Oracle® Fusion Middleware

Upgrading Oracle Traffic Director

12*c* (12.2.1.2)

E78464-02

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Documentation for installers and system administrators that describes how to upgrade Oracle Traffic Director to 12*c* (12.2.1.2)

ORACLE®

Oracle Fusion Middleware Upgrading Oracle Traffic Director, 12*c* (12.2.1.2)

E78464-02

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Preface

This document describes how to upgrade an existing Oracle Traffic Director environment to 12*c* (12.2.1.2).

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Audience

This document is intended for system administrators who are responsible for installing, maintaining, and upgrading Oracle Traffic Director. 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.

Documentation Accessibility

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

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.

Convention	Meaning
`monospace`	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

1

Introduction to Upgrading Oracle Traffic Director to 12*c* (12.2.1.2)

Before you begin an upgrade to Oracle Traffic Director12*c* (12.2.1.2), make sure that you understand the standard upgrade topologies and upgrade paths for your domain.

Following the introductory information and preparation steps, the procedures in this guide are divided into two sections. It is important that you refer to the correct set of procedures for your domain:

- Upgrades from 11*g*, described in Upgrading Oracle Traffic Director from 11*g*

- Upgrades from a previous 12*c* release, described in Upgrading Oracle Traffic Director from a Previous 12*c* Release

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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 12c

- Understanding In-Place Versus Out-of-Place Upgrades

- Understanding the Basic 12c Upgrade Tasks

See the following documents for more information on Oracle Traffic Director:

- Fusion Middleware Release Notes for Oracle Traffic Director

- Fusion Middleware Administering Oracle Traffic Director

The following topics describe the concepts related to upgrading Oracle Traffic Director

About the Starting Points for a Oracle Traffic Director Upgrade
This guide provides information for upgrading from supported 11*g* and 12*c* releases.

About the Oracle Traffic Director Standard Topologies
The steps to upgrade Oracle Traffic Director to 12*c* (12.2.1.2) depend on the current production topology (either 11*g* or a previous 12*c* release).

About Upgrade Restrictions
If you are using two or more Oracle Fusion Middleware products of the same or different versions in a single, supported, Oracle Fusion Middleware configuration, you must consider the interoperability and compatibility factors before planning the upgrade.

1.1 About the Starting Points for a Oracle Traffic Director Upgrade

This guide provides information for upgrading from supported 11*g* and 12*c* releases.

You can upgrade to Oracle Traffic Director 12*c* (12.2.1.2) from the following starting points:

- Oracle Traffic Director 11*g* Release 1 (11.1.1.7, and 11.1.1.9)

- Oracle Traffic Director 12*c* (12.1.2.0, 12.1.3.0, 12.2.1.0, and 12.2.1.1)

The upgrade procedures in this guide explain how to upgrade an existing Oracle Traffic Director 11*g* domain and existing 12*c* domain to Oracle Fusion Middleware 12*c* (12.2.1.2). If your domain contains other components that also need to be upgraded, links to supporting documentation are provided.

1.2 About the Oracle Traffic Director Standard Topologies

The steps to upgrade Oracle Traffic Director to 12*c* (12.2.1.2) depend on the current 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 Traffic Director installation. Therefore, this upgrade documentation provides instructions for upgrading several typical Oracle Traffic Director topologies. These typical topologies are referred to as *standard upgrade topologies*.

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

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

1.3 About Upgrade Restrictions

If you are using two or more Oracle Fusion Middleware products of the same or different versions in a single, supported, Oracle Fusion Middleware configuration, you must consider the interoperability and compatibility factors before planning the upgrade.

Interoperability

In the context of Oracle Fusion Middleware products, Interoperability is defined as the ability of two Oracle Fusion Middleware products or components of the same version (or release) to work together (interoperate) in a supported Oracle Fusion Middleware configuration. Specifically, interoperability applies when the first 4 digits of the release or version number are the same. For example, Oracle Fusion Middleware 12*c* (12.2.1.0) components are generally interoperable with other 12*c* (12.2.1.2) components.

Compatibility

In the context of Oracle Fusion Middleware products, Compatibility is defined as the ability of two Oracle Fusion Middleware components of different versions (or releases) to interoperate.

For a list of products and features available in Oracle Fusion Middleware Release 12.2.1.2, see Products and Features Available in Oracle Fusion Middleware in *Understanding Interoperability and Compatibility*.

When performing the upgrade of your hardware or software, verify that your Oracle Fusion Middleware software is certified to support the new operating system or computer hardware. For more information, refer to the following resources:

- Oracle Fusion Middleware Supported System Configurations

- Oracle® Fusion Middleware System Requirements and Specifications

2

Pre-Upgrade Requirements

Before you begin the upgrade to Oracle Traffic Director 12*c* (12.2.1.2), you must perform pre-upgrade tasks such as backing up, cloning your current environment, and verifying that your system meets certified requirements.

Pre-Upgrade Checklist

    The Pre-Upgrade Checklist identifies tasks that can be performed before you begin your upgrade to ensure you have a successful upgrade and limited downtime.

Creating a Complete Backup

    Back up all system-critical files including all of the databases that host your Oracle Fusion Middleware schemas before you start the upgrade.

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.

Performing Traffic Director-specific Pre-Upgrade Tasks

2.1 Pre-Upgrade Checklist

The Pre-Upgrade Checklist identifies tasks that can be performed before you begin your upgrade to ensure you have a successful upgrade and limited downtime.

Upgrades are performed while the servers are down. This checklist is meant to identify 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 12c

Task	Description
Required Create a complete backup of your existing environment. Creating a Complete Backup	Back up all system-critical files and database(s) that contain any schemas that are to be upgraded before you begin your upgrade. Make sure that your backup includes the schema version registry table. Backing Up the Schema Version Registry Table If the upgrade fails, you must restore your pre-upgrade environment and begin the upgrade again. 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:
Optional Clone your production environment to use as an upgrade testing platform. Cloning Your Production Environment for Testing	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.
Required Verify that you are installing and upgrading your product on a supported hardware and software configuration. Verifying Certification and System Requirements **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. Oracle recommends that you verify this information right before you start the upgrade as the certification requirements are frequently updated. **Make sure that you have applied the latest patches to your components before you upgrade.** You must also make sure to use a supported JDK version before you install the 12*c* product distributions.

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

Task	Description
Optional Update security policy files if you are using enhanced encryption (AES 256). Updating Policy Files when 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.
Optional Purge any outdated or unused data before you upgrade. Purging Unused Data	To optimize performance, Oracle strongly recommends that you purge data and objects that will not be used in the upgraded environment.
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* (12.2.1.2). Creating an Edition on the Server for Edition-Based Redefinition	If you are using an Edition-Based Redefinition (EBR) database, you must create the edition before starting the upgrade.
Optional Create a Non-SYSDBA user to run the Upgrade Assistant. Creating a Non-SYSDBA User to Run 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.
Optional Identify which schemas are currently in your domain before you begin. Identifying Existing Schemas Available for Upgrade	It is important that you know which schemas are in your pre-upgrade domain before you start the upgrade. You should know the schema owner names and passwords, as well as the versions of each schema,

2.2 Creating a Complete Backup

Back up all system-critical files including all of the databases that host your Oracle Fusion Middleware schemas before you start the upgrade.

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.

For more information about creating a backup, see:

- Backing Up Your Oracle Fusion Middleware Environment in *Administering Oracle Fusion Middleware*

- Upgrading and Preparing Your Oracle Databases for 12*c* in *Planning an Upgrade of Oracle Fusion Middleware*

In addition to creating a complete backup of your system, you must also create a backup of your schema version registry and any custom settings you want to use in your upgraded environment. See the following resources:

Backing Up the Schema Version Registry Table

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

Maintaining Custom Domain Environment Settings

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

2.2.1 Backing Up the Schema Version Registry Table

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

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

Note: Performing these backups prior to performing a schema upgrade is a
prerequisite for running the Upgrade Assistant. During the upgrade you will
be required to acknowledge that backups have been performed.

2.2.2 Maintaining Custom Domain Environment Settings

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

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. Any custom settings you add to
this file are preserved during the domain upgrade operation and are carried over to
the remote servers when using the pack and unpack commands.

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 *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 Reapply Customizations to Startup Scripts in *Upgrading Oracle WebLogic Server*.

2.3 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.

2.4 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
Before you can install any Oracle Fusion Middleware product distributions, you must download and install a supported JDK on your system.

2.4.1 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. For more information, see Certification Matrix for 12*c* (12.2.1.2).

2.4.2 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.

The Oracle Fusion Middleware System Requirements and Specifications document should be used to verify that the requirements of the certification are met. For example, if the Certification Matrix for 12*c* (12.2.1.2) 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. The latest version is available on Oracle Technology Network.

For a complete description of the system requirements for installing and upgrading to Oracle Fusion Middleware 12*c*, see Review System Requirements and Specifications.

> **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.

2.4.2.1 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 the Administration Server, Managed Servers, 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 require 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.

2.4.2.1.1 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.

2.4.2.1.2 Stop All Processes

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

For example, to stop the Administration Server, enter the following command on UNIX:

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

2.4.2.1.3 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.

For more information on backing up your 11*g* files, 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:

- 11*g* Domain Home

- 11*g* /nodemanager directory located in $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.

2.4.2.1.4 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 require you to change the IP address and name of the source machine or decommission the source machine to avoid conflicts in the network.

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

2.4.2.1.5 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.

For detailed information about restoring your 11*g* files to the 64-bit target machine, see Recovering Your Environment in *Oracle Fusion Middleware Administrator's Guide*.

2.4.2.1.6 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.

For detailed instructions on how to obtain 12*c* distributions, see Understanding and Obtaining Product Distributions in *Planning an Installation of Oracle Fusion Middleware*. To identify an installation user see Selecting an Installation User. To understand the directory structure for installation and configuration, see Understanding Directories for Installation and Configuration. Refer to the component-specific installation guides for the component(s) you are installing.

2.4.2.1.7 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.

For a complete upgrade procedure, see the component-specific upgrade guide for the component(s) you are upgrading.

> **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.

2.4.3 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. For more information, see Certification Matrix for 12*c* (12.2.1.2).

> **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*

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

Before you can install any Oracle Fusion Middleware product distributions, you must download and install a supported JDK on your system.

Refer to the Oracle Fusion Middleware System Requirements and Specifications document to verify that the JDK you are using is supported.

At the time this document was published, the certified JDK was 1.8.0_101.

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*.

2.5 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. For more information, 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.

2.6 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.

2.7 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 changes have been made and tested do 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, log 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 to manually set up the default edition name for the database, for example:

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

2.8 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 in this section must be granted to user FMW before starting the Upgrade Assistant.

> **Notes:** If you created the non-SYSDBA user FMW in a previous release, you must drop and recreate this user before starting the upgrade. Running the Upgrade Assistant with an older FMW user may lead to a failed upgrade as new privileges may have been added. Oracle recommends that you drop and recreate the user instead of modifying the existing FMW user.
>
> 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 `v$xatrans$` table is required only for Oracle Identity Manager. If you do not require Oracle Identity Manager for configuration, or if you do not have the `v$xatrans$` table, then remove the following line from the script:
>
> ```
> grant select on v$xatrans$ to FMW with grant option;
> ```

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

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

```
grant execute on DBMS_UTILITY to FMW with grant option;
grant execute on DBMS_SESSION to FMW with grant option;
grant execute on DBMS_METADATA to FMW with grant option;
grant execute on DBMS_XMLGEN to FMW with grant option;
grant execute on DBMS_DATAPUMP to FMW with grant option;
grant execute on DBMS_MVIEW to FMW with grant option;
grant select on ALL_ENCRYPTED_COLUMNS to FMW with grant option;
grant select on dba_queue_subscribers to FMW with grant option;
grant execute on SYS.DBMS_ASSERT to FMW with grant option;
grant select on dba_subscr_registrations to FMW with grant option;
grant manage scheduler to FMW;
```

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

2.9 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 the value in the `VERSION` column is at `11.1.1.7.0` or higher, and the `STATUS` column value is `VALID`, then the schema is supported for upgrade.

    If an upgrade is not needed for a schema, the `schema_version_registry` table retains the 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 creating new 12*c* schemas.

Notes:

- If your existing schemas are not at a supported version, then you must upgrade them to a supported version before using the 12*c* (12.2.1.2) 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 that you create a new OPSS schema before you perform the upgrade. After the upgrade, the OPSS schema will remain an LDAP-based store.

- You can only upgrade schemas for products that are available for upgrade in the Oracle Fusion Middleware release 12*c* (12.2.1.2). **Do not attempt to upgrade a domain that includes components that are not yet available for upgrade to 12*c* (12.2.1.2)**.

2.10 Performing Traffic Director-specific Pre-Upgrade Tasks

Before you upgrade to Oracle Traffic Director 12*c* , you must follow these steps:

1. Make sure Oracle WebLogic Server is installed into a new Oracle home and extend with the Oracle Traffic Director template.

Note:

For more information about configuring an Oracle Traffic Director Domain, see *Administering Oracle Traffic Director*.

---

2. Shutdown 11g environment.

3. Shutdown 12c environment.

Note:

If Oracle Traffic Director11g and 12c installations are on different hosts/machines (for example 11g on OEL5 and 12c on OEL6), then the user has to do one of the following:

Remotely copy ORACLE_HOME and INSTANCE_HOME directories from 11g host to 12c preserving the same path as it was on 11g host.

For example, on 12c host:

scp -r <11g host>:/otd/oracle_home /otd/oracle_home

scp -r <11g host>:/otd/instance_home /otd/instance_home

Mount 11g ORACLE_HOME and INSTANCE_HOME paths on 12c host preserving the same path as it was on 11g host.

For example, on 12c host:

mount <11g host>:/otd/oracle_home on /otd/oracle_home

mount <11g host>:/otd/instance_home on /otd/instance_home

3

Upgrading Oracle Traffic Director from 11*g*

You can upgrade Oracle Traffic Director from Oracle Fusion Middleware Release 11*g* to 12*c* (12.2.1.2) .

Complete the steps in the following topics to perform the upgrade:

About the Oracle Traffic Director Upgrade Process
> Review the roadmap for an overview of the upgrade process for Oracle Traffic Director.

Performing Traffic Director-specific Pre-Upgrade Tasks

Preparing to Upgrade Oracle Traffic Director to 12c (12.2.1.2)
> This section describes the steps to prepare the upgrade Oracle Traffic Director to 12*c* (12.2.1.2)

Installing the Product Distributions
> Before beginning your upgrade, download Oracle Fusion Middleware Infrastructure and Oracle Traffic Director 12*c* (12.2.1.2) distributions on the target system and install them using Oracle Universal Installer.

Stopping Servers and Processes
> Before running the Upgrade Assistant to upgrade your schemas and configurations, you must shut down all processes and servers, including the Administration server and any managed servers.

Starting the Upgrade Assistant
> Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 12*c* (12.2.1.2). Oracle recommends that you run the Upgrade Assistant as a non-SYSDBA user, completing the upgrade for one domain at a time.

Upgrading the Component Configurations

Verifying the Component Configurations Upgrade

Post-Upgrade Steps

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

3.1 About the Oracle Traffic Director Upgrade Process

Review the roadmap for an overview of the upgrade process for Oracle Traffic Director.

The steps you take to upgrade your existing domain will vary depending on how your domain is configured and which components are being upgraded. Follow only those steps that are applicable to your deployment.

Table 3-1   Tasks for Upgrading Oracle Traffic Director

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 Pre-Upgrade Checklist
Required Download and install the Oracle Fusion Middleware Infrastructure and Oracle Traffic Director 12*c* (12.2.1.2) distributions into a new Oracle home.	See Installing the Product Distributions
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 (again) to upgrade domain component configurations.	The Upgrade Assistant is used to update the domain's component configurations. For 11g to 12c upgrades see Upgrading the Component Configurations
Required Start the Upgrade Assistant (again) to upgrade standalone system component configurations.	The Upgrade Assistant updates the standalone agent's component configurations. See Starting the Upgrade Assistant
Required Complete and verify the upgrade.	Perform the required post-upgrade configuration tasks (if needed), including starting the new Administration and Managed Servers and node manager to ensure there are no issues. Oracle recommends that you ensure all of the upgraded components are working as expected before deleting your backups. See Verifying The Component Configurations

3.2 Performing Traffic Director-specific Pre-Upgrade Tasks

Before you upgrade to Oracle Traffic Director 12*c* , you must follow these steps:

1. Make sure Oracle WebLogic Server is installed into a new Oracle home and extend with the Oracle Traffic Director template.

   > **Note:**
   >
   > For more information about configuring an Oracle Traffic Director Domain, see *Administering Oracle Traffic Director*.

2. Shutdown 11g environment.

3. Shutdown 12c environment.

> **Note:**
>
> If Oracle Traffic Director11g and 12c installations are on different hosts/ machines (for example 11g on OEL5 and 12c on OEL6), then the user has to do one of the following:
>
> Remotely copy ORACLE_HOME and INSTANCE_HOME directories from 11g host to 12c preserving the same path as it was on 11g host.
>
> For example, on 12c host:
>
> # scp -r <11g host>:/otd/oracle_home /otd/oracle_home
>
> # scp -r <11g host>:/otd/instance_home /otd/instance_home
>
> Mount 11g ORACLE_HOME and INSTANCE_HOME paths on 12c host preserving the same path as it was on 11g host.
>
> For example, on 12c host:
>
> # mount <11g host>:/otd/oracle_home on /otd/oracle_home
>
> # mount <11g host>:/otd/instance_home on /otd/instance_home

3.3 Preparing to Upgrade Oracle Traffic Director to 12*c* (12.2.1.2)

This section describes the steps to prepare the upgrade Oracle Traffic Director to 12*c* (12.2.1.2)

Oracle Fusion Middleware Upgrade Assistant supports an out-of-place upgrade to 12c (12.2.1.2.0) for the following Oracle Traffic Director 11g releases:

- Oracle Traffic Director FMW 11g Release 1 (11.1.1.7.0)

- Oracle Traffic Director FMW 11g Release 1 (11.1.1.9.0)

Before you upgrade to Oracle Traffic Director 12*c* (12.2.1.2), follow these steps:

1. Ensure that 12.2.1.2 binaries are installed in a new MW_HOME. A valid WebLogic Server domain extended with Oracle Traffic Directorand dependant JRF templates must also be created at the target location.

   For more information, see Configuring the WebLogic Server Domain for Oracle Traffic Director in *Administering Oracle Traffic Director*.

2. Shutdown the source (11g or 12.2.1) environment.

3. Shutdown the target 12.2.1.2.0 environment.

- If Oracle Traffic Director 11g and 12c installations are on different hosts/machines (for example 11*g* on OEL5 and 12*c* on OEL6), then the user has to do one of the following:

  - In the Upgrade Assistant, when you select '11g source' as the source version for the upgrade, specify the remote directory path for Oracle Traffic Director 11g instances. See Section 4.1.3, "Upgrading the Component Configurations".

  - Remotely copy ORACLE_HOME and INSTANCE_HOME directories from 11g host to 12c preserving the same path as it was on 11g host.

    For example, on 12c host:

```
# scp -r <11g host>:/otd/oracle_home /otd/oracle_home
# scp -r <11g host>:/otd/oracle_home /otd/oracle_home
```

– Mount 11g `ORACLE_HOME` and `INSTANCE_HOME` paths on 12c host preserving the same path as it was on 11g host.

For example, on 12c host:

```
# mount <11g host>:/otd/oracle_home on /otd/oracle_home
# mount <11g host>:/otd/instance_home on /otd/instance_home
```

- Oracle Traffic Director 11g `INSTANCE_HOME` must have read permissions for the user running Upgrade Assistant to access the configurations within 11g Administration Server config-store.

- Upgrading across different platforms is not supported. For example, you cannot upgrade Oracle Traffic Director from a Linux to Solaris environment.

3.4 Installing the Product Distributions

Before beginning your upgrade, download Oracle Fusion Middleware Infrastructure and Oracle Traffic Director 12*c* (12.2.1.2) distributions on the target system and install them using Oracle Universal Installer.

Note: You must install the Oracle Fusion Middleware Infrastructure distribution first before installing other Fusion Middleware products, when Infrastructure is required for the upgrade.

The following install instructions are for the standard Oracle Fusion Middleware installation topology. Refer to the Oracle Traffic Director Installation Guide for more information about installing the other supported topologies.

To install 12*c* (12.2.1.2) distributions:

1. Sign in to the target system where you want to install the 12*c* (12.2.1.2) product distribution.

2. Download the following 12*c* (12.2.1.2) product distributions from Oracle Technology Network or Oracle Software Delivery Cloud to your target system:

   - Oracle Fusion Middleware Infrastructure (`fmw_12.2.1.2.0_infrastructure_generic.jar`)

   - Oracle Traffic Director (UNIX: `fmw_12.2.1.2.0_otd_linux64.bin`), (Windows: `setup_fmw_12.2.1.2.0_otd_win64.exe`)

3. Change to the directory where you downloaded the 12*c* (12.2.1.2) product distribution.

4. Start the installation program for Oracle Fusion Middleware Infrastructure:

   - (UNIX) *JDK_HOME*`/bin/java -jar fmw_12.2.1.2.0_infrastructure_generic.jar`

   - (Windows) *JDK_HOME*`\bin\java -jar fmw_12.2.1.2.0_infrastructure_generic.jar`

5. 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.

6. On the Welcome screen, review the information to make sure that you have met all the prerequisites. Click **Next**.

7. On the Auto Updates screen, select **Skip Auto Updates**. Options are:

   - **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**.

8. 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 Selecting Directories for Installation and Configuration in *Oracle Fusion Middleware Planning an Installation of Oracle Fusion Middleware*.

9. On the Installation Type screen, select the following:

   a. For Infrastructure, select **Fusion Middleware Infrastructure**

   b. For Oracle Traffic Director, select **Oracle Traffic Director**

   Select the type of installation and consequently, the products and feature sets you want to install.

   - Select **Standalone OTD** (Managed independently of WebLogic server) if you are installing Oracle Traffic Director in a Standalone domain or installing Oracle Traffic Director in a remote node of a collocated domain.

   - Select **Collocated OTD** (Managed through WebLogic server) if you are installing Oracle Traffic Director in a WebLogic Server domain on the administration server node.

   Click **Next**

   See Installing Oracle Traffic Director for more information.

   .

10. 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 gets 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).

11. On the Installation Summary screen, verify the installation options 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.

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

13. 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.

14. After you have installed Oracle Fusion Middleware Infrastructure, enter the following command to start the installer for your product distribution and repeat the steps above to navigate through the installer screens:

    (UNIX) `./fmw_12.2.1.2.0_otd_linux64.bin`

    (Windows) `setup_fmw_12.2.1.2.0_otd_win64.exe`

3.5 Stopping Servers and Processes

Before running the Upgrade Assistant to upgrade your schemas and configurations, you must shut down all 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 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 in *Administering Oracle Fusion Middleware.*

To stop your Fusion Middleware environment, follow the steps below.

Step 1: Stop System Components

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

- (UNIX) *DOMAIN_HOME*/bin/stopComponent.sh *component_name*

- (Windows) *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) *DOMAIN_HOME*/bin/stopManagedWebLogic.sh
  managed_server_name admin_url

- (Windows) *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, that form part of your environment:

- (UNIX) *DOMAIN_HOME*/bin/stopComponent.sh *component_name*

- (Windows) *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) *DOMAIN_HOME*/bin/stopWebLogic.sh

- (Windows) *DOMAIN_HOME*\bin\stopWebLogic.cmd

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

Step 5: Stop Node Manager

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

Alternatively, after 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. For more information, see stopNodeManager in *WLST Command Reference for WebLogic Server*.

3.6 Starting the Upgrade Assistant

Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 12*c* (12.2.1.2). 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:

1. Go to the `oracle_common/upgrade/bin` directory:

- (UNIX) *ORACLE_HOME*/oracle_common/upgrade/bin

- (Windows) *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 Command-Line Parameters

3.6.1 Upgrade Assistant Command-Line Parameters

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

Table 3-2   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 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 3-2   (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 will create log files and temporary files.
		
		The default locations are:
		
		(UNIX) `ORACLE_HOME/oracle_common/upgrade/logs`
		`ORACLE_HOME/oracle_common/upgrade/temp`
		
		(Windows) `ORACLE_HOME\oracle_common\upgrade\logs`
		`ORACLE_HOME\oracle_common\upgrade\temp`

`-help`	Optional	Displays all of the command-line options.

3.7 Upgrading the Component Configurations

When you run the Upgrade Assistant to upgrade the Oracle Traffic Director component configurations, consider the following points based on the Oracle Traffic Director domain.

Collocated domain upgrade:

- Specify the starting point for an upgrade. The options are **12c source** and **11g source**.

- Specify the 11g Oracle Traffic Director Instance Home where instances are located.

- For each Oracle Traffic Director configuration, specify the NSS DB password for internal token, if one exists.

You can run the Upgrade Assistant in the following ways:

3.7.1 Upgrading Oracle Traffic Director in Graphical Mode

Launch the upgrade assistance and follow the steps below:

1. The Welcome screen displays list of tasks to be performed. Click **Next** to continue.

2. In the All Configurations screen, select **All Configurations Used By a Domain** and provide the correct domain path in the **Domain Directory** field.

3. Click **Next** to continue.

4. In the Component List screen, click **Next** to continue.

5. In the Prerequisites screen, select all the check boxes, then click **Next** to continue.

6. In the OTD 11g Instance Home screen, provide the path to 11g OTD Instance Home, then click **Next** to continue.

7. The Examine screen displays the list of tasks done. Click **Next** to continue.

8. The Upgrade Summary screen is displayed.

Note:

Click the **Save Response File..** button to create a response file, which can be used as an input for Command Line upgrade.

---

9. Click **Next** to continue.

10. In the Upgrade Progress screen, click **Next** to continue.

11. In the Upgrade Success screen, click **Close** to complete the upgrade.

3.7.2 Upgrading Oracle Traffic Director in Silent Mode

To upgrade using silent mode, run the upgrade UA command with the response file option.

This response file is generated using the upgrade wizard. Click the **Save Response File** button in the *Upgrade Summary* screen.

After successful upgrade, a success message is displayed on the console. Log file is available under the following path:

```
<FMW_HOME>\oracle_common\upgrade\logs
```

Command Line for silent upgrade (on unix):

Syntax

```
<MW_HOME>/oracle_common/upgrade/bin/ua -response <response-file> -logLevel <Log-
verbosity>
```

Sample response file:

```
[GENERAL]
fileFormatVersion = 3

[UAWLSINTERNAL.UAWLS]
pluginInstance = 1
UASVR.path = <PATH-TO-12C-OTD-DOMAIN>

[JRF.JRF_CONFIG_PLUGIN]
pluginInstance = 5

[CAM.SYSCOMP]
pluginInstance = 2

[OTD.CONFIG_UPGRADE]
pluginInstance = 12
INSTANCE_HOME.path = <PATH-TO-11g-OTD-INSTANCE-HOME>

SSL_TOKEN_TABLE.CONFIG_NAME.0.string = <OTD-11G-CONFIG-NAME>
SSL_TOKEN_TABLE.SSL_TOKEN_PIN.0.encryptedPassword =
<ENCRYPTED-SSL-TOKEN-PIN-FOR-CONFIG-IN-11G>
SSL_TOKEN_TABLE.WALLET_PSWD.0.encryptedPassword =
<ENCRYPTED-WALLET-PASSWORD-FOR-UPGRADED-CONFIG-IN-12C>
```

Note:

The SSL_TOKEN* fields are applicable only if the 11g instance has SSL enabled config.

3.8 Verifying the Component Configurations Upgrade

Verifying the Component Configurations Upgrade.

For Oracle Traffic Director 11g Configuration:

- The 11g configuration files are copied to the 12.2.1.2.0 domain under `DOMAIN_HOME/config/fmwconfig/components/OTD/` directory.

- The configuration elements in `server.xml` file are modified.

- The 11g `server.xml` elements which are not supported in 12.2.1.2.0 are removed.

- The 11g `obj.conf` parameters which are not supported in 12.2.1.2.0 are removed.

- Certificate configurations from the NSS database are moved to KSS and to Oracle wallet for Oracle Traffic Director runtime consumption.

- The version in `server.xml` of config-store is modified to 12.2.1.2.

3.9 Post-Upgrade Steps

Review the following list of post-upgrade tasks to be performed after using the Upgrade Assistant to upgrade to Oracle Traffic Director 12*c* (12.2.1.2):

- Oracle Traffic Director system component instances must be created post-upgrade by targeting the system component configurations to machines using Fusion Middleware Control or WLST. For more information, see Managing Instances in *Administering Oracle Traffic Director*.

- Creation of instances and failover groups is a deployment task. These steps are best handled outside upgrade as post-upgrade steps. For more information about the deployment topology and configuring failover groups, see Configuring Oracle Traffic Director for High Availability in *Administering Oracle Traffic Director*.

- Any references in the Oracle Traffic Director config files to the paths outside of INSTANCE_HOME and ORACLE_HOME may not be accessible post-upgrade. This should be configured manually.

3.10 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) *DOMAIN_HOME*/bin/startWebLogic.sh

- (Windows) *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) *DOMAIN_HOME*/bin/startNodeManager.sh

- (Windows) *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) *DOMAIN_HOME*/bin/startComponent.sh *component_name*

- (Windows) *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) *DOMAIN_HOME*/bin/startManagedWebLogic.sh
  managed_server_name admin_url

- (Windows) *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) *DOMAIN_HOME*/bin/startComponent.sh *component_name*

- (Windows) *DOMAIN_HOME*\bin\startComponent.cmd *component_name*

You can start system components in any order.

4

Upgrading Oracle Traffic Director from a Previous 12*c* Release

You can upgrade Oracle Traffic Director from a previous 12*c* release to 12*c* (12.2.1.2) .

Follow the steps in the following topics to perform the upgrade:

About the Oracle Traffic Director Upgrade Process
> Review the roadmap for an overview of the upgrade process for Oracle Traffic Director.

Upgrading to Oracle Traffic Director 12c (12.2.1.2.0)
> Oracle Fusion Middleware Upgrade Assistant supports an out-of-place upgrade and an in-place upgrade to 12c (12.2.1.2.0).

Post-Upgrade Tasks

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

4.1 About the Oracle Traffic Director Upgrade Process

Review the roadmap for an overview of the upgrade process for Oracle Traffic Director.

The steps you take to upgrade your existing domain will vary depending on how your domain is configured and which components are being upgraded. Follow only those steps that are applicable to your deployment.

Table 4-1   Tasks for Upgrading Oracle Traffic Director

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 Pre-Upgrade Checklist
Required Download and install the Oracle Fusion Middleware Infrastructure and Oracle Traffic Director 12*c* (12.2.1.2) distributions into a new Oracle home.	See Installing the Product Distributions
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 Traffic Director

Task	Description
Required Start the Upgrade Assistant to upgrade domain component configurations.	The Upgrade Assistant is used to update the domain's component configurations. See Upgrading the Component Configurations
Required Start the Upgrade Assistant to upgrade standalone system component configurations.	The Upgrade Assistant updates the standalone agent's component configurations. See Starting the Upgrade Assistant
Required Complete and verify the upgrade.	Perform the required post-upgrade configuration tasks (if needed), including starting the new Administration and Managed Servers and node manager to ensure there are no issues. Oracle recommends that you ensure all of the upgraded components are working as expected before deleting your backups. See Verifying the Component Configurations

4.2 Upgrading to Oracle Traffic Director 12*c* (12.2.1.2.0)

Oracle Fusion Middleware Upgrade Assistant supports an out-of-place upgrade and an in-place upgrade to 12c (12.2.1.2.0).

Oracle Fusion Middleware Upgrade Assistant supports an in-place upgrade to 12c (12.2.1.2.0) for the following Oracle Traffic Director releases:

- Oracle Traffic Director FMW 12c Release 2 (12.2.1)

The following topics describe how to upgrade Oracle Traffic Director to 12.2.1.2:

Starting the Upgrade Assistant

> Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 12*c* (12.2.1.2). Oracle recommends that you run the Upgrade Assistant as a non-SYSDBA user, completing the upgrade for one domain at a time.

Upgrading the Component Configurations

Verifying the Component Configurations Upgrade

4.2.1 Starting the Upgrade Assistant

Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 12*c* (12.2.1.2). 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:

1. Go to the `oracle_common/upgrade/bin` directory:

   - (UNIX) *ORACLE_HOME*`/oracle_common/upgrade/bin`

   - (Windows) *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 Command-Line Parameters

4.2.1.1 Upgrade Assistant Command-Line Parameters

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

Table 4-2   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 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 4-2   (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 will create log files and temporary files.
		
		The default locations are:
		
		(UNIX) `ORACLE_HOME/ oracle_common/upgrade/ logs`
		`ORACLE_HOME/ oracle_common/upgrade/ temp`
		
		(Windows) `ORACLE_HOME \oracle_common\upgrade \logs`
		`ORACLE_HOME \oracle_common\upgrade \temp`

`-help`	Optional	Displays all of the command-line options.

4.2.2 Upgrading the Component Configurations

When you run the Upgrade Assistant to upgrade the Oracle Traffic Director component configurations, consider the following points based on the Oracle Traffic Director domain.

Standalone domain upgrade:

• Specify the location of the target domain for the upgraded Oracle Traffic Director configurations.

Collocated domain upgrade:

- Specify the location of the 12.2.1.2target domain for the upgraded Oracle Traffic Director configurations.

- Specify the starting point for an upgrade. The options are **12c source** and **11g source**.

4.2.3 Verifying the Component Configurations Upgrade

Verifying the Component Configurations Upgrade.

For Oracle Traffic Director 12c Configuration:

- The version in `server.xml` is modified to 12.2.1.2.

- The value of `ORACLE_HOME` in the scripts and in the `obj.conf` file are updated as the new `ORACLE_HOME` for local Oracle Traffic Directory instances.

4.3 Post-Upgrade Tasks

Review the following list of post-upgrade tasks you might have to perform after upgrading to Oracle Traffic Director 12*c* (12.2.1.2):

- Any references in the Oracle Traffic Director configuration files to the paths outside of `INSTANCE_HOME` and `ORACLE_HOME` may not be accessible post upgrade. This should be configured manually.

4.4 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.

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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) *DOMAIN_HOME*/bin/startNodeManager.sh

- (Windows) *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) *DOMAIN_HOME*/bin/startComponent.sh *component_name*

- (Windows) *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) *DOMAIN_HOME*/bin/startManagedWebLogic.sh *managed_server_name admin_url*

- (Windows) *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) *DOMAIN_HOME*/bin/startComponent.sh *component_name*

- (Windows) *DOMAIN_HOME*\bin\startComponent.cmd *component_name*

You can start system components in any order.