assistant performs, but you do not have to manually enter the data again. If you want to save these options to a response file, click **Save Response File** and provide the location and name of the response file.

   Click **Upgrade** to start the upgrade process.

7. On the Upgrade Progress screen, monitor the status of the upgrade.

> **Caution:**
>
> Allow the Upgrade Assistant enough time to perform the upgrade. Do not cancel the upgrade operation unless absolutely necessary. Doing so may result in an unstable environment.

If any components are not upgraded successfully, refer to the Upgrade Assistant log files for more information.

> **Note:**
>
> The progress bar on this screen displays the progress of the current upgrade procedure. It does not indicate the time remaining for the upgrade.

Click **Next**.

8. If the upgrade is successful: On the Upgrade Success screen, click **Close** to complete the upgrade and close the wizard. The Post-Upgrade Actions window describes the manual tasks you must perform to make components functional in the new installation. This window appears only if a component has post-upgrade steps.

   If the upgrade fails: On the Upgrade Failure screen, click **View Log** to view and troubleshoot the errors. The logs are available at *`NEW_ORACLE_HOME`*`/oracle_common/upgrade/logs`.

> **Note:**
>
> If the upgrade fails you must restore your pre-upgrade environment from backup, fix the issues, then restart the Upgrade Assistant.

Starting Servers and Processes

After a successful upgrade, restart all processes and servers, including the Administration Server and any Managed Servers.

The components may be dependent on each other so they must be started in the correct order.

> **Note:**
>
> The procedures in this section describe how to start servers and process using the WLST command line or a script. You can also use the Oracle Fusion Middleware Control and the Oracle WebLogic Server Administration Console. See Starting and Stopping Administration and Managed Servers and Node Manager in *Administering Oracle Fusion Middleware.*

To start your Fusion Middleware environment, follow the steps below:

Step 1: Start the Administration Server

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

To start the Administration Server, use the `startWebLogic` script:

- (UNIX) *`NEW_DOMAIN_HOME`*`/bin/startWebLogic.sh`
- (Windows) *`NEW_DOMAIN_HOME`*`\bin\startWebLogic.cmd`

When prompted, enter your user name, password, and the URL of the Administration Server.

Step 2: Start Node Manager

To start Node Manager, use the `startNodeManager` script:

- (UNIX) *`NEW_DOMAIN_HOME`*`/bin/startNodeManager.sh`
- (Windows) *`NEW_DOMAIN_HOME`*`\bin\startNodeManager.cmd`

Step 3: Start Oracle Identity Management Components

Start any Oracle Identity Management components, such as Oracle Internet Directory, that form part of your environment:

- (UNIX) *`NEW_DOMAIN_HOME`*`/bin/startComponent.sh` *`component_name`*
- (Windows) *`NEW_DOMAIN_HOME`*`\bin\startComponent.cmd` *`component_name`*

Step 4: Start the Managed Servers

To start a WebLogic Server Managed Server, use the `startManagedWebLogic` script:

- (UNIX) *`NEW_DOMAIN_HOME`*`/bin/startManagedWebLogic.sh` *`managed_server_name admin_url`*
- (Windows) *`NEW_DOMAIN_HOME`*`\bin\startManagedWebLogic.cmd` *`managed_server_name admin_url`*

When prompted, enter your user name and password.

> **Note:**
>
> The startup of a Managed Server will typically start the applications that are deployed to it. Therefore, it should not be necessary to manually start applications after the Managed Server startup.

Step 5: Start System Components

To start system components, such as Oracle HTTP Server, use the `startComponent` script:

- (UNIX) *`NEW_DOMAIN_HOME`*`/bin/startComponent.sh` *`component_name`*
- (Windows) *`NEW_DOMAIN_HOME`*`\bin\startComponent.cmd` *`component_name`*

You can start system components in any order.

Step 6: Change to External Authentication

If you changed to internal authentication before upgrading product schemas, change back to external authentication after starting servers and processes.

Part IV

Troubleshooting and Advanced Configurations

This part of *Upgrading Oracle Data Integrator* provides information about troubleshooting upgrade issues, and options for advanced upgrade configurations.

- Troubleshooting the Upgrade
  If the upgrade process fails, you must close the Upgrade Assistant, correct the issue, and then restart the Upgrade Assistant.
- Advanced Upgrade Options
  You can set extra options for upgrading Oracle Data Integrator.

9
Troubleshooting the Upgrade

If the upgrade process fails, you must close the Upgrade Assistant, correct the issue, and then restart the Upgrade Assistant.

If the upgrade process fails *after* the upgrade process has started, you must drop the cloned repository and start from a freshly cloned repository in addition to correcting the underlying issue. There is no way to restart the failed upgrade process.

See Troubleshooting Your Upgrade in *Upgrading with the Upgrade Assistant*.

Troubleshooting Upgrade Log Errors

If the Upgrade Assistant log file contains `<#>, 11g interfaces are converted with errors`, check for the interface name and ID in the Upgrade Assistant log and correct the issue using ODI Studio in the 11*g* repository. An error during interface conversion can be caused by a validation failure for the 11*g* interface, such as an unmatched parenthesis in an expression. The conversion error can cause the resulting mapping to be incomplete, but has no effect on other conversions.

How to proceed when you encounter such interface upgrade errors:

- If the interfaces highlighted by Upgrade Assistant log file are not used and can be ignored, you can continue to use the upgraded 12*c* repository.
- If the interface is converted to a valid 12*c* mapping, each erroneous interface needs to be fixed in the 11*g* environment and reconverted using one of these two methods:
  - Export only those interfaces, and import them into the upgraded 12*c* repository. The import process internally upgrades the 11*g* interfaces into 12*c* mappings. For more information about importing an interface into a 12*c* repository, see Importing Objects in *Developing Integration Projects with Oracle Data Integrator*.
  - Repeat the entire upgrade with fixed interfaces. This is recommended if the number of erroneous interfaces is large.

Troubleshooting Upgrade Performance Errors

The number of sessions present in a repository affects upgrade performance. Oracle recommends that you archive and purge your session logs to improve upgrade performance. See Purging the Logs in *Administering Oracle Data Integrator*.

Troubleshooting DB2 Database Transaction Log Errors

When using a DB2 database, the database transaction log may become full during ODI upgrade.

You can increase the database configuration parameter to allow for a larger log file. A larger log file requires more space, but it reduces the need for applications to retry the

operation. You should set the log file size to at least 10000 and the number of primary log files to at least 50. Use the following commands:

```
db2 'update database config for database_alias using LOGFILSIZ 10000'
db2 'update database config for database_alias using LOGPRIMARY 50'
```

10
Advanced Upgrade Options

You can set extra options for upgrading Oracle Data Integrator.

These are extra options that were visible in the 12*c* (12.1.3) Upgrade Assistant, but are hidden in the 12*c* (12.2.1.3.0) Upgrade Assistant. If you need these options, then you must set them in the response file while running the upgrade in silent mode.

Table 10-1 Advanced Upgrade Options

Option name in 12*c* (12.1.3)	Option name in 12*c* (12.2.1.3.0) response file	Possible values (default = yes)	Description
Upgrade repository to use GUIDs	`ODI_GUID.option`	yes/no	This selection sets the repository to 12*c* full mode. All objects are referenced using the 12*c* GUID rather than the internal ID. You should leave this option checked in order to take advantage of the truly universally unique identification scheme in Oracle data Integrator 12*c*. Note: This option only applies when upgrading from 11*g* repository. For the 12*c* repository, the option is ignored, and the repository stays in the same mode If you have custom Knowledge Modules and procedures that use `odiRef` substitution APIs, which take internal identifiers as parameters such as `getFlexFieldValue()`, you may choose to not select this option, leaving your repository in "11*g* compatibility mode." Scenarios generated from objects using such Knowledge Modules and procedures continue to work in "11*g* compatibility mode" but will not work in 12*c* full mode. "11*g* compatibility mode" can be used to smoothly transition the custom Knowledge Modules and procedures to use the new `odiRef` substitution APIs (the ones that take GUIDs as parameters). After all custom Knowledge Modules and procedures have been modified to use the new `odiRef` substitution APIs, the repository can be switched to 12*c* full mode. To change the repository to full GUID mode after

Table 10-1 (Cont.) Advanced Upgrade Options

Option name in 12*c* (12.1.3)	Option name in 12*c* (12.2.1.3.0) response file	Possible values (default = yes)	Description
			upgrade (in case you did not choose the option in Upgrade Assistant during upgrade), go to **Studio**, in the ODI drop down menu, select the option **Switch Repository Compatibility Mode**. This brings up the option to switch to full GUID mode. If the repository is already in full GUID mode, then that option is disabled. For a list of all substitution methods impacted by the GUID changes, see Table A-1.

Table 10-1 (Cont.) Advanced Upgrade Options

Option name in 12*c* (12.1.3)	Option name in 12*c* (12.2.1.3.0) response file	Possible values (default = yes)	Description
Upgrade interfaces to use 12c mappings - losing 11g SDK compatibility	`ODI_SDK.option`	yes/no	This selection converts all 11*g* interfaces to 12*c* mappings. Once converted to 12*c* mappings, all of the existing scenarios must be regenerated before use. There is no ability to use existing 11*g* SDK applications; they must be upgraded to use the 12*c* SDK. Some conversion is performed, but the resulting mappings are left in 11*g* compatible mode, which allows them to be modified using 11*g* Java SDK. But they can only be modified using 11*g* SDK; in Studio UI they are read-only. If this option is not selected, some conversion to 12*c* mappings are performed but the resulting mappings are left in "11*g* compatibility mode."After these interfaces are modified using the 11*g* SDK, they can then be converted to 12*c* mappings using the ODI Studio graphical interface or the 12*c* SDK. Oracle recommends leaving this option checked, unless you have significant amount of Java code that uses the 11*g* SDK to read or update existing interfaces. This option only applies when upgrading from 11*g* repository. For the 12*c* repository the option is ignored, and the repository stays in the same mode as before upgrade. NOTE: In order for this migration to work properly, all interfaces in 11*g* repository must be valid (for example, they should not return any errors when validating from 11*g* Studio,

Table 10-1 (Cont.) Advanced Upgrade Options

Option name in 12*c* (12.1.3)	Option name in 12*c* (12.2.1.3.0) response file	Possible values (default = yes)	Description
			for example). If an 11*g* interface is not valid, the Upgrade Assistant will try to migrate it into a 12*c* mapping, but there are no guarantees about the result: the migration of that interface may fail, or exceptions may printed out the in log file. In any case the resulting mapping will be invalid. The best way to ensure a smooth upgrade is to make sure all interfaces in 11*g* repository are valid to start with. The upgrade process does not stop even if some 11*g* interfaces fail during the migration; the upgrade will continue until all interfaces are processed.
Use AES-128 encryption algorithm	`ODI_AES.option`	yes/no	AES with 128-bit keys provides adequate protection for sensitive information. AES with 256-bit keys is required to protect classified information of higher importance. If the option is unchecked, then AES-256 encryption will be used.

Table 10-2 contains descriptions of the combinations of options that may or may not be selected on the ODI Options screen.

Table 10-2 Possible ODI Options screen combinations

Replace Knowledge Modules with mandatory updates	Upgrade repository to use GUIDs	Upgrade interfaces to use 12*c* mappings	Description
Yes	Yes	Yes	This is the most common combination and is the configuration with which the new 12*c* repositories are created. With this combination, all objects use the new GUID identification, and all interfaces are converted into full 12*c* mappings, which can be modified in ODI Studio editors.
Yes	No	Yes	With this combination, the repository stays in ID compatibility mode, which means that `odiRef` APIs that use legacy numeric identifiers continue to work. Use this combination if you have significant number of custom Knowledge Modules or procedures that use `odiRef` APIs with numeric IDs as arguments.
No	No	Yes	With this selection, the Knowledge Modules existing in the repository are preserved and are not overwritten with the new 12*c* updates. Also, the repository stays in ID compatibility mode. Use this combination if you have modified default Knowledge Modules but would like to use full 12*c* mappings.
Yes	Yes	No	With combination, the 11*g* interfaces are converted to 11*g* compatible mappings, which can be accessed and modified through 11*g* interface SDK. These mappings are read-only in ODI Studio editors. Use this combination if you have significant investment in programs or scripts that use the 11*g* interface SDK.

Table 10-2 (Cont.) Possible ODI Options screen combinations

Replace Knowledge Modules with mandatory updates	Upgrade repository to use GUIDs	Upgrade interfaces to use 12*c* mappings	Description
Yes	No	No	With this selection, the repository stays in ID compatibility mode, which means that odiRef APIs that use legacy numeric identifiers continue to work. Also, the 11*g* interfaces are converted to 11*g* compatible mappings, which can be accessed and modified through the 11*g* SDK. However, they are read-only in ODI Studio editors. Use this combination if you have significant number of custom Knowledge Modules or procedures that use odiRef APIs with numeric IDs as arguments, and you have significant investment in programs or scripts that use 11*g* interface SDK.
No	No	No	If you do not select any options, the Knowledge Modules existing in the repository are going to be preserved and not overwritten with the new 12*c* updates. Use this combination if you have existing applications that use the ODI 11*g* SDK to read or modify these mappings, but you do not have modified Oracle supplied Knowledge Modules for your own purpose.

Table 10-3 describes the Invalid ODI Options screen combinations.

Table 10-3 Invalid ODI Options screen combinations

Replace Knowledge Modules with mandatory updates	Upgrade repository to use GUIDs	Upgrade interfaces to use 12c mappings	Description
No	Yes	No	With this selection, most Knowledge Modules will not function correctly since they will be using deprecated `odiRef` APIs, which use legacy numeric IDs.
No	Yes	Yes	With this combination, most Knowledge Modules will not function correctly since they will be using deprecated `odiRef` APIs, which use legacy numeric IDs.

> **Note:**
>
> The **Upgrade topology and security metadata** option can be selected or not selected independently of all the other options and has no effect on the other options.
>
> Also **Use AES-128 encryption algorithm** option can be selected or not selected independently of all the other options and has no effect on the other options.

A
Substitution API

Upgrading to GUIDs impacts some Substitution API methods that use internal IDs as parameters.
Table A-1 lists the new Substitution API methods.

Table A-1 New Substitution API Methods

Impacted ODIRef Methods	Previous ODIRef Method	New ODIRef Method
getAK() method	getAK("ID")	getAK("GUID") /* Return the Alternate Key GUID */
getCK() method	getCK("ID")	getCK("GUID") /* Return the Check GUID */
getContext() method	getContext("ID")	getContext("GLOBAL_ID") /* Return the Context GUID*/
getFK() method	getFK("ID")	getFK("GUID") /* Return the Foreign Key GUID */
getFK() method	getFK("ID_TABLE_PK")	getFK("GUID_TABLE_PK") /* Return the Primary Table GUID */
getFK() method	getFK("PK_I_MOD")	getFK ("PK_MOD_GUID") /* Return the Model GUID of Primary Key table */
getInfo() method	getInfo("I_SRC_SET")	getInfo("GUID_SRC_SET") /* Return the SourceSet GUID */
getInfo() method	getInfo("CT_ERR_ID")	getInfo("CT_ERR_GUID") /* Return the Checked Source GUID (a datastore for Static Check or a Mapping for a Flow Check) */
getInfo() method	getInfo("DEST_I_CONNECT")	getInfo("DEST_ CONNECT_GUID") /* Return the Destination connection GUID */
getInfo() method	getInfo("SRC_I_CONNECT")	getInfo("SRC _CONNECT _GUID") /* Return the Source connection GUID */
getInfo() method	getInfo("DEST_I_PSCHEMA")	getInfo("DEST _PSCHEMA _GUID") /* Return the Destination Physical Schema GUID */
getInfo() method	getInfo("SRC_I_PSCHEMA")	getInfo("SRC _PSCHEMA _GUID") /* Return the Source Physical Schema GUID */
getInfo() method	getInfo("DEST_I_LSCHEMA")	getInfo("DEST _LSCHEMA _GUID") /* Return the Destination Logical Schema GUID */
getInfo() method	getInfo("SRC_I_LSCHEMA")	getInfo("SRC _LSCHEMA _GUID") /* Return the Source Logical Schema GUID */

Table A-1 (Cont.) New Substitution API Methods

Impacted ODIRef Methods	Previous ODIRef Method	New ODIRef Method
getInfo() method	getInfo("DEST_I_TECHNO ")	getInfo("DEST _TECHNO _GUID") /* Return the Destination Technology GUID */
getInfo() method	getInfo("SRC_I_ TECHNO")	getInfo("SRC _ TECHNO _GUID") /* Return the Source Technology GUID */
getLoadPlanInstance( ) method	getLoadPlanInstance("BAT CH_ID")	getLoadPlanInstance("BATCH_GUID") /* Return the batch GUID*/
getNotNullCol() method	getNotNullCol("ID")	getNotNullCol("GLOBAL_ID") /* Return the Attribute GUID */
getModel() method	getModel ("ID")	getModel ("GLOBAL_ID") /* Return the Model GUID */
getPackage() method	getPackage("I_PACKAGE")	getPackage("PACKAGE_ GUID ") /* Return the Package GUID */
getPK() method	getPK("ID")	getPK("GLOBAL_ID") /* Return the Primary Key GUID */
getPrevStepLog() method	getPrevStepLog("SESS_N O")	getPrevStepLog("SESS_GUID") /* Return the Session GUID */
getSession() method	getSession("SESS_NO")	getSession("SESS_GUID") /* Return the Session GUID */
getSrcTablesList() method	getSrcTablesList("I_TABL E")	getSrcTablesList("TABLE_ GUID") /* Return the Source Table GUID */
getStep() method	getStep("SESS_NO")	getStep("SESS_GUID") /* Return the Session GUID */
getTable() method	getTable("ID")	getTable("GLOBAL_ID") /* Return the target Table GUID */
getTargetTable() method	getTargetTable("I_TABLE")	getTargetTable("TABLE_GUID") /* Return the target table GUID */
getUser() method	getUser("I_USER")	getUser("USER_GUID") /* Return the User GUID */

B

Upgrading the JDK After Installing and Configuring an Oracle Fusion Middleware Product

This appendix describes some common procedures for upgrading the JDK after installing and configuring an Oracle Fusion Middleware product.

- About Updating the JDK Location After Installing an Oracle Fusion Middleware Product
  The binaries and other metadata and utility scripts in the Oracle home and Domain home, such as RCU or Configuration Wizard, use a JDK version that was used while installing the software and continue to refer to the same version of the JDK. The JDK path is stored in a variable called JAVA_HOME which is centrally located in .globalEnv.properties file inside the *ORACLE_HOME*/oui directory.

About Updating the JDK Location After Installing an Oracle Fusion Middleware Product

The binaries and other metadata and utility scripts in the Oracle home and Domain home, such as RCU or Configuration Wizard, use a JDK version that was used while installing the software and continue to refer to the same version of the JDK. The JDK path is stored in a variable called JAVA_HOME which is centrally located in .globalEnv.properties file inside the *ORACLE_HOME*/oui directory.

The utility scripts such as config.sh|cmd, launch.sh, or opatch reside in the *ORACLE_HOME*, and when you invoke them, they refer to the JAVA_HOME variable located in .globalEnv.properties file. To point these scripts and utilities to the newer version of JDK, you must update the value of the JAVA_HOME variable in the .globalEnv.properties file by following the directions listed in Updating the JDK Location in an Existing Oracle Home .

To make the scripts and files in your Domain home directory point to the newer version of the JDK, you can follow one of the following approaches:

- Specify the path to the newer JDK on the Domain Mode and JDK screen while running the Configuration Wizard.

  For example, consider that you installed Oracle Fusion Middleware Infrastructure with the JDK version 8u121. So while configuring the WebLogic domain with the Configuration Assistant, you can select the path to the newer JDK on the Domain Mode and JDK screen of the Configuration Wizard. Example: `/scratch/jdk/jdk1.8.0_131`.

- Manually locate the files that have references to the JDK using `grep` (UNIX) or `findstr` (Windows) commands and update each reference. See Updating the JDK Location in an Existing Domain Home.

> **Note:**
>
> If you install the newer version of the JDK in the same location as the existing JDK by overwriting the files, then you don't need to take any action.

- Updating the JDK Location in an Existing Oracle Home
  The `getProperty.sh|cmd` script displays the value of a variable, such as JAVA_HOME, from the .globalEnv.properties file. The `setProperty.sh|cmd` script is used to set the value of variables, such as OLD_JAVA_HOME or JAVA_HOME that contain the locations of old and new JDKs in the .globalEnv.properties file.
- Updating the JDK Location in an Existing Domain Home
  You must search the references to the current JDK, for example jdk1.8.0_121 manually, and replace those instances with the location of the new JDK.

Updating the JDK Location in an Existing Oracle Home

The `getProperty.sh|cmd` script displays the value of a variable, such as JAVA_HOME, from the .globalEnv.properties file. The `setProperty.sh|cmd` script is used to set the value of variables, such as OLD_JAVA_HOME or JAVA_HOME that contain the locations of old and new JDKs in the .globalEnv.properties file.

The `getProperty.sh|cmd` and `setProperty.sh|cmd` scripts are located in the following location:

(UNIX) *ORACLE_HOME*`/oui/bin`
(Windows) *ORACLE_HOME*`\oui\bin`
Where, *ORACLE_HOME* is the directory that contains the products using the current version of the JDK, such as jdk1.8.0_121.

To update the JDK location in the .globalEnv.properties file:

1. Use the `getProperty.sh|cmd` script to display the path of the current JDK from the JAVA_HOME variable. For example:

   (UNIX) *ORACLE_HOME*`/oui/bin/getProperty.sh JAVA_HOME`
   (Windows) *ORACLE_HOME*`\oui\bin\getProperty.cmd JAVA_HOME`
   `echo JAVA_HOME`
   Where JAVA_HOME is the variable in the .globalEnv.properties file that contains the location of the JDK.

2. Back up the path of the current JDK to another variable such as OLD_JAVA_HOME in the .globalEnv.properties file by entering the following commands:

   (UNIX) *ORACLE_HOME*`/oui/bin/setProperty.sh -name OLD_JAVA_HOME -value` *specify_the_path_of_current_JDK*
   (Windows) *ORACLE_HOME*`\oui\bin\setProperty.cmd -name OLD_JAVA_HOME -value` *specify_the_path_of_current_JDK*

   This command creates a new variable called OLD_JAVA_HOME in the .globalEnv.properties file, with a value that you have specified.

3. Set the new location of the JDK in the JAVA_HOME variable of the .globalEnv.properties file, by entering the following commands:

(UNIX) *ORACLE_HOME*/oui/bin/setProperty.sh -name JAVA_HOME -value *specify_the_location_of_new_JDK*
(Windows) *ORACLE_HOME*\oui\bin\setProperty.cmd -name JAVA_HOME -value *specify_the_location_of_new_JDK*

After you run this command, the JAVA_HOME variable in the .globalEnv.properties file now contains the path to the new JDK, such as jdk1.8.0_131.

Updating the JDK Location in an Existing Domain Home

You must search the references to the current JDK, for example jdk1.8.0_121 manually, and replace those instances with the location of the new JDK.

You can use the `grep` (UNIX) or `findstr` (Windows) commands to search for the jdk-related references.

You'll likely be required to update the location of JDK in the following three files:

(UNIX) *DOMAIN_HOME*/bin/setNMJavaHome.sh
(Windows) *DOMAIN_HOME*\bin\setNMJavaHome.cmd

(UNIX) *DOMAIN_HOME*/nodemanager/nodemanager.properties
(Windows) *DOMAIN_HOME*\nodemanager\nodemanager.properties

(UNIX) *DOMAIN_HOME*/bin/setDomainEnv.sh
(Windows) *DOMAIN_HOME*\bin\setDomainEnv.cmd