Oracle® Fusion Middleware

Installing Oracle Traffic Director

12*c* (12.2.1.1.0)

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Oracle Fusion Middleware Installing Oracle Traffic Director, 12*c* (12.2.1.1.0)

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Preface

This document provides information about installing Oracle Traffic Director.

Audience

The intended audience for this document is the person who administers and maintains Oracle Traffic Director.

This document assumes you are familiar with the following topics:

- Working in a terminal window
- HTTP
- XML
- Executing operating system commands on UNIX-like platforms

Documentation Accessibility

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Related Documents

For more information, see the following documents, which are available on the Oracle Technology Network:

- *Configuration Files Reference for Oracle Traffic Director*
- *WebLogic Scripting Tool Command Reference for Oracle Traffic Director*
- *Administering Oracle Traffic Director*
- *Release Notes for Oracle Traffic Director*
- *Using WebLogic Server MT*

Conventions

The following text conventions are used in this document:

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

1

Overview of Installing Oracle Traffic Director

Oracle Traffic Director is a software load balancer for load balancing HTTP/S and TCP traffic to back-end servers. These back-end servers, which are referred to as origin servers within Oracle Traffic Director, can be application servers, web servers, LDAP servers and so on.

Starting from 12c (12.2.1.0), in addition to being available for use with the engineered systems (Oracle Exalogic running either Oracle Linux or Oracle Solaris and Oracle SuperCluster running Oracle Solaris), Oracle Traffic Director is available for customers with the Oracle WebLogic Server Multi-tenancy or Oracle WebLogic Server Continuous Availability add-on options.

> **Note:** Before you start installing Oracle Traffic Director, it is recommended that you get a basic understanding of its features, the related terminology, and the installation topology. For more information, see the "Getting Started with Oracle Traffic Director" section of the *Oracle Traffic Director Administrator's Guide*.

This chapter contains the following section:

- Installation, Deinstallation and Reinstallation

1.1 Installation, Deinstallation and Reinstallation

Table 1–1 provides information about the tasks that need to be performed for installing Oracle Traffic Director.

Table 1–1 Installation, Deinstallation and Reinstallation

Task	For more information, see...
Installing Oracle Traffic Director	Section 2.3
Verifying the installation	Section 3.1

2

Installing Oracle Traffic Director

This chapter provides information about installing Oracle Traffic Director.

If installing Oracle Traffic Director on engineered systems, first perform the procedures described in Appendix B, "Requirements for Installing Oracle Traffic Director on Engineered Systems"

This chapter contains the following sections:

2.1 Microsoft C Runtime Libs Required for OTD Installation

MSVC 12 runtime Libraries must be installed separately before installing OTD. You must install Visual C++ Redistributable Packages for Visual Studio, which can be found at:

https://www.microsoft.com/en-us/download/details.aspx?id=40784

2.2 Prerequisites for Installing Oracle Traffic Director

The following are the prerequisites for installing Oracle Traffic Director.

- At least 1 core CPU with 4 GB RAM and 4 GB Swap.
- The following packages are mandatory for installing Oracle Traffic Director on Oracle Linux 6 for Exalogic.
  - compat-glibc-2.3.4-x86_64 or higher
  - binutils-2.20.51.0.2-5.11.el6-x86_64 or higher
  - compat-libcap1-1.10-1-x86_64 or higher
  - compat-libstdc++-33-3.2.3-69.el6-x86_64 or higher
  - compat-libstdc++-33-3.2.3-69.el6-i686 or higher
  - libgcc-4.4.4-13.el6-i686 or higher
  - libgcc-4.4.4-13.el6-x86_64 or higher
  - libstdc++-4.4.4-13.el6-x86_64 or higher
  - libstdc++-4.4.4-13.el6-x86_64 or higher

  - libstdc++-devel-4.4.4-13.el6-x86_64 or higher
  - sysstat-9.0.4-11.el6-x86_64 or higher
  - gcc-4.4.4-13.el6-x86_64 or higher
  - gcc-c++-4.4.4-13.el6-x86_64 or higher
  - glibc-2.12-1.7.el6-i686 or higher
  - glibc-2.12-1.7.el6-x86_64 or higher
  - glibc-devel-2.12-1.7.el6-x86_64 or higher
  - glibc-devel-2.12-1.7.el6 or higher
  - libaio-0.3.107-10.el6-x86_64 or higher
  - libaio-devel-0.3.107-10.el6-x86_64 or higher

- The following packages are mandatory for installing Oracle Traffic Director on Oracle Linux 6 or 7 for other hardware.
  - binutils-2.20.51.0.2-5.11.el6-x86_64 or higher
  - compat-libcap1-1.10-1-x86_64 or higher
  - compat-libstdc++-33-3.2.3-69.el6-x86_64 or higher
  - compat-libstdc++-33-3.2.3-69.el6-i686 or higher
  - libgcc-4.4.4-13.el6-i686 or higher
  - libgcc-4.4.4-13.el6-x86_64 or higher
  - libstdc++-4.4.4-13.el6-x86_64 or higher
  - libstdc++-4.4.4-13.el6-x86_64 or higher
  - libstdc++-devel-4.4.4-13.el6-x86_64 or higher
  - sysstat-9.0.4-11.el6-x86_64 or higher
  - gcc-4.4.4-13.el6-x86_64 or higher
  - gcc-c++-4.4.4-13.el6-x86_64 or higher
  - glibc-2.12-1.7.el6-i686 or higher
  - glibc-2.12-1.7.el6-x86_64 or higher
  - glibc-devel-2.12-1.7.el6-x86_64 or higher
  - glibc-devel-2.12-1.7.el6 or higher
  - libaio-0.3.107-10.el6-x86_64 or higher
  - libaio-devel-0.3.107-10.el6-x86_64 or higher

For information on installing Oracle WebLogic Server, see Installing Oracle WebLogic Server. For information on performing administration tasks, see Administering Oracle WebLogic Server and Administering Oracle Traffic Director. For a list of custom Oracle Traffic Director WLST commands see Oracle Traffic Director WLST Command Reference.

2.2.1 Prerequisites for Installation in a Collocated Domain

These additional prerequisites are required if installing Oracle Traffic Director in a collocated domain with Oracle WebLogic Server. In this configuration, Oracle Traffic Director is administered through Oracle WebLogic Server.

- Oracle WebLogic Server (`fmw_12.2.1.1.0_infrastructure_generic.jar`)
- Java SE Development Kit 8

The recommended configuration for a collocated domain uses the Restricted JRF template and does not include a database. If this template is not used, the following are additional requirements:

- Oracle Database (Without a Restricted JRF template, the Oracle Traffic Director domain creation requires a running Oracle database to successfully complete the installation).
- Creation of a domain repository.

2.3 Installation Procedure

This section describes how to install Oracle Traffic Director as a physical application.

You can install Oracle Traffic Director either by using a graphical wizard or in silent mode.

- Section 2.3.1, "Installing Oracle Traffic Director in Graphical Mode"
- Section 2.3.2, "Installing Oracle Traffic Director in Silent Mode"

2.3.1 Installing Oracle Traffic Director in Graphical Mode

This section describes how to install Oracle Traffic Director by using an interactive graphical wizard provided by the Oracle Universal Installer. In order to configure Oracle Traffic Director for high availability, the steps below must be performed on two mount points.

1. Download the installer file.

   The location from which you should download the installer file varies depending on how you intend to use the product:

   - **For development**: Oracle Technology Network

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

   - **For production**: Oracle Software Delivery Cloud

     `http://edelivery.oracle.com/`

2. Click **Sign-in/Register**.

   Note: If you are not already logged in, the Oracle Single Sign-On page appears. Enter your Oracle user id and password and click **Sign In**.

   The Terms & Restrictions page appears

3. Click **Accept** to agree to the Export Restrictions, and then click **Continue**.

   The Oracle Software Delivery Cloud page appears.

4. Go to the directory in which you downloaded the installer
5. Run the following command to launch the installation wizard:
   - On Linux:

     ```
     $./fmw_12.2.1.1.0_otd_linux64.bin
     ```

   - On Windows:

     ```
     setup_fmw_12.2.1.1.0_otd_win64.exe
     ```

6. Follow the on-screen prompts and instructions provided on the screens of the installation wizard. Table 2–1 provides a brief description of each screen and the action required on the screen.

   For more information about a specific screen, click the **Help** button on the screen.

Table 2–1 Screens of the Installation Wizard

Screen	Description and Action Required
Installation Inventory Setup	On UNIX operating systems, this screen will appear if this is the first time you are installing any 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. For more information about the central inventory, see Oracle Fusion Middleware Installing Software with the Oracle Universal Installer in *Oracle Fusion Middleware Installing Software with the Oracle Universal Installer.* This screen will not appear on Windows operating systems.
Welcome	Click **Next**.
Auto Updates	Select whether or not you want to receive automatic updates for this product.
Installation Location	Use this screen to specify the location of your Oracle home directory. Oracle home is the directory in which software binaries for Oracle products are stored. Note that run-time processes cannot write to this directory. If you are installing using the standard installation topology for Oracle Traffic Director in a WebLogic Server domain, then you must enter the path to an existing Oracle Fusion Middleware Infrastructure Oracle home. If you are installing using the standard installation topology for Oracle Traffic Director in a standalone domain, you can specify an Oracle home directory of your choice. However, ensure that you install the software in a new Oracle home. For more information about Oracle Fusion Middleware directory structure, see "Selecting Directories for Installation and Configuration" in Planning an Installation of Oracle Fusion Middleware.

Table 2–1 (Cont.) Screens of the Installation Wizard

Screen	Description and Action Required
Installation Type	Use this screen to 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.
Prerequisite Checks	The installer analyzes the host computer to ensure that the prerequisites are fulfilled. The results of the prerequisite checks are displayed on this screen. If a prerequisite check fails, an error or warning message is displayed. ■ Fix the error and click **Rerun**. For example, if any of the required packages listed in Prerequisites for Installing Oracle Traffic Director are not available in the system, install them. ■ To ignore the error or warning and continue with the installation, click **Skip**. ■ To stop the prerequisite checking process, click **Stop**. Click **Next** to continue.
Specify Security Updates	If you already have an Oracle Support account, use this screen to indicate how you would like to receive security updates. If you do not have one and are sure you want to skip this step, clear the check box and verify your selection in the follow-up dialog box.
Installation Summary	This screen displays the Oracle home directory that you specified earlier. It also indicates the amount of disk space that will be used for the installation and the free space available. Review information on this screen. To change the Oracle home directory, click the **Back** button or the **Installation Location** link in the left navigation pane. To save the settings specified so far in the installation wizard in a text file (called a *response* file), click **Save**. If necessary, you can use the response file to perform the same installation from the command line. Click **Install** to proceed with the installation process. For more information about silent or command line installation, see "Using the Oracle Universal Installer in Silent Mode" in Installing Software with the Oracle Universal Installer.
Installation Progress	This screen shows the progress and status of the installation process. If you want to cancel the installation, click **Cancel**. The files that were copied to your system before you canceled the installation will remain on the system; you should remove them manually. Click **Next** to continue.
Installation Complete	Click **Finish**.

Note: After installing Oracle Traffic Director, you must create the administration server instance.

2.3.2 Installing Oracle Traffic Director in Silent Mode

This section describes how to install Oracle Traffic Director in noninteractive mode by specifying installation options at the command line. On Exalogic, in order to configure Oracle Traffic Director for high availability, the steps below must be performed on two mount points.

If a central inventory directory is not already available on the host on which you are installing Oracle Traffic Director, you must create an `oraInst.loc` file before starting the silent installation. For more information, see the "UNIX Users: Creating the oraInst.loc File" section of the *Oracle Fusion Middleware Installation Planning Guide*.

1. Perform steps 1, 2, and 3 of Section 2.3.1, "Installing Oracle Traffic Director in Graphical Mode."
2. Verify that the prerequisites listed in Section 2.2, "Prerequisites for Installing Oracle Traffic Director" are fulfilled.
3. Run the following command:

```
./otd_linux64.bin -silent ORACLE_HOME=$testhome DECLINE_SECURITY_UPDATES=true
INSTALL_TYPE="Collocated OTD (Managed through WebLogic server)" -invPtrLoc
$testhome/oraInventory/inv.txt
```

The path that you provide for `ORACLE_HOME` must be the NFS share that is mounted locally within the compute node.

Note: The `ignoreSysPrereqs` option cannot be used while performing silent installation of Oracle Traffic Director, as this option will cause the installation to fail.

For information about the options of the `runInstaller` command, see the "Silent Oracle Fusion Middleware Installation and Deinstallation" section of the *Oracle Fusion Middleware Installation Planning Guide*.

2.4 Troubleshooting Installation Problems

If you encounter an error while installing Oracle Traffic Director, do the following:

- Verify that your computer meets the requirements specified in Section 2.2, "Prerequisites for Installing Oracle Traffic Director"
- While using the installation wizard, if you realize that you entered incorrect information on one of the installation screens, then return to that screen by clicking **Back**, enter the correct information and proceed with the installation.
- If an error occurs while the installer is copying or linking files:
  1. Note the error and review the installation log files. For more information, see Section 3.1.1, "Examine the Installation Log."
  2. Remove the failed installation by running the following command:

```
$ORACLE_HOME/oui/bin/deinstall.sh
```

3. Correct the issue that caused the error.
4. Restart the installation process.

3

Post Installation

This chapter provides information about verifying the installation to check if it completed successfully. In addition, it provides information about the steps for deinstalling and reinstalling Oracle Traffic Director.

This document contains the following sections:

- Verifying the Installation
- Configuring Oracle Traffic Director Domain
- Deinstalling Oracle Traffic Director
- Reinstalling Oracle Traffic Director

3.1 Verifying the Installation

You can verify whether the installation was completed properly by examining the installation log file, looking at the directories and files in the Oracle home directory, and by trying to access the Oracle Traffic Director administration console.

- Section 3.1.1, "Examine the Installation Log"
- Section 3.1.2, "Verifying the Installation Directory Structure"

3.1.1 Examine the Installation Log

The installer creates log files in the `logs` subdirectory within the Oracle inventory directory.

> **Note:** If you do not know the location of the Oracle inventory directory, you can find the path to it in the *ORACLE_HOME*`/oraInst.loc` file.

The `logs` directory contains the following files:

- `install`*`date-time-stamp`*`.log`

  This is the main log file.

- `install`*`date-time-stamp`*`.out`

  This log file contains the output and error streams during the installation.

- `install`*`date-time-stamp`*`.out`

  This log file contains the output and error streams during the installation.

- launcher-time-stamp.log

  This file contains the date/time the launcher was initiated.

- installProfile*date-time-stamp*.log

  This log file contains the overall statistics, like time taken to complete the installation, as well as configuration, memory, and CPU details.

- oraInstall*date-time-stamp*.log

  This log file contains the output stream of the copy session.

- timeTaken*date-time-stamp*.log

  This file is created only if you start the installer with the -printtime option. It contains information for the amount of time taken to move between screens (applicable for GUI installations only).

- time*date-time-stamp*.log

  This file is created only if you start the installer with the -printtime option. It contains time information for the copy session.

- memory*date-time-stamp*.log

  This file is created only if you start the installer with the -printmemory option. It contains memory usage information for the copy session.

3.1.2 Verifying the Installation Directory Structure

After installing Oracle Traffic Director and performing the post-installation steps, verify that the Oracle home directory contains the following directories:

```
bin
cfgtoollogs
coherence
crs
css
em
has
install
inventory
jlib
ldap
lib
network
nls
OPatch
oracle_common
oracore
otd
oui
plsql
plugins
precomp
rdbms
slax
sqlplus
srvm
webgate
wlserver
xdk
```

3.2 Configuring Oracle Traffic Director Domain

After you successfully install WebLogic Server, create and configure a WebLogic domain using the Configuration Wizard.

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

3.3 Deinstalling Oracle Traffic Director

You might want to remove an Oracle Traffic Director installation, either to remove files pertaining to a failed installation or to install a newer version.

You should always use the instructions provided here for removing the software. If you try to remove the software manually, you may experience problems when you try to reinstall the software at a later time. Following the procedure described here will ensure that the software is properly removed.

To deinstall Oracle Traffic Director, perform the following steps:

1. Delete all the configured *OTD instances* from the Oracle Traffic Director WLST command-line interface to remove the all instances of Oracle Traffic Director available in the specified DOMAIN_HOME. This procedure also ensures that all related configuration settings such as services, failover configurations and so on are fully removed.
2. After deleting all OTD instances and Configurations, run the following command:

   ```
   $ORACLE_HOME/oui/bin/deinstall.sh
   ```

   The deinstallation wizard starts.
3. Follow the on-screen prompts and instructions provided on the screens of the installation wizard.

   For more information about a specific screen, click the **Help** button on the screen.

3.4 Reinstalling Oracle Traffic Director

You cannot reinstall Oracle Traffic Director in a directory that already contains an installation of the product.

To reinstall Oracle Traffic Director, perform the following steps:

1. Deinstall the existing installation by following the procedure described in Section 3.3, "Deinstalling Oracle Traffic Director."
2. Install Oracle Traffic Director as described in Section 2.3, "Installation Procedure."

4

Upgrading Oracle Traffic Director to 12c (12.2.1.1.0)

This chapter describes how to upgrade Oracle Traffic Director to 12*c* (12.2.1.1.0) using Oracle Fusion Middleware Upgrade Assistant.

The following topics are covered:

- Upgrading to Oracle Traffic Director 12c (12.2.1.1.0)
- Post-Upgrade Tasks

> **Note:** For information about upgrading from Oracle Traffic Director 11g to 12c (12.2.1), see Upgrading from Oracle Traffic Director 11g to 12c (12.2.1).

4.1 Upgrading to Oracle Traffic Director 12*c* (12.2.1.1.0)

Oracle Fusion Middleware Upgrade Assistant supports an *out-of-place* upgrade to 12*c* (12.2.1.1.0) for the following Oracle Traffic Director 11*g* releases:

- Oracle Traffic Director FMW 11*g* Release 1 (11.1.1.7.0)
- Oracle Traffic Director FMW 11*g* Release 1 (11.1.1.9.0)

Oracle Fusion Middleware Upgrade Assistant supports an *in-place* upgrade to 12*c* (12.2.1.1.0) 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 12.2.1.1:

- Preparing for Upgrading to Oracle Traffic Director 12c (12.2.1.1.0)
- Running the Upgrade Assistant
- Upgrading the Component Configurations
- Verifying the Component Configurations Upgrade

4.1.1 Preparing for Upgrading to Oracle Traffic Director 12*c* (12.2.1.1.0)

Before you upgrade to Oracle Traffic Director 12c (12.2.1.1.0), follow these steps:

1. Ensure that 12.2.1.1.0 binaries are installed in a new `MW_HOME`. A valid WebLogic Server domain extended with OTD and dependant JRF templates must also be created at the target location.

Note: 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 12.2.1.1.0 environment.

Notes:

- If Oracle Traffic Director 11g 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:
  - 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/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
    ```

- 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.

4.1.2 Running the Upgrade Assistant

To start the upgrade process, run the Oracle Fusion Middleware Upgrade Assistant (the `ua.bat/ua` script) located in the *`ORACLE_HOME`*`/oracle_common/upgrade/bin` directory.

For more information, see Starting the Upgrade Assistant section in *Upgrading with the Upgrade Assistant*.

4.1.3 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.

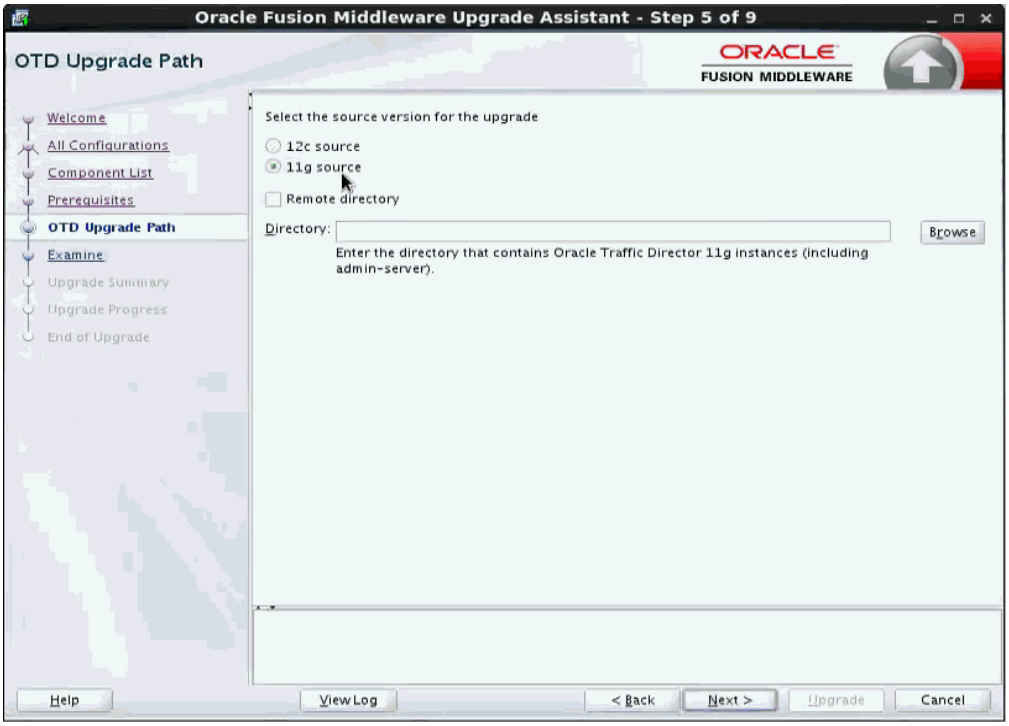
Standalone domain upgrade:

- Specify the location of the 12.2.1.1.0 target domain for the upgraded Oracle Traffic Director configurations

Collocated domain upgrade:

- Specify the location of the 12.2.1.1.0 target domain for the upgraded Oracle Traffic Director configurations
- Specify the starting point for an upgrade. The options are '12c source' and '11g source' as shown in Figure 4–1.

Figure 4–1 Oracle Traffic Director Upgrade Path



If the starting point is 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.

4.1.4 Verifying the Component Configurations Upgrade

To verify that the Oracle Traffic Director domain component configurations upgrade was successful, ensure that the following changes are done for each Oracle Traffic Director configuration.

For Oracle Traffic Director 11*g* Configuration:

- The 11g configuration files are copied to the 12.2.1.1.0 domain under *DOMAIN_HOME*/config/fmwconfig/components/OTD/ directory.
- The configuration elements in `server.xml` file are modified.
- The 11*g* `server.xml` elements which are not supported in 12.2.1.1.0 are removed.
- The 11*g* `obj.conf` parameters which are not supported in 12.2.1.1.0 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 12.2.1.1.

For Oracle Traffic Director 12*c* Configuration:

- The version in `server.xml` of config-store is modified to 12.2.1.1.
- 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.

4.2 Post-Upgrade Tasks

Review the following list of post-upgrade tasks you might have to perform after upgrading to Oracle Traffic Director 12c (12.2.1.1.0):

- 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 configuration files to the paths outside of `INSTANCE_HOME` and `ORACLE_HOME` may not be accessible post upgrade. This should be configured manually.

5

Upgrading from Oracle Traffic Director 11g to 12c (12.2.1)

This chapter describes how to upgrade from Oracle Traffic Director 11*g* to Oracle Traffic Director 12*c* (12.2.1)

The following topics are covered:

- Section 5.1, "Preparing to Upgrade to Oracle Traffic Director 12c (12.2.1)"
- Section 5.2, "Running 12c (12.2.1) Upgrade Assistant"
- Section 5.3, "What Is Upgraded to Oracle Traffic Director 12c (12.2.1)"
- Section 5.4, "Post-Upgrade Steps"

5.1 Preparing to Upgrade to Oracle Traffic Director 12*c* (12.2.1)

Upgrade to 12c (12.2.1) is supported for the following software versions:

- Oracle Traffic Director FMW 11*g* Release 1 (11.1.1.7.0)
- Oracle Traffic Director FMW 11*g* Release 1 (11.1.1.9.0)

Before you upgrade to Oracle Traffic Director 12*c* (12.2.1), you must follow these steps:

1. Make sure WebLogic Server 12.2.1 is installed into a new FMW_HOME and extended with OTD 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 OTD 11g 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

5.2 Running 12*c* (12.2.1) Upgrade Assistant

Run 12*c* Upgrade Assistant to complete the upgrade. The `ua` script is available under the path:

```
$FMW_HOME/oracle_common/upgrade/bin/ua
```

Command Options

Option	Description	Default
logLevel	One of WARNING, TRACE, NOTIFICATION, ERROR, or INTERNAL_ERROR	NOTIFICATION
response	Take user inputs from the specified file and perform the upgrade without any graphics user interface.	Normal GUI operation
examine	Only the examine operation of each selected plug-in will be called. The upgrade operations will be skipped. This can be useful during testing.	Both examine and upgrade is called.

You can run the Upgrade Assistant in the following ways:

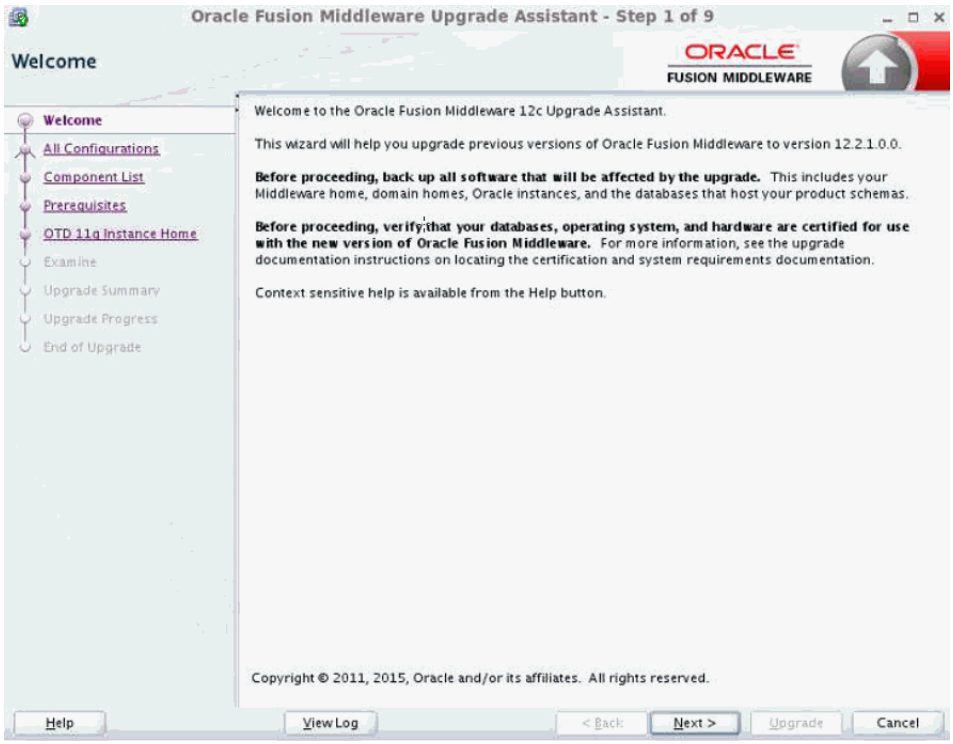
- Upgrading Oracle Traffic Director in Graphical Mode
- Upgrading Oracle Traffic Director in Silent Mode

5.2.1 Upgrading Oracle Traffic Director in Graphical Mode:

Launch the upgrade assistance and follow the steps below:

1. Welcome screen page is displayed, showing the list of tasks to be done, as shown in Figure 5–1.

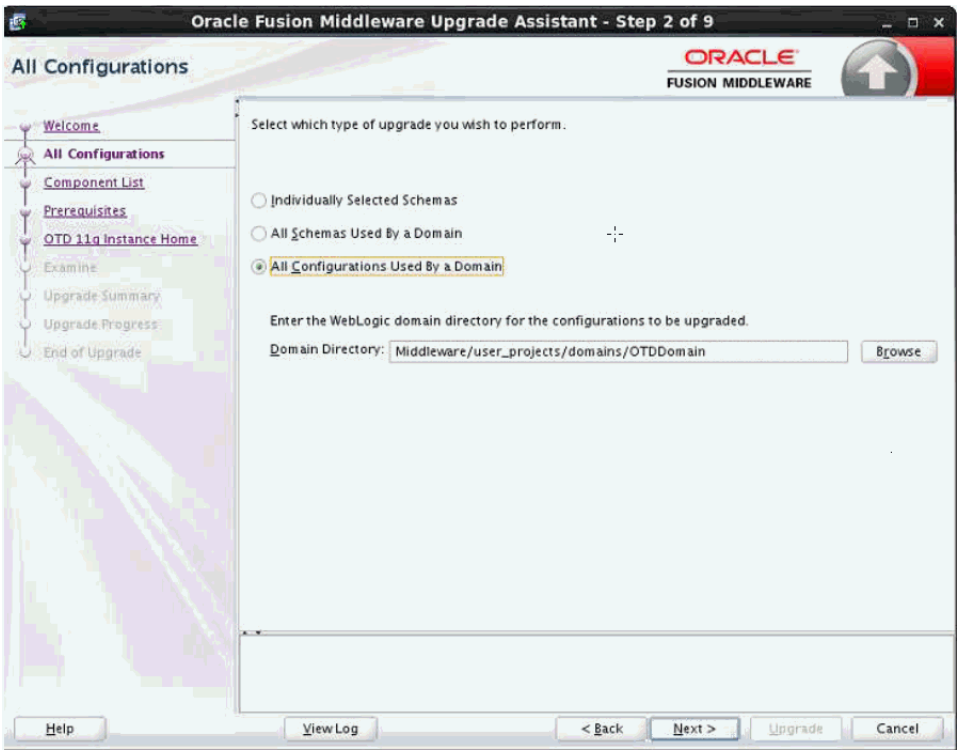
Figure 5–1 Welcome Screen



Click **Next** to continue.

2. All Configurations screen page is displayed, select "All Configurations Used By a Domain" and provide the correct domain path, as shown in Figure 5–2.

Figure 5–2 All Configurations



Click **Next** to continue.

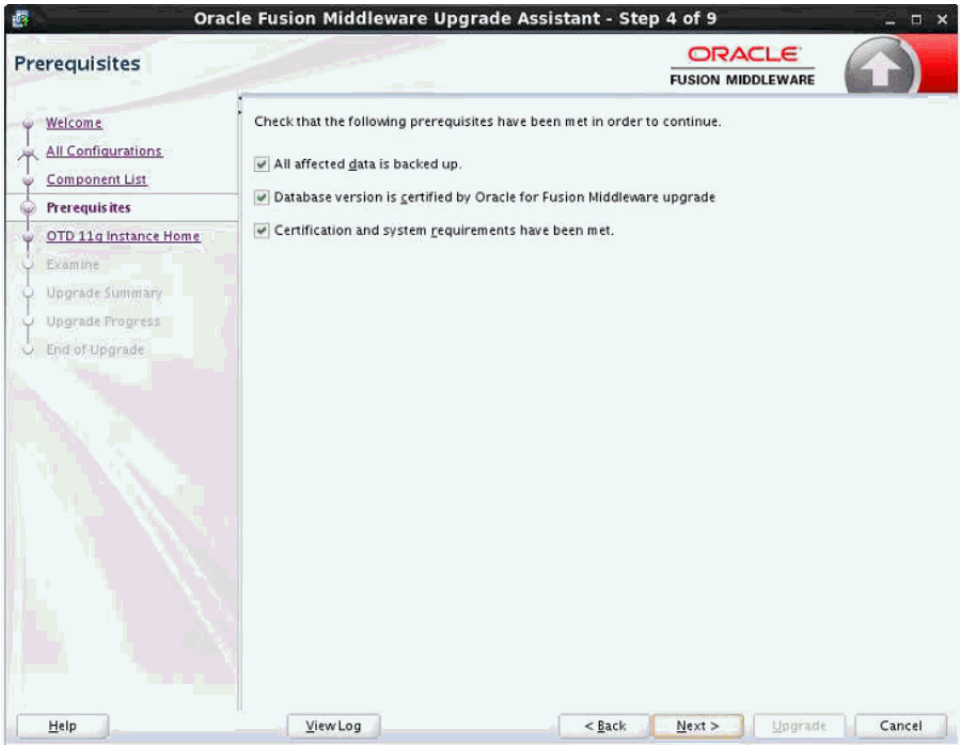
3. Component List screen page is displayed, as shown in Figure 5–3.

Figure 5–3 Component List

Click **Next** to continue.

4. Prerequisites screen page is displayed, select all the check boxes, as shown in Figure 5–4.

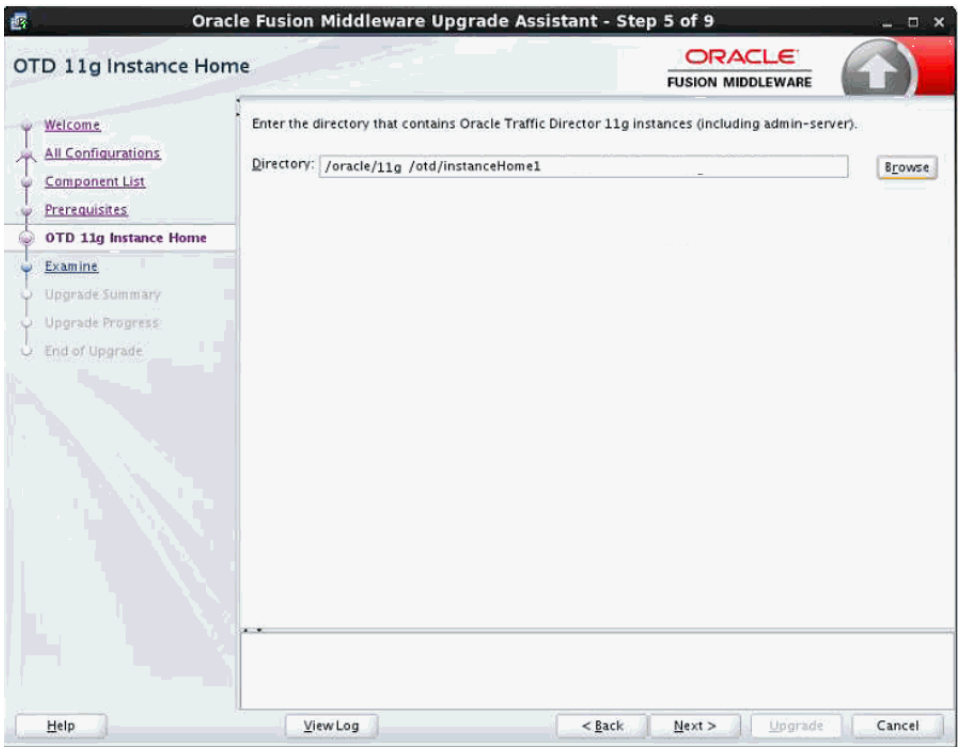
Figure 5–4 Prerequisites



Click **Next** to continue.

5. OTD 11g Instance Home screen page is displayed, provide the path to 11g OTD Instance Home, as shown in Figure 5–5.

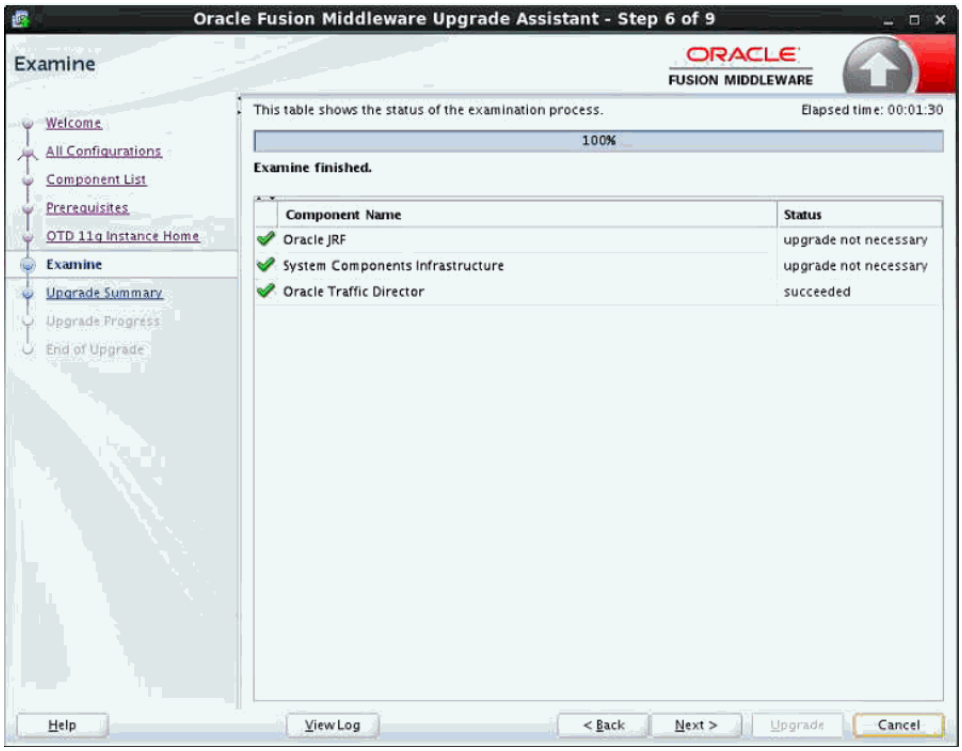
Figure 5–5 OTD 11g Instance Home



Click **Next** to continue.

6. Examine screen page is displayed, showing the list of tasks done, as shown in Figure 5–6.

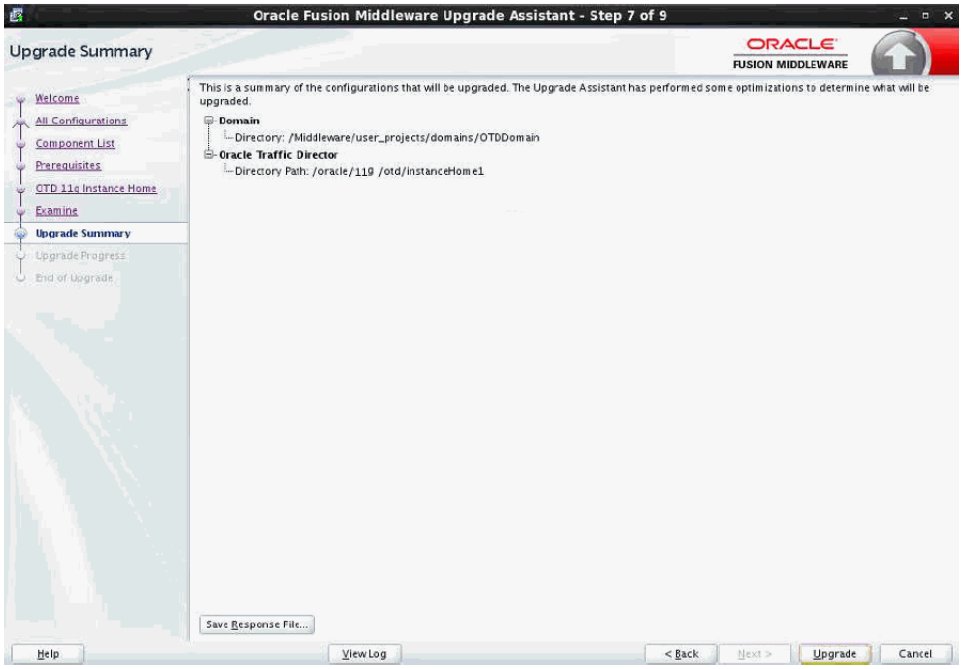
Figure 5–6 Examine



Click **Next** to continue.

7. Upgrade Summary screen page is displayed, as shown in Figure 5–7.

Figure 5–7 Upgrade Summary

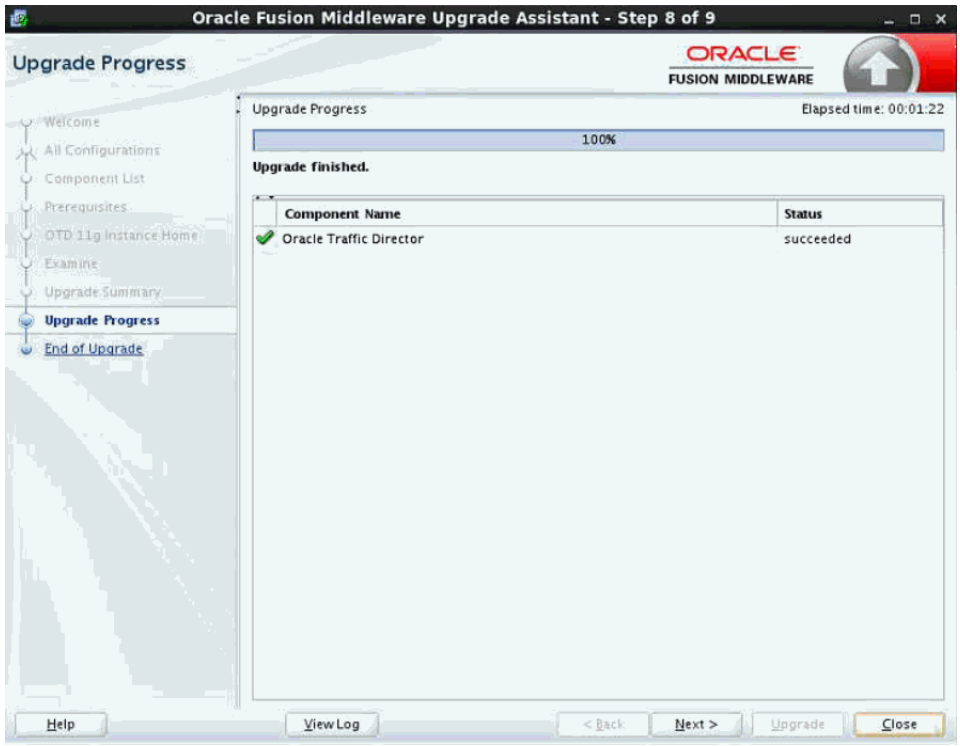


Note: Click on **Save Response File..** button to create a ressponse file, which can be used as an input for Command Line upgrade.

Click **Next** to continue.

8. Upgrade Progress screen page is displayed, as shown in Figure 5–8.

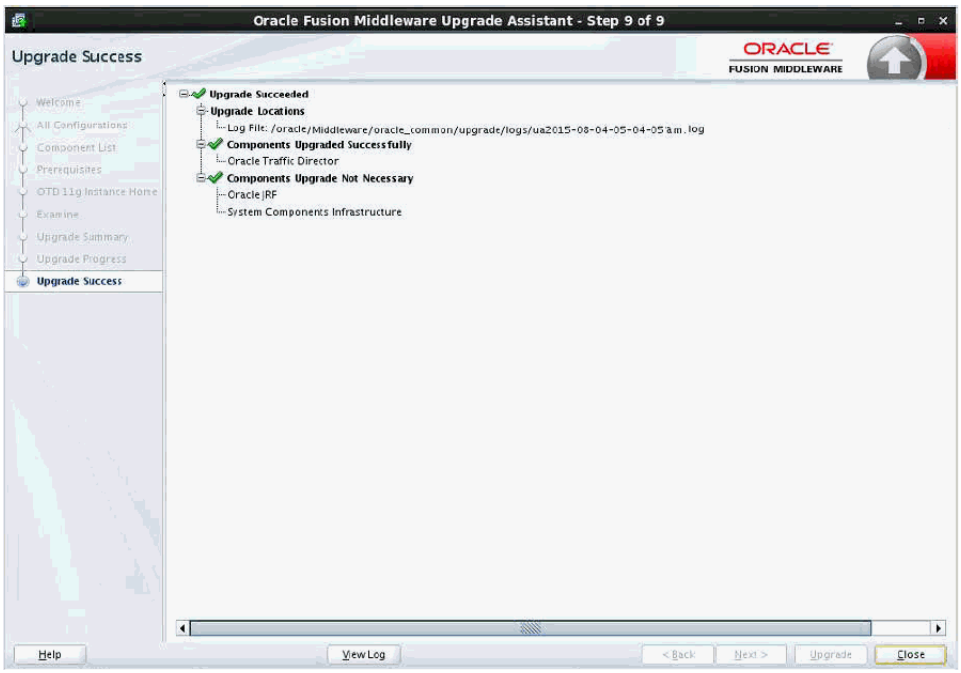
Figure 5–8 Upgrade Progress



Click **Next** to continue.

9. Upgrade Success screen page is displayed, as shown in Figure 5–9.

Figure 5–9 Upgrade Success



Click **Close** to finish the upgrade.

5.2.2 Upgrading Oracle Traffic Director in Silent Mode

The other mode to upgrade is in the silent mode, run the upgrade UA command with the response file option.

This response file can be generated using the upgrade wizard by choosing the. The 'Upgrade Summary' page provides a 'Save Response File' button for this purpose.

On successful upgrade, a success message is displayed on the console. Log file will be available under this 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.

5.3 What Is Upgraded to Oracle Traffic Director 12*c* (12.2.1)

The following are the changes after upgraded:

File	Status
magnus.conf	Copied as-is
WAF rulesedt files	Copied as-is
cert9.db	Imported to Oracle Wallet
key4.db	Imported to Oracle Wallet
pkcs11.txt	Imported to Oracle Wallet
obj.conf	Modified, see Section 5.3.1, "obj.conf"
server.xml	modified, see Section 5.3.2, "server.xml changes"

5.3.1 obj.conf

SAFs changed:

check-request-limits SAF:

Params removed:

interval

continue

ssl-client-config SAF:

This SAF is no longer supported in 12.2.1. Instead, ssl client config settings within origin-server-pool element in server.xml are used.

As part of upgrade, this SAF will be removed from obj.conf and since in 11g this was a VS specific configuration and in 12.2.1 it is not, a warning message will be logged for manually configuring this in server.xml.

5.3.2 server.xml changes

These server.xml elements no longer support:

- <server>:<cluster> and its sub-elements (<local-host>, <instance>, <failover-group>)
- <server>:<platform>

- <server>:<ssl-client>
- <server>:<user>
- <server>:<pkcs11>:<allow-bypass>
- <server>:<pkcs11>:<token> and its sub-elements (<name>, <pin>, <enabled>)
- <server>:<tcp-listener>:<ssl>:<tls-session-tickets-enabled
- <server>:<http-listener>:<ssl>:<tls-session-tickets-enabled>
- <server>:<tcp-listener>:<ssl>:<strict-sni-vs-host-match>
- <server>:<http-listener>:<ssl>:<strict-sni-vs-host-match>
- <server>:<tcp-listener>:<ssl>:<tls-rollback-detection>
- <server>:<http-listener>:<ssl>:<tls-rollback-detection>
- The following cipher elements under
  <server>:<tcp-listener>:<ssl>:<ssl3-tls-ciphers> and
  <server>:<http-listener>:<ssl>:<ssl3-tls-ciphers>

```
<SSL_RSA_WITH_DES_CBC_SHA>
<SSL_RSA_FIPS_WITH_DES_CBC_SHA>
<SSL_RSA_EXPORT_WITH_RC4_40_MD5>
<SSL_RSA_EXPORT_WITH_RC2_CBC_40_MD5>
<TLS_RSA_EXPORT1024_WITH_DES_CBC_SHA>
<TLS_RSA_EXPORT1024_WITH_RC4_56_SHA>
<SSL_RSA_WITH_NULL_MD5>
<SSL_RSA_WITH_NULL_SHA>
<TLS_ECDHE_RSA_WITH_NULL_SHA>
<TLS_ECDHE_ECDSA_WITH_NULL_SHA>
<SSL_RSA_FIPS_WITH_3DES_EDE_CBC_SHA>
<TLS_RSA_WITH_CAMELLIA_256_CBC_SHA>
<TLS_RSA_WITH_CAMELLIA_128_CBC_SHA>
<TLS_RSA_WITH_SEED_CBC_SHA>
<SSL_RSA_WITH_RC4_128_MD5>
```

server.xml elements modified:

- <server>:<pkcs11>:<crl-path> moved to <server>:<crl>:<crl-path>
- <server>:<http-listener>:<ssl>:<tls> changed to
  <server>:<http-listener>:<ssl>:<tls10>
- <server>:<tcp-listener>:<ssl>:<tls> changed to
  <server>:<tcp-listener>:<ssl>:<tls10>
- <server>:<http-listener>:<ssl>:<server-cert-nickname> should be replaced by

```
<server>
  <http-listener>
    <ssl>
      <cert>
        <subject/>
        <serial-number/>
        <issuer/>
      </cert>
    </ssl>
  </http-listener>
</server>
```

- <server>:<tcp-listener>:<ssl>:<server-cert-nickname> should be replaced by

```
<server>
```

```
  <tcp-listener>
    <ssl>
      <cert>
        <subject/>
        <serial-number/>
        <issuer/>
      </cert>
    </ssl>
  </tcp-listener>
</server>
```

- <server>:<virtual-server>:<ssl>:<server-cert-nickname> should be replaced by

```
<server>
  <virtual-server>
    <ssl>
      <cert>
        <subject/>
        <serial-number/>
        <issuer/>
      </cert>
    </ssl>
  </virtual-server>
</server>
```

- <server>:<origin-server-pool>:<type> with value as "https" change it to

```
<server>
  ...
  <origin-server-pool>
    <type>http</type>
    <ssl/>
  </origin-server-pool>
  ...
</server>
```

- <server>:<origin-server>:<enabled> changed to <server>:<origin-server>:<mode>

```
<enabled>true</enabled> => <mode>enabled</mode>
<enabled>false</enabled> => <mode>disabled</mode>
```

5.4 Post-Upgrade Steps

Review the following list of post-upgrade tasks you might have to perform after using the Upgrade Assistant to upgrade to Oracle Traffic Director 12*c* (12.2.1):

- OTD system component instances must be created post-upgrade by targeting the system component configurations to machines using Fusion Middleware Control or WLST.
- OTD is generally configured for failover and thus, the failover groups may need to be created post-upgrade.
- Creation of instances and failover groups is a deployment task and thus, these steps are best handled outside upgrade as post-upgrade steps.
- Any references in the OTD config files to the paths outside of INSTANCE_HOME and ORACLE_HOME may not be accessible post-upgrade. This should be configured manually.

A

Configuring OAM Agent (WebGate) for Oracle Traffic Director 12.2.1

This appendix describes the steps for configuring WebGate for Oracle Traffic Director 12.2.1.

A WebGate intercepts HTTP requests and forwards them to the Oracle Access Manager for authentication and authorization. WebGate gets installed by default when you install Oracle Traffic Director.

This appendix contains the following sections:

A.1 Prerequisites for Configuring Webgate

Before you can configure Oracle Traffic Director 12*c* (12.2.1) WebGate, you must install one of the following versions of Oracle Access Manager.

> **Note:** It is highly recommended that Oracle Access Manager is installed in its own environment and not on the same machine as WebLogic Server. Oracle Access Manager and WebLogic Server can be installed on the same machine if they are both 11g versions.

- *Oracle Fusion Middleware 11gR2 Release 2(11.1.2.2.0)*
- *Oracle Fusion Middleware 11gR2 Release 2(11.1.2.3.0)*

A.2 Configuring Oracle Traffic Director 12*c* WebGate

Complete the following steps after installing Oracle Traffic Director to configure Oracle Traffic Director 12*c* (12.2.1) WebGate for Oracle Access Manager:

- **On UNIX**

  1. Go to the *$(Oracle_Home)*/webgate/otd/tools/deployWebGate directory (Please note that `$(Oracle_Home)` is the location set as the OracleHome when installing Oracle Traffic Director) by running the following command:

     ```
     cd $(Oracle_Home)/webgate/otd/tools/deployWebGate
     ```

2. Run the following command to create the OTD WebGate Instance Directory from *$(Oracle_Home)*/webgate/otd/tools/deployWebGate:

   ./deployWebGateInstance -w *webgate_instanceDirectory* -oh *$(Oracle_Home)* -ws otd

   In this command:

   – $(Oracle_Home) is the path to where Oracle Traffic Director has been installed.

     Example:

     /home/oracle

   – webgate_instanceDirectory is the location of the directory where you will copy the WebGate profile.

     Example:

     $(Domain_Home)/config/fmwconfig/components/OTD/instances/*Instance_Name*

     (Please note that $(Domain_Home)is the path to the directory which contains the OTD domain.)

3. Set the environment variable LD_LIBRARY_PATH to *WebGate_$(Oracle_Home)*/lib

   For example:

   For Linux 64

   export LD_LIBRARY_PATH=$LD_LIBRARY_PATH:$(Oracle_Home)/lib

   For Windows

   set PATH=%(Oracle_Home)%\bin;%path%

   For Solaris/Sparc

   export LD_PRELOAD_64=$(Oracle_Home)/lib/libclntsh.so.11.1:$(Oracle_Home)/lib/libnnz11.so

4. Go to the following directory:

   For Unix-based platforms

   $(Oracle_Home)/webgate/otd/tools/setup/InstallTools

   For Windows

   %(Oracle_Home)%\webgate\otd\tools\EditObjConf

5. On the command line, run the following command for updating OTD conf files, such as magnus.conf and obj.conf.

   For a standalone Oracle Traffic Director installation:

   ./EditObjConf -f *Domain_Home*/config/fmwconfig/components/OTD/instances/*Instance_Name*/config/*Instance_Name*-obj.conf -w *webgate_instanceDirectory* [-oh Oracle_Home] -ws otd

   For a collocated Oracle Traffic Director installation:

   ./EditObjConf -f *Domain_Home*/config/fmwconfig/components/OTD/*Instance_Name*/config/*Instance_Name*-obj.conf -w *webgate_instanceDirectory [-oh Oracle_Home]* -ws otd

In this command:

- *Oracle_Home* is the path to the parent directory of a valid WebLogic Server installation, or to where Oracle Traffic Director is installed.

  Example:

  ```
  /home/oracle
  ```

- webgate_instanceDirectory is the location of the directory where you will copy the WebGate profile.

  Example:

  Domain_Home/config/fmwconfig/components/OTD/instances/*Instance_Name*

- **On Windows**

1. Go to the *%Oracle_Home*%\webgate\otd\tools\deployWebGate directory by running the following command:

   ```
   cd %Oracle_Home%\webgate\otd\tools\deployWebGate
   ```

2. Run the following command to copy the required bits of agent from the *%Oracle_Home%* directory to the *webgate_instanceDirectory* location:

   ```
   deployWebGateInstance.bat -w webgate_instanceDirectory [-oh Oracle_Home] -ws otd
   ```

   In this command:

   - Oracle_Home is the directory in which you have installed Oracle Traffic Director WebGate.

     Example:

     ```
     \home\oracle
     ```

   - webgate_instanceDirectory is the location of the directory where you will copy the WebGate profile.

     Example:

     Domain_Home/config/fmwconfig/components/OTD/instances/*Instance_Name*

3. Run the following command to set the PATH environment variable:

   ```
   set %PATH%=%PATH%;%Oracle_Home%\webgate\otd\lib;%Oracle_Home%\bin
   ```

4. Go to the following directory:

   %Oracle_Home%\webgate\otd\tools\EditObjConf

5. On the command line, run the following command for updating OTD conf files, such as magnus.conf and obj.conf.

   For a standalone Oracle Traffic Director installation:

   EditObjConf -f *Domain_Home*/config/fmwconfig/components/OTD/instances/*Instance_Name*/config/*Instance_Name*-obj.conf -w *webgate_instanceDirectory [-oh $(Oracle_Home)]* -ws otd

   For a collocated Oracle Traffic Director installation:

   ./EditObjConf -f *Domain_Home*/config/fmwconfig/components/OTD/*Instance_Name*/config/*Instance_*

Name-obj.conf -w *webgate_instanceDirectory* [-oh *$(Oracle_Home)*] -ws otd

In this command:

– Oracle_Home is the directory in which you have installed Oracle Traffic Director WebGate for Oracle Access Manager.

  Example:

  \home\oracle

– webgate_instanceDirectory is the location of the directory where you will copy the WebGate profile.

  Example:

  Domain_Home/config/fmwconfig/components/OTD/instances/*Instance_Name*

A.3 Verifying the Configuration of Oracle Traffic Director 12*c* WebGate

After installing Oracle Traffic Director 12*c* (12.2.1) WebGate for Oracle Access Manager and completing the configuration steps, you can examine the *installDATE-TIME_STAMP.out* log file to verify the installation. The default location of the log are as follows:

- **On UNIX**

  $(Oracle_Home)/oraInst.loc

- **On Windows**

  C:\Program Files\Oracle\Inventory\logs

A.4 Getting Started with a New Oracle Traffic Director 12*c* WebGate

Before you can use the new Oracle Traffic Director 12*c* (12.2.1) WebGate agent for Oracle Access Manager, you must complete the following tasks:

1. Registering the New Oracle Traffic Director 12c WebGate
2. Copying Generated Files and Artifacts to the Oracle Traffic Director WebGate Instance Location
3. Restarting the Oracle Traffic Director Instance

A.4.1 Registering the New Oracle Traffic Director 12*c* WebGate

You can register the new WebGate agent with Oracle Access Manager by using the Oracle Access Manager Administration console. For more information, see "Registering an OAM Agent Using the Console" in the *Oracle Fusion Middleware Administrator's Guide for Oracle Access Management*.

Alternatively, you can use the RREG command-line tool to register a new WebGate agent. You can use the tool to run in two modes: **In-Band** and **Out-Of-Band**.

This section contains the following topics:

- Setting Up the RREG Tool
- Updating the OAM11gRequest.xml File
- Using the In-Band Mode

- Using the Out-Of-Band Mode
- Files and Artifacts Generated by RREG

A.4.1.1 Setting Up the RREG Tool

To set up the RREG tool, complete the following steps:

- **On UNIX**

  1. After installing and configuring Oracle Access Manager, go to the following directory:

     Oracle_IDM2/oam/server/rreg/client

  2. Untar the RREG.tar.gz file.

     Example:

     ```
     gunzip RREG.tar.gz
     ```

     ```
     tar -xvf RREG.tar
     ```

  The tool for registering the agent is located at:

  RREG_Home/bin/oamreg.sh

  > **Note:** *RREG_Home* is the directory in which you extracted the contents of RREG.tar.gz/rreg.

- **On Windows**

  1. After installing and configuring Oracle Access Manager, go to the following location:

     Oracle_IDM2\oam\server\rreg\client

  2. Extract the contents of the RREG.tar.zip file to a destination of your choice.

The tool for registering the agent is located at:

RREG_Home\bin\oamreg.bat

> **Note:** *RREG_Home* is the directory in which you extracted the contents of RREG.tar.gz/rreg.

Set the following environment variables in the oamreg.sh script, on UNIX, and oamreg.bat script, on Windows:

- OAM_REG_HOME

  Set this variable to the absolute path to the directory in which you extracted the contents of RREG.tar/rreg.

- JDK_HOME

  Set this variable to the absolute path to the directory in which Java or JDK is installed on your machine.

A.4.1.2 Updating the OAM11gRequest.xml File

You must update the agent parameters, such as `agentName`, in the `OAM11GRequest.xml` file in the *RREG_Home*`\input` directory on Windows. On UNIX, the file is in the *RREG_Home*`/input` directory.

> **Note:** The `OAM11GRequest.xml` file or the short version `OAM11GRequest_short.xml` is used as a template. You can copy this template file and use it.

Modify the following required parameters in the `OAM11GRequest.xml` file or in the `OAM11GRequest_short.xml` file:

- `serverAddress`

  Specify the host and the port of the OAM Administration Server.

- `agentName`

  Specify any custom name for the agent.

- `agentBaseUrl`

  Specify the host and the port of the machine on which Oracle Traffic Director 12c WebGate is installed.

- `preferredHost`

  Specify the host and the port of the machine on which Oracle Traffic Director 12*c* WebGate is installed.

- `security`

  Specify the security mode, such as `open`, based on the WebGate installed.

- `primaryServerList`

  Specify the host and the port of Managed Server for the Oracle Access Manager proxy, under a *`Server`* container element.

After modifying the file, save and close it.

A.4.1.3 Using the In-Band Mode

If you run the RREG tool once after updating the WebGate parameters in the `OAM11GRequest.xml` file, the files and artifacts required by WebGate are generated in the following directory:

On UNIX:

RREG_Home`/output/`*agent_name*

On Windows:

RREG_Home`\output\`*agent_name*

> **Note:** You can run RREG either on a client machine or on the server. If you are running it on the server, you must manually copy the artifacts back to the client.

Complete the following steps:

1. Open the OAM11GRequest.xml file, which is in *RREG_Home*/input/ on UNIX and *RREG_Home*\input on Windows. *RREG_Home* is the directory on which you extracted the contents of RREG.tar.gz/rreg.

   Edit the XML file and specify parameters for the new Oracle Traffic Director WebGate for Oracle Access Manager.

2. Run the following command:

   On UNIX:

   ```
   ./RREG_Home/bin/oamreg.sh inband input/OAM11GRequest.xml
   ```

   On Windows:

   ```
   RREG_Home\bin\oamreg.bat inband input\OAM11GRequest.xml
   ```

A.4.1.4 Using the Out-Of-Band Mode

If you are an end user with no access to the server, you can e-mail your updated OAM11GRequest.xml file to the system administrator, who can run RREG in the out-of-band mode. You can collect the generated *AgentID*_Response.xml file from the system administrator and run RREG on this file to obtain the WebGate files and artifacts you require.

After you receive the generated *AgentID*_Response.xml file from the administrator, you must manually copy the file to the input directory on your machine.

- **On UNIX**

  Complete the following steps:

  1. If you are an end user with no access to the server, open the OAM11GRequest.xml file, which is in *RREG_Home*/input/.

     RREG_Home is the directory on which you extracted the contents of RREG.tar.gz/rreg. Edit this XML file and specify parameters for the new Oracle Traffic Director WebGate for Oracle Access Manager. Send the updated file to your system administrator.

  2. If you are an administrator, copy the updated OAM11GRequest.xml file, which is in *RREG_Home*/input/ directory.

     This is the file that you received from the end user. Go to your (administrator's) *RREG_Home* directory and run the following command:

     ```
     ./RREG_Home/bin/oamreg.sh outofband input/OAM11GRequest.xml
     ```

     An *Agent_ID*_Response.xml file is generated in the output directory on the administrator's machine, in the *RREG_Home*/output/ directory. Send this file to the end user who sent you the updated OAM11GRequest.xml file.

  3. If you are an end user, copy the generated *Agent_ID*_Response.xml file, which is in *RREG_Home*/input/.

     This is the file that you received from the administrator. Go to your (client's) RREG home directory and run the following command on the command line:

     ```
     ./RREG_Home/bin/oamreg.sh outofband input/Agent_ID_Response.xml
     ```

Note: If you register the WebGate agent by using the Oracle Access Manager Administration Console, as described in "Registering an OAM Agent Using the Console" in the *Oracle Fusion Middleware Administrator's Guide for Oracle Access Management*, you must manually copy the files and artifacts generated after the registration from the server (the machine on which the Oracle Access Manager Administration Console is running) to the client machine. The files and artifacts are generated in the *$(Oracle_Home)*/user_projects/domains/*name_of_the_WebLogic_domain_for_OAM*/output/*Agent_ID* directory.

- **On Windows**

  Complete the following steps:

  1. If you are an end user with no access to the server, open the OAM11GRequest.xml file, which is in *RREG_Home*\input\ directory.

     RREG_Home is the directory in which you extracted the contents of RREG.tar.gz/rreg. Edit this XML file, specify parameters for the new Oracle Traffic Director WebGate for Oracle Access Manager, and send the updated file to your system administrator.

  2. If you are an administrator, copy the updated OAM11GRequest.xml file, which is in *RREG_Home*\input\. This is the file you received from the end user. Go to your (administrator's) *RREG_Home* directory and run the following command:

     ```
     RREG_Home\bin\oamreg.bat outofband input\OAM11GRequest.xml
     ```

     An *Agent_ID*_Response.xml file is generated on the administrator's machine in the *RREG_Home*\output\ directory. Send this file to the end user who sent you the updated OAM11GRequest.xml file.

  3. If you are an end user, copy the generated *Agent_ID*_Response.xml file, which is in *RREG_Home*\input\. This is the file you received from the administrator. Go to your (client's) RREG home directory and run the following command:

     ```
     RREG_Home\bin\oamreg.bat outofband input\Agent_ID_Response.xml
     ```

     Note: If you register the WebGate agent by using the Oracle Access Manager Administration Console, as described in "Registering an OAM Agent Using the Console" in the *Oracle Fusion Middleware Administrator's Guide for Oracle Access Management*, you must manually copy the files and artifacts generated after the registration from the server (the machine on which the Oracle Access Manager Administration Console is running) to the client machine. The files and artifacts are generated in the *$(Oracle_Home)*/user_projects/domains/*name_of_the_WebLogic_domain_for_OAM*/output/*Agent_ID* directory.

A.4.1.5 Files and Artifacts Generated by RREG

Regardless of the method or mode you use to register the new WebGate agent, the following files and artifacts are generated in the *RREG_Home*/output/*Agent_ID* directory:

- wallet/cwallet.sso

- cwallet.sso
- ObAccessClient.xml
- In the **SIMPLE** mode, RREG generates:
  - password.xml, which contains the obfuscated global passphrase to encrypt the private key used in SSL. This passphrase can be the same as the passphrase used on the server.
  - aaa_key.pem
  - aaa_cert.pem
- In the **CERT** mode, RREG generates password.xml, which contains the obfuscated global passphrase to encrypt the private key used in SSL. This passphrase can be different than the passphrase used on the server.

> **Note:** You can use these files generated by RREG to generate a certificate request and get it signed by a third-party Certification Authority. To install an existing certificate, you must use the existing aaa_cert.pem and aaa_chain.pem files along with password.xml and aaa_key.pem.

A.4.2 Copying Generated Files and Artifacts to the Oracle Traffic Director WebGate Instance Location

After RREG generates these files and artifacts, you must manually copy them, based on the security mode you are using, from the *RREG_Home*/output/*Agent_ID* directory to the webgate_instanceDirectory directory.

Do the following according to the security mode you are using:

- In **OPEN** mode, copy the following files from the *RREG_Home*/output/*Agent_ID* directory to the *webgate_instanceDirectory*/webgate/config directory:
  - wallet/cwallet.sso
  - ObAccessClient.xml
  - cwallet.sso
- In **SIMPLE** mode, copy the following files from the *RREG_Home*/output/*Agent_ID* directory to the *webgate_instanceDirectory*/webgate/config directory:
  - ObAccessClient.xml
  - cwallet.sso
  - password.xml

  In addition, copy the following files from the *RREG_Home*/output/*Agent_ID* directory to the *webgate_instanceDirectory*/webgate/config/simple directory:
  - aaa_key.pem
  - aaa_cert.pem
- In **CERT** mode, copy the following files from the *RREG_Home*/output/*Agent_ID* directory to the *webgate_instanceDirectory*/webgate/config directory:
  - ObAccessClient.xml
  - cwallet.sso

- password.xml

Generating a New Certificate

You can generate a new certificate as follows:

1. Go to the *$(Oracle_Home)*/webgate/otd/tools/openssl directory.
2. Create a certificate request as follows:

```
./openssl req -utf8 -new -nodes -config openssl_silent_otd11g.cnf
-keyout aaa_key.pem -out aaa_req.pem -rand $(Oracle_
Home)/webgate/otd/config/random-seed/
```

3. Self-sign the certificate as follows:

```
./openssl ca -config openssl_silent_otd11g.cnf -policy policy_anything
-batch -out aaa_cert.pem -infiles aaa_req.pem
```

4. Copy the following generated certificates to the *webgate_instanceDirectory*/webgate/config directory:
   - aaa_key.pem
   - aaa_cert.pem
   - cacert.pem located in the simpleCA directory

   Note: After copying the cacert.pem file, you must rename the file to aaa_chain.pem.

Migrating an Existing Certificate

If you want to migrate an existing certificate (aaa_key.pem, aaa_cert.pem, and aaa_chain.pem), ensure that you use the same passphrase that you used to encrypt aaa_key.pem. You must enter the same passphrase during the RREG registration process. If you do not use the same passphrase, the password.xml file generated by RREG does not match the passphrase used to encrypt the key.

If you enter the same passphrase, you can copy these certificates as follows:

1. Go to the *webgate_instanceDirectory*/webgate/config directory.
2. Copy the following certificates to the *webgate_instanceDirectory*/webgate/config directory:
   - aaa_key.pem
   - aaa_cert.pem
   - aaa_chain.pem

A.4.3 Restarting the Oracle Traffic Director Instance

For information about restarting the Oracle Traffic Director instance, see "Starting, Stopping, and Restarting Oracle Traffic Director Instances by Using WLST" in *Administering Oracle Traffic Director*.

If you have configured Oracle Traffic Director in a WebLogic Server domain, you can also use Oracle Fusion Middleware Control to restart the Oracle Traffic Director Instances. For more information, see "Starting, Stopping, and Restarting Oracle Traffic Director Instances Using Fusion Middleware Control" in *Administering Oracle Traffic Director*.

For a standalone instance, you can restart from *Domain_Home*/config/fmwconfig/components/OTD/instances/*Instance_Name*/bin using the ./restart command.

B

Requirements for Installing Oracle Traffic Director on Engineered Systems

This appendix describes additional procedures required for configuring engineered systems before installing Oracle Traffic Director.

This appendix contains the following sections:

- Configuring Shared Storage on Exalogic for Installing Oracle Traffic Director
- Configuring and Creating Zones on Oracle SuperCluster for Installing Oracle Traffic Director

B.1 Configuring Shared Storage on Exalogic for Installing Oracle Traffic Director

This section describes how to configure shared storage on the ZFS appliance in Exalogic, before installing Oracle Traffic Director.

The setup that is discussed in this section is ideal when you are looking for application-level traffic management capabilities to monitor and shape the traffic within Exalogic. In order to achieve this, two compute nodes are allocated, wherein incoming traffic is appropriately screened and routed to one of the back-end application servers. In this scenario, Oracle Traffic Director (web tier) is typically hosted on two compute nodes and the application tier is located on other compute nodes. The web tier and application tier traffic here are isolated both at the physical level as well as the network level.

> **Note:** On Exalogic (Solaris), Oracle Traffic Director can be configured for high availability only when installed on a global zone. In addition, all administration nodes must be running on the global zone.

This section contains the following subsections:

- Overview of Shared Storage in Exalogic
- Creating Projects and Shares
- Mounting Shares

B.1.1 Overview of Shared Storage in Exalogic

In an Exalogic environment, all compute nodes are connected to a shared storage array (ZFS storage appliance) through the InfiniBand fabric. The shared storage array is

used to install and configure all applications, and it is mounted locally within each of these compute nodes through Network File System (NFS).

Before installing Oracle Traffic Director on Exalogic, you must first create new projects and shares, and then mount these shares locally.

For an Oracle Traffic Director installation, it is recommended that the share hosting Oracle Traffic Director is unique to the compute node. For example, if Oracle Traffic Director is installed on two compute nodes for high availability, then the following installation layout is recommended:

- Create a share named `primary` within the storage array and mount this share locally within one compute node.
- Create a share named `secondary` within the storage array and mount this share locally within another compute node.

B.1.2 Creating Projects and Shares

If you wish to configure Oracle Traffic Director for high availability, the administration server and administration node must have `root` access within the instance root directory. Similarly, the ZFS share location needs to be configured appropriately so that a `root` user can read and write to this share location. This can be accomplished by enabling `root access` as NFS exception within the ZFS console.

Perform the following steps for creating and mounting shares with `root` access:

Note: It is recommended that you install Oracle Traffic Director on each node. This is to ensure that there is no application downtime while patching Oracle Traffic Director.

---

1. Create a new project and create new shares within it, or create new shares within an existing project. For information about creating projects and shares, see the following sections in the "Configuring the Sun ZFS Storage 7320 Appliance" chapter of the *Oracle Exalogic Elastic Cloud Machine Owner's Guide*.
   - Creating Custom Projects
   - Creating Custom Shares
2. Log in to the ZFS storage appliance.
3. Ensure that the shares that you just created are configured to allow `root` access on the compute nodes that will host Oracle Traffic Director. This can be done by:
   - Using the ZFS shared storage administration console:

     In the NFS Exceptions section in the ZFS shared storage administration console, ensure that the share hosting Oracle Traffic Director configuration has appropriate NFS exceptions to allow `root` access.

     In addition, in the Properties section in the Project Settings page, deselect the following options
     - Update access time on read
     - Restrict ownership change

     For more information about using these options, see the following guides:
     - Oracle Exalogic Elastic Cloud Machine Owner's Guide
     - Oracle Exalogic Elastic Cloud Administrator's Guide

- Using the CLI:

  Run the following command:

  ```
  sharenfs
  ="sec=sys,rw=@<ip-address-1>/<network-prefix-bits>,root=@<ip-address-2>/<ne
  twork-prefix-bits>"
  ```

  – For an Exalogic physical configuration, `ip-address-1` and `ip-address-2` would be the `BOND0` IP addresses of the compute nodes.

  – For an Exalogic virtual configuration, `ip-address-1` and `ip-address-2` would be the IP addresses of the vServers on the `IPoIB-vServer-shared-storage` network.

  Example:

  ```
  set sharenfs="sec=sys,rw=@196.168.10.0/24,root=@192.168.10.1/24"
  ```

  Note:

  - The terms `BOND0` and `BOND1` refer to the default interfaces for IP over InfiniBand (IPoIB) and Ethernet over InfiniBand (EoIB), respectively, on the Oracle Linux operating system.
  - Oracle Solaris uses the IP Multipathing (IPMP) technology to support IPMP Groups that consist of one or more physical interfaces on the same system that are configured with the same IPMP group name. This technology provides the same functionality as Bonded Interfaces on Oracle Linux. You can name the IPMP groups anything. In this guide, `BOND0` and `BOND1` are used as example names to keep the terminology consistent with Oracle Linux.

  For shares that were created without `root` access, run the following commands. This ensures that a `root` user within a compute node that hosts Oracle Traffic Director is able to start the administration server and administration node:

  ```
  <ZFS-SharedStorage> shares
  <ZFS-SharedStorage> select <Project-used-for-OTD>
  <ZFS-SharedStorage> get sharenfs
  <ZFS-SharedStorage> set sharenfs
  ="sec=sys,rw=@<<ip-address-1>/<network-prefix-bits>,root=@<ip-address-2>/<n
  etwork-prefix-bits>"
  <ZFS-SharedStorage> commit
  ```

B.1.3 Mounting Shares

After creating the shares with the appropriate permission, mount the shares based on your requirement:

- For information about mounting shares on an Exalogic physical configuration, see "Creating NFSv4 Mount Points on Oracle Linux" in the chapter "Configuring NFS Version 4 (NFSv4) on Exalogic" of the *Oracle Exalogic Elastic Cloud Machine Owner's Guide*.

- For information about mounting shares on an Exalogic virtual configuration, see "Setting Up Access to the ZFS Storage Appliance for a vServer" in the *Oracle Exalogic Elastic Cloud Administrator's Guide*.

The mount point that you create is the location where Oracle Traffic Director will be installed. For more information, see Chapter 2, "Installing Oracle Traffic Director."

B.2 Configuring and Creating Zones on Oracle SuperCluster for Installing Oracle Traffic Director

This section provides information about global and non-global zones, and discusses the various options for installing Oracle Traffic Director on Oracle SuperCluster.

The setup that is discussed in this chapter is ideal when you are looking for application-level traffic management capabilities to monitor and shape the traffic within Oracle SuperCluster. In Oracle SuperCluster, two zones (global or non-global) are allocated, wherein incoming traffic is screened and routed to one of the back-end application servers. In this scenario, Oracle Traffic Director (web tier) is typically hosted on two zones and the application tier is located on another zone.

This section contains the following subsections:

B.2.1 Overview of Installing Oracle Traffic Director on Oracle SuperCluster

Before installing Oracle Traffic Director on Oracle SuperCluster, you must consider the following.

- Oracle Traffic Director requires an application domain, such as Oracle VM Server for SPARC (formerly called Logical Domains), running Solaris 11.1 for it to run successfully.
- In an Oracle VM Server for SPARC, Oracle Traffic Director can be installed on either a global zone or a non-global zone.

  The global zone is the default operating system and has control over all the processes. A global zone always exists even when no other zones are configured. A global zone is also used for system-wide administrative control.

  A non-global zone, referred to as a zone, is configured inside the global zone. Each zone is an isolated OS environment that you can use to run applications. The applications and processes that are running in one zone do not affect what is running in other zones.

  For more information about global and non-global zones, see "Oracle Solaris Zones" section of *Oracle Solaris 11.1 Administration: Oracle Solaris Zones, Oracle Solaris 10 Zones, and Resource Management*: http://docs.oracle.com/cd/E26502_01/html/E29024/zone.html.
- One important factor to consider when choosing global or non-global is that Oracle Traffic Director can be configured for high availability only when installed on a global zone. In addition, all administration nodes must be running on the global zone.

Note: Configuring VRRP and hence configuring failover groups is supported only in the global zone, and for a privileged user. This is because of Solaris VRRP limitations. For more information, see the "VRRP Limitations" section of the *Managing Oracle Solaris 11.1 Network Performance Guide*: http://docs.oracle.com/cd/E26502_01/html/E28993/gkmfl.html.

B.2.2 Installing Oracle Traffic Director on Oracle SuperCluster

Oracle Traffic Director can be installed on a global zone or a non-global zone. Note that in order to take advantage of Oracle Traffic Director's high availability capability, it must be installed on a global zone.

Note: Another option to configure Oracle Traffic Director for HA is to install Oracle Solaris Cluster. For more information, see the *Oracle Solaris Cluster Data Services Planning and Administration Guide*, http://docs.oracle.com/cd/E29086_01/html/E29475/index.html.

For an Oracle Traffic Director installation, it is recommended that the zone (global or non-global) hosting Oracle Traffic Director is unique. Note that for installing Oracle Traffic Director on a non-global zone, it must be configured with appropriate disk and network information.

The steps for installing Oracle Traffic Director on Oracle SuperCluster are as follows:

1. Configure and create a new zone, either global or non-global. For more information about leveraging zones, see "Oracle Solaris Zones" in *Oracle Solaris 11.1 Administration: Oracle Solaris Zones, Oracle Solaris 10 Zones, and Resource Management*:

   http://docs.oracle.com/cd/E26502_01/html/E29024/zone.html

2. Download and install Oracle Traffic Director on the zone. For more information, see Chapter 2, "Installing Oracle Traffic Director."