Oracle® Endeca Server

Installation Guide

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Preface

Oracle® Endeca Server is a hybrid search-analytical engine that organizes complex and varied data from disparate sources. At the core of Endeca Information Discovery, the unique NoSQL-like data model and in-memory architecture of the Endeca Server create an extremely agile framework for handling complex data combinations, eliminating the need for complex up-front modeling and offering extreme performance at scale. Endeca Server also supports 35 distinct languages.

About this guide

This guide contains installation instructions for setting up Oracle Endeca Server on Windows and Linux.

The guide assumes that you are familiar with Oracle WebLogic Server concepts.

Who should use this guide

This guide is intended for system administrators installing Oracle Endeca Server on Windows or Linux.

Conventions used in this guide

The following conventions are used in this document.

Typographic conventions

This table describes the typographic conventions used when formatting text in this document.

Typeface	Meaning
User Interface Elements	This formatting is used for graphical user interface elements such as pages, dialog boxes, buttons, and fields.
`Code Sample`	This formatting is used for sample code phrases within a paragraph.
Variable	This formatting is used for variable values. For variables within a code sample, the formatting is *`Variable`*.
`File Path`	This formatting is used for file names and paths.

Symbol conventions

This table describes the symbol conventions used in this document.

Symbol	Description	Example	Meaning
>	The right angle bracket, or greater-than sign, indicates menu item selections in a graphic user interface.	File > New > Project	From the File menu, choose New, then from the New submenu, choose Project.

Path variable conventions

This table describes the path variable conventions used in this document.

Path variable	Meaning
`$MW_HOME`	Indicates the absolute path to your Oracle Middleware home directory, which is the root directory for your WebLogic installation.
`$DOMAIN_HOME`	Indicates the absolute path to your WebLogic domain home directory. For example, if `endeca_server_domain` is the name of your WebLogic domain, then the `$DOMAIN_HOME` value would be the `$MW_HOME/user_projects/domains/endeca_server_domain` directory.
`$ENDECA_HOME`	Indicates the absolute path to your Oracle Endeca Server home directory, which is the root directory for your Endeca Server installation.

Contacting Oracle Customer Support

Oracle Endeca Customer Support provides registered users with important information regarding Oracle Endeca software, implementation questions, product and solution help, as well as overall news and updates.

You can contact Oracle Endeca Customer Support through Oracle's Support portal, My Oracle Support at *https://support.oracle.com*.

Part I

Before You Install

Chapter 1

Introduction

This section provides an overview of Endeca Server and the installation process.

The Endeca Server software package

The Oracle Endeca Server software is the query engine for the front-end applications built on top of it. It answers end-user queries and provides business analytics information to the front-application's users.

The term ***Oracle Endeca Server*** is used in two related contexts: On the one hand, it is the name of the entire software package for the server. On the other hand, the Oracle Endeca Server is the Java application hosted in the WebLogic Server through which you issue queries on your data and manage your data. The data is loaded into an Endeca data domain. The Endeca ***data domain*** is a logical collection of data and metadata managed by the Endeca Server. Through its interfaces, the Endeca Server allows for the data loading, configuration, and querying of a data domain.

Within the Oracle Endeca Server Java application, you can create one or more data domains, stop and start them, view and monitor their status, and automatically restart them.

The Dgraph process

The Endeca Server Java application, (often referred to as Endeca Server), delegates most of its actual query processing to its own internal component, the Dgraph process, which receives client requests via the application tier, queries the index, and returns the results. The Dgraph process is the query engine that uses proprietary data structures and algorithms to provide real-time responses to client requests issued to the data domain running on the server. Each data domain can be served by one or more Dgraph processes. When you create a data domain and start it, Endeca Server launches one or more Dgraph processes for it, manages these processes and monitors them.

Endeca Server interfaces

Endeca Server includes a set of versioned Web services for loading, configuring, and querying data in a data domain. These Web services, together with the Bulk Load Interface, provide the interfaces to the Oracle Endeca Server.

The Endeca Server cluster

The ***Endeca Server cluster*** is a deployment of multiple Endeca Server instances that host and manage multiple clustered data domains. The Endeca Server cluster serves as a building block for building other

services on top of the Oracle Endeca Server software. It also supports on-premise deployments of Endeca Information Discovery. It runs in WebLogic on a homogeneous cluster of hardware nodes, all of which have access with write permissions to shared storage.

It allows system administrators to add additional servers to the cluster over time. It encapsulates the details of setting up data domain clusters, by keeping details about the location of the Endeca Server nodes and hosted data domain nodes hidden from the end users. (The end users are users of any front-end application, such as Studio, configured on top of a particular data domain cluster.)

The Endeca Server cluster makes decisions about how to allocate resources to data domains, performs load balancing and routing of requests to the appropriate nodes, and maintains availability of data domains. It provides a unified interface for provisioning and managing data domains while automating the process of data domain cluster setup, allocation of processing resources, and configuration. It lets you create a reusable set of data domain profiles for data domains, where each of the data domain profiles maps to different allotments of the underlying hardware resources on the hardware nodes hosting Endeca Server instances. When you create a data domain cluster, a previously defined profile is used initially; a cluster can be changed after it has been created.

The data domain cluster

A data domain cluster is composed of a set of nodes (Dgraph processes) all of which can serve query requests. If the data domain cluster is not read-only, one node is identified as the leader node that can process updating requests; all other nodes are follower nodes (and can process read-only query requests). For read-only data domain clusters, all nodes serve as follower nodes. One copy of the index for the data domain is shared and used by all Dgraph nodes. The Cluster Coordinator provides communication between the nodes in the data domain cluster. It also notifies the follower nodes about index updates and updates to the configuration.

If one of the data domain cluster nodes fails, queries continue to be processed by other nodes. A data domain cluster also provides increased throughput by the Oracle Endeca Server. By adding Endeca Server instances to an Endeca Server cluster that is hosting the data domain cluster, you can spread the query load across multiple Oracle Endeca Servers without the need to increase storage requirements at the same rate. Endeca Server instances can be added or removed dynamically, without having to stop the data domain cluster.

In the development environment, you can start with a single Endeca Server hosting one or more data domains. In this case, it is said that all data domains run in a "single-node" Endeca Server cluster (see the cluster description in this topic). When the Endeca Server runs on a single node, it is considered a "cluster of one" that can be expanded to include additional nodes. You can add Endeca Server instances and expand the data domain to utilize those instances. You can also add more data domains. When you move to a production environment, you can duplicate a multi-node data domain cluster that you built in the development environment.

For information on installing and deploying an Endeca Server cluster, see the section in this guide.

For detailed information on the Endeca Server cluster and the data domain cluster, see the *Oracle Endeca Server Cluster Guide*.

Cluster Coordinator

Each Endeca Server installation, regardless of whether it is a single-instance cluster installation or a multi-instance installation, includes the Cluster Coordinator. It monitors the status of Endeca Server instances and implements increased availability.

Data Enrichment Plugins

The Endeca Server software package includes a set of Data Enrichment plugins. A subset of these plugins is used through Studio, in Endeca Information Discovery. For information, see sections about data enrichments in the *Oracle Endeca Information Discovery Studio User's Guide*.

Integration of Endeca Server with WebLogic

The Endeca Server is a J2EE application that runs in a J2EE container in the Oracle WebLogic Server. The Endeca Server uses WebLogic 11g (10.3.6), and Application Development Framework 11g (11.1.1.6). This topic discusses the integration in detail.

The Endeca Server software exposes almost all of its APIs as SOAP Web services. These Web services are implemented using the Oracle WebLogic Server 11g (WebLogic Server version 10.3.6), inside a hosted Web application called the Endeca Server.

The Endeca Server delegates most of its actual query processing to its own internal component, the Dgraph, which is external to the WebLogic Server, is not Java-based, and must be running in each active Endeca Server instance.

For single-node development environments, you can deploy the Endeca Server instance in the single Admin Server in the WebLogic Server. In the Endeca Server cluster, all Endeca Server instances must be running on the WebLogic Managed Servers only.

Important: For performance and troubleshooting purposes, it is preferable to dedicate a WebLogic domain to hosting only the Endeca Server application. In this case, the `endeca-server` root context is used in the URL pointing to any of the WebLogic Server instances hosting the Endeca Server application.

How the WebLogic Server is used

The Endeca Server application hosted in the WebLogic domain utilizes the following features of the WebLogic Server and Application Development Framework (this list is not guaranteed to be exhaustive):

- The Java Required Files (JRF). The JRF template is used for the domain configuration of the Oracle WebLogic Server targeted for using it with the Endeca Server. (This template is used automatically when you create an Endeca Server domain in the WebLogic Server.)
- The WebLogic deployment tools. You use the Configuration Wizard for creating a WebLogic domain for JRF and the Endeca Server. The Endeca Server uses the Administration Console and WLST (the WebLogic Server Scripting Tool) for starting and stopping the Managed Servers hosting the Endeca Server instances.
- The WebLogic Server security features, for ensuring security of the Endeca Server processing, interfaces, and data.

The Endeca Server does not utilize the following features of the WebLogic Server (this list is not exhaustive):

- The WebLogic Server message catalog and the default Java Logging API are not used for logging from the Endeca Server. Instead, the Endeca Server uses the Oracle Diagnostic Logging (ODL). Note that any messages from the WebLogic domain itself (and not the Endeca Server application running inside it) utilize the default message catalog and the Java Logging API from the WebLogic Server.
- The WebLogic Server JDBC modules or resources are not used in the Endeca Server package (as they are not required).

- The WebLogic Server clusters are not used by the Endeca Server for load balancing and request routing. Instead, the Endeca Server cluster accepts requests on any Endeca Server instance, and utilizes its own routing service. Depending on the deployment strategy, an external load balancer can also be used.

Installation options

You can choose between one of the two orchestration script installation modes, or a manual installation of the components.

When installing Endeca Server, you have a choice of two installation options:

- **Installation with the orchestration script.** You can install WebLogic, ADF (Application Development Framework) Runtime, and Endeca Server all at once with a unified orchestration script. The script runs all three installers for you, and, optionally, performs the configuration tasks of creating a WebLogic domain, generating SSL certificates, and registering the Data Enrichment plugins. The orchestration script relies on the configuration file.
  - **Script installation in configuration mode:** In this mode, after installing WebLogic, ADF (Application Development Framework) Runtime, and Endeca Server all at once, the orchestration script performs the configuration tasks of creating a WebLogic domain, generating SSL certificates, and registering the Data Enrichment plugins. For details, see *Installing in configuration mode on page 26*.
  - **Script installation in non-configuration mode:** In this mode, the script runs all three installers for you, but does not perform the configuration tasks. For details, see *Installing in non-configuration mode on page 27*.
- **Manual installation:** If you do not want to use the installation script, you can manually install each of the three packages separately. A manual installation does not require a configuration file, as you will be answering the installer prompts interactively.

  For installing WebLogic and ADF, see *Installing WebLogic Server and Application Developer Framework on page 31*.

  For installing Endeca Server, see *Manually Installing Endeca Server on a Single Machine on page 52*.

After you have installed the Endeca Server package on a single node, you have an option to install and deploy an Endeca Server cluster that consists of multiple Endeca Server instances hosted by multiple Managed Servers in a WebLogic domain. For details, see *Installing and Deploying an Endeca Server Cluster on page 79*.

Chapter 2

Prerequisites

This section provides information about the software and hardware prerequisites for installation of the Oracle Endeca Server.

Required Oracle products

An Endeca Server installation requires the WebLogic Server, ADF Runtime, and JDK products.

Oracle WebLogic Server requirement

The supported software version of Oracle WebLogic Server is 10.3.6, which is part of the WebLogic Server 11g product. The only supported installer version is the **Generic** version, which is available in the **Oracle WebLogic Server 11gR1 (10.3.6) Generic and Coherence** package. The download instructions for this package are in *Downloading the software on page 18*. As a result, the `V29856-01.zip` file (which contains the `wls_generic.jar` installer) is downloaded to your machine.

The Generic version is used because it is a platform-agnostic installer (i.e., can be used on both Linux and Windows platforms) and also because it allows you to use a 64-bit JVM. The 64-bit JVM is required for the Oracle Endeca Server.

Oracle ADF Runtime requirement

After installing WebLogic Server, you must install version 11.1.1.6 of the Oracle ADF (Application Development Framework) Runtime package. The ADF Runtime installer is available in the **Oracle Application Development Runtime 11g Patch Set 5 (11.1.1.6.0)** package. The download instructions for this package are also in *Downloading the software on page 18*.

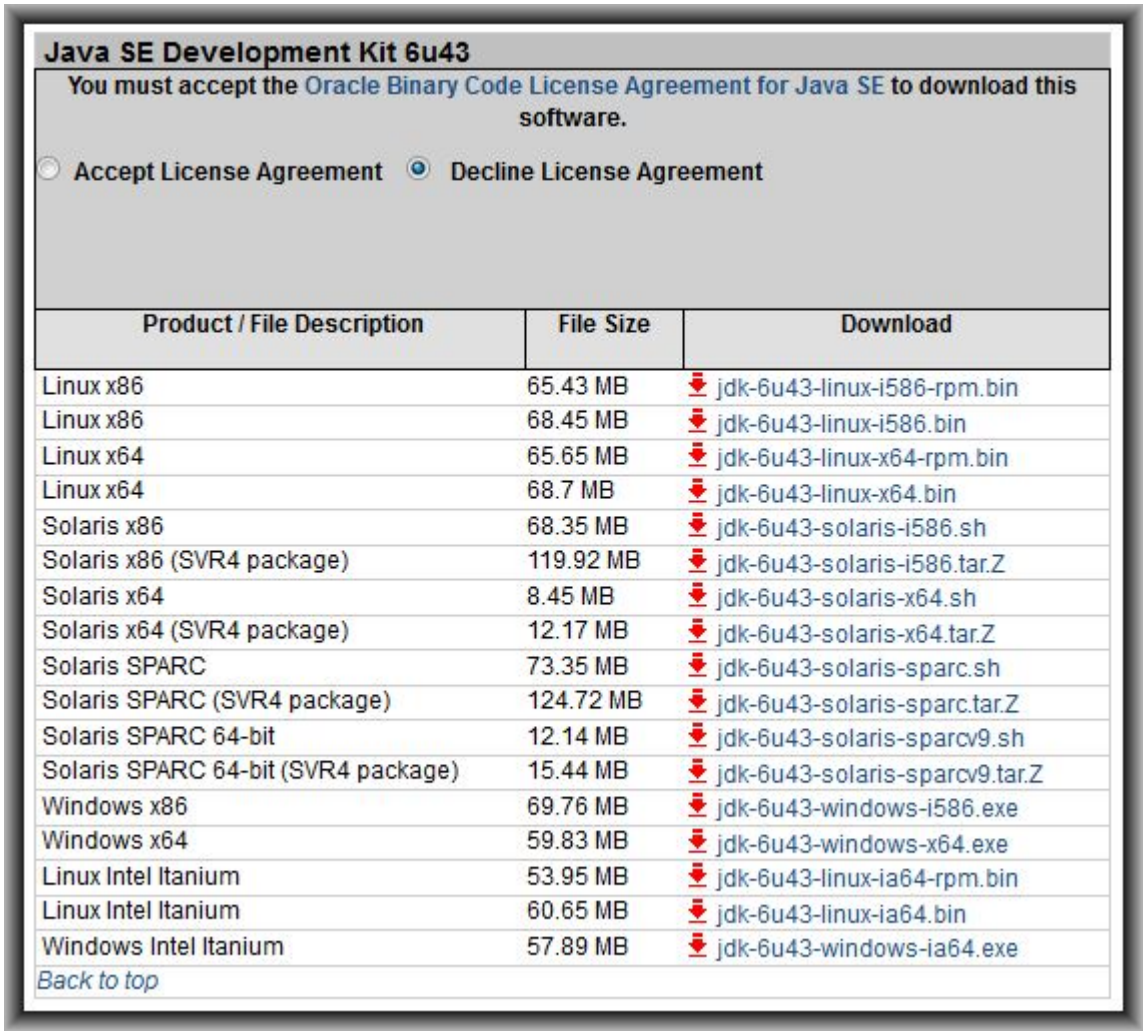
As a result, the `V29673-01.zip` file is downloaded to your machine.

Sun Java 6 JDK requirement

During the WebLogic installation procedure (and later during the WebLogic domain creation procedure), you are prompted for a JDK (Java Development Kit). The JDK provides the JRE (Java run-time environment) needed by the installation program to run. The JDK must be Java version 6 (also called 1.6).

While some WebLogic Server installers include a bundled JDK, the Generic installation program (`wls_generic.jar`) does not have a bundled JDK. Therefore, you must already have a JDK available that you can specify during the installation procedure.

The recommended JDK is Version 6 of the Oracle Sun SE (Standard Edition) Development Kit. This JDK is available from the **Java SE Development Kit 6u43** section of this web page: *http://www.oracle.com/technetwork/java/javasebusiness/downloads/java-archive-downloads-javase6-419409.html*



Java SE Development Kit 6u43

You must accept the Oracle Binary Code License Agreement for Java SE to download this software.

Accept License Agreement **Decline License Agreement**

Product / File Description	File Size	Download
Linux x86	65.43 MB	jdk-6u43-linux-i586-rpm.bin
Linux x86	68.45 MB	jdk-6u43-linux-i586.bin
Linux x64	65.65 MB	jdk-6u43-linux-x64-rpm.bin
Linux x64	68.7 MB	jdk-6u43-linux-x64.bin
Solaris x86	68.35 MB	jdk-6u43-solaris-i586.sh
Solaris x86 (SVR4 package)	119.92 MB	jdk-6u43-solaris-i586.tar.Z
Solaris x64	8.45 MB	jdk-6u43-solaris-x64.sh
Solaris x64 (SVR4 package)	12.17 MB	jdk-6u43-solaris-x64.tar.Z
Solaris SPARC	73.35 MB	jdk-6u43-solaris-sparc.sh
Solaris SPARC (SVR4 package)	124.72 MB	jdk-6u43-solaris-sparc.tar.Z
Solaris SPARC 64-bit	12.14 MB	jdk-6u43-solaris-sparcv9.sh
Solaris SPARC 64-bit (SVR4 package)	15.44 MB	jdk-6u43-solaris-sparcv9.tar.Z
Windows x86	69.76 MB	jdk-6u43-windows-i586.exe
Windows x64	59.83 MB	jdk-6u43-windows-x64.exe
Linux Intel Itanium	53.95 MB	jdk-6u43-linux-ia64-rpm.bin
Linux Intel Itanium	60.65 MB	jdk-6u43-linux-ia64.bin
Windows Intel Itanium	57.89 MB	jdk-6u43-windows-ia64.exe

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You should download the 64-bit version appropriate for your platform:

- Linux: the **Linux x64** product
- Windows: the **Windows x64** product

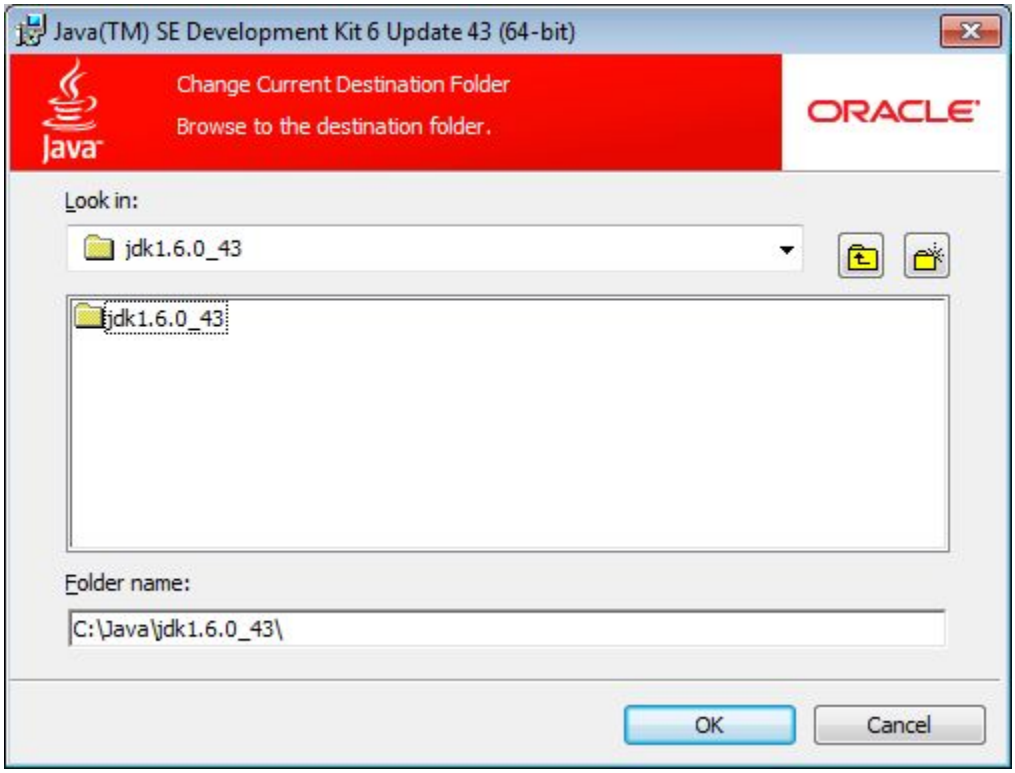
When installing the Sun JDK package, make sure that you install it in a directory path that does not have spaces. For example, the default destination path on Windows is:

```
C:\Program Files\Java\jdk1.6.0_43
```

Because the space in "Program Files" will cause problems with the ADF and Endeca Server installers, you must change the destination path to a directory similar to this example:

```
C:\Java\jdk1.6.0_43
```

The JDK screen for the destination folder path should look like this:



Make sure you specify this path to the `-jreLoc` flag of the ADF and Endeca Server installers and also when prompted for a JDK in an installation screen.

Hardware requirements

The Oracle Endeca Server has the following hardware requirements.

Note: In this guide, the term "x64" refers to any processor compatible with the AMD64/EM64T architecture. You might need to upgrade your hardware, depending on the data you are processing. All run-time code must fit entirely in RAM. Likewise, hard disk capacity must be sufficient based on the size of your data set. Please contact your Oracle representative if you need more information on sizing your hardware.

Windows and Linux on x64

Minimum hardware requirements:

- x64 processor, minimum 1.8 GHz
- At least 3 GB of RAM, depending on the size of the application data set
- 80 GB hard drive, depending on the size of the application data set

Recommended hardware requirements:

- x64 3.0+ GHz processors; Intel Xeon (including Nehalem) or AMD Opteron processors are recommended
- 8 GB of RAM or more, depending on the size of the application data set
- High performance network-attached storage (for example, attached via a dedicated iSCSI or fibre channel network), or high performance locally-attached RAID storage (for example, a RAID 6 or RAID 0+1 array with battery-backed write caching, operating on 72GB or 146 GB spindles at 10k or 15k RPM spindle speed)
- Gigabit Ethernet

Hardware requirements for running an Endeca Server cluster

These requirements exist:

- Shared file system. All Endeca Server instances deployed on Managed Servers in the WebLogic domain must have write access to a shared file system on which the index for the data domains will be stored. This shared file system is also used by the Cluster Coordinator services that must be running in the Endeca Server cluster.
- Load balancer. Even though, in an Endeca Server cluster, you can issue queries to any WebLogic Server instance hosting one of the Endeca Server instances (and it will be routed accordingly to the designated data domain hosted in this Endeca Server cluster), in most production deployments, it is still desirable to configure an external load balancer between your front-end application and an Endeca Server cluster. For more information load balancing and routing of requests in the Endeca Server cluster, see the *Oracle Endeca Server Cluster Guide*.

For detailed information about prerequisites and for instructions about deploying a cluster, see *Installing and Deploying an Endeca Server Cluster on page 79*.

Supported operating systems

The Oracle Endeca Server supports the following 64-bit operating systems running on servers with x64 capabilities:

Operating System	Description
Oracle Linux 6	Both the Oracle Unbreakable Enterprise Kernel and the Red Hat Compatible Kernel are supported.
Oracle Linux 5	Both the Oracle Unbreakable Enterprise Kernel and the Red Hat Compatible Kernel are supported.

Operating System	Description
RHEL Linux 6	• Red Hat Enterprise Linux Server (version 6 for x64) running on x64 processors. • Red Hat Enterprise Linux Advanced Platform (version 6 for x64) running on x64 processors. For best performance on Red Hat Linux version 6 (Server and Advanced), Oracle recommends the latest version of RHEL 6.
RHEL Linux 5	• Red Hat Enterprise Linux Server (version 5 for x64) running on x64 processors. • Red Hat Enterprise Linux Advanced Platform (version 5 for x64) running on x64 processors. For best performance on Red Hat Linux version 5 (Server and Advanced), Oracle recommends the latest version of RHEL 5.
Windows 2008	Windows Server 2008 R2 Enterprise running on x64 processors. The OS must have at least Service Pack 1 installed.

Notes

Windows 7 is not supported for production deployment, but operates sufficiently to enable training and small-scale staging and development work.

Windows XP is not supported.

We recommend turning off hyper-threading for machines on which the Dgraph is running. Because of the way the Dgraph works, it is actually detrimental to cache performance to use hyper-threading.

If you intend to run Linux, we recommend using the Linux 6 version, rather than Linux 5, for the following reasons:

- Oracle Linux 6 or RHEL 6 both allow Endeca Server to utilize an operating system feature known as cgroups (control groups). Relying on cgroups is useful especially if you are planning to deploy a large number of self-service applications in the Endeca Server. Utilizing cgroups with the Endeca Server deployment increases the allocation guarantees and ensures that Endeca Server nodes continue to operate even when many data domains are provisioned. For information on configuring cgroups in Endeca Server running on Linux 6 or RHEL 6, see the *Oracle Endeca Server Administrator's Guide*.
- Linux 5 may experience the following problem. During periods of heavy disk activity on Linux kernel versions earlier than 2.6.30, Endeca Server may experience dropped connections to the Cluster Coordinator service (`ConnectionLossException`), when the Cluster Coordinator is configured to store its transaction log on a busy ext3 file system mounted with the `data=ordered` journaling mode. To work around this issue, configure the Cluster Coordinator to store its transaction log on a dedicated disk or a disk without significant write activity, using the `endeca-cluster-coordinator-dataLogDir` option in the `EndecaServer.properties` file.

Disk space requirements

Ensure that adequate disk space is available before installing the Oracle Endeca Server software.

The three products have the following disk sizes after installation:

- Oracle WebLogic Server: 425 MB
- Oracle Application Development Runtime: 1024 MB
- Oracle Endeca Server: 475 MB

Therefore, the total disk size of the entire installation is approximately 1.9 GB.

Each of the three installation programs uses a temporary directory into which they extract the files necessary to install the software on the target system. During the installation process, your temporary directory must contain sufficient space to accommodate these files. As a rule of thumb, the files in the temporary directory require approximately 2.5 times the space that is ultimately required for each installation.

By default, the installation programs use these temporary directories:

- Windows platforms: directory referenced by the `TMP` system variable.
- UNIX platforms: system-dependent temporary directory.

Physical memory requirements for running the Endeca Server

The amount of RAM required to run the Endeca Server hosting one or more data domains depends on multiple characteristics and is determined by the hardware sizing process.

If you are planning to use data enrichment plugins (such as term extraction) in Studio, consider adding additional memory of about 10GB per each instance of Data Enrichment plugin running concurrently in the data domain on which this term extraction will be run.

Downloading the software

The Oracle Endeca Server software modules are downloaded from the Oracle Software Delivery Cloud.

To download the Oracle Endeca Server software:

1. Log in to `https://edelivery.oracle.com`.
2. Accept the terms and restrictions.
3. On the **Media Pack Search** page:
   (a) From the **Select a Product Pack** drop-down list, select **Oracle Endeca**.
   (b) From the **Platform** drop-down list, select either **Microsoft Windows x64 (64-bit)** or **Linux x86-64**.
   (c) Click **Go**.
   The list of media packs for the selected product and platform is displayed.
4. Select the media pack for your platform and then click **Continue**:
   - Windows: **Oracle Endeca Server (7.6.x) Media Pack for Microsoft Windows x64 (64-bit)**
   - Linux: **Oracle Endeca Server (7.6.x) Media Pack for Linux x86-64**

5. On the **Download** page, click **Download** next to the name of package for your platform:
   - **Oracle Endeca Server (7.6) for Microsoft Windows x64 (64-bit)**
   - **Oracle Endeca Server (7.6) for Linux x86-64**

   Each package contains two ZIP files (one for the Oracle Endeca Server installer and the other for the orchestration script files).
6. You should also download these packages:
   - **Oracle WebLogic Server 11gR1 (10.3.6) Generic and Coherence** contains the Oracle WebLogic installer.
   - **Oracle Application Development Runtime 11g Patch Set 5 (11.1.1.6.0)** contains the Oracle ADF Runtime installer.
   - **Oracle Endeca Server (7.6) Sample Data** contains the Oracle Endeca Server sample data set (documented in *Using the Sales History sample data on page 117*).
   - **Oracle Endeca Server (7.6) Documentation** contains a ZIP file which has this guide, the *Oracle Endeca Server Migration Guide*, the Oracle Endeca Server Licensing Guide, and the release notes for Oracle Endeca Server.

The complete documentation set for Endeca Server is available for online viewing or downloading at: *http://www.oracle.com/technetwork/middleware/endecaserver/documentation/endeca-documentation-1721979.html*

Part II

Orchestration Script Installation

Chapter 3

Orchestration Script Installation

This section describes how to use the orchestration script to install the WebLogic, Application Developer Runtime, and Endeca Server products.

About an orchestration script installation

The orchestration script lets you install all the products with a unified script.

The Endeca Server orchestration script lets you easily install the WebLogic, ADF, and Endeca Server components by running one script.

In non-configuration mode, the installation is run completely in silent mode. In configuration mode, the installation is mostly in silent mode, except for prompts for administrator names/passwords and (if installing in secure mode) the SSL pass phrase.

Installation modes

The `INSTALL_MODE` parameter in the script configuration file sets the installation mode to one of the two modes:

- `INSTALL_ALL` (non-configuration mode), or
- `INSTALL_ALL_AND_CONFIGURE` (configuration mode).

Non-configuration mode

The non-configuration (`INSTALL_ALL`) mode installs the WebLogic, ADF, and Endeca Server components without any user input (that is, the user is not prompted for administrator names and passwords). However, the script does not do several important tasks. In particular:

- The WebLogic domain for Endeca Server is not created. Therefore, if needed, you can create it manually after the script finishes.

- If `DEPLOY_ENDECA_SERVER_IN_SECURE_MODE` is set to `TRUE`, Endeca Server is installed in secure mode, but the SSL certificates are not generated. You must manually generate them after the script finishes.
- There is no configuration of the Endeca Server Data Enrichment module. Therefore, you must manually run a Data Enrichment configuration script to register its plugins.

You would choose this mode if you want to install all the components at once, but want to perform the configuration tasks yourself. Note that Endeca Server will not run until you create its WebLogic domain.

Configuration mode

The configuration mode (`INSTALL_ALL_AND_CONFIGURE`) performs the following tasks:

- Installs the WebLogic, ADF, and Endeca Server components, with the help of user input (that is, the user is prompted for administrator names and passwords, and for the SSL pass phrase, if installing in secure mode).
- Configures the WebLogic domain for Endeca Server (including registering the WebLogic domain administrator).
- Generates the SSL certificates (if installing in secure mode).
- Registers the Data Enrichment plugins and creates the Endeca Server administrator. This allows you to perform enrichments on your data from Studio.
- Automatically starts the WebLogic Server and the Endeca Server.

You would choose this mode if you want all the installation and configuration tasks to be performed at once by the script. In other words, when you run the script in the configuration mode, everything needed for the normal operation of Endeca Server is done.

Setting up the installer source directory

This topic describes how to set up the directory that will contain all the installers and the orchestration script files.

This procedure assumes that you have downloaded these packages:

- Generic version of the Oracle WebLogic installer, which is downloaded as a `V29856-01.zip` file as described in *Oracle WebLogic Server requirement on page 13*.
- Oracle ADF (Application Development Framework) Runtime 11.1.1.6 product installer, which is downloaded in a `V29673-01.zip` file as described in *Oracle ADF Runtime requirement on page 13*.
- Endeca Server installation package: **Oracle Endeca Server (7.6) for Microsoft Windows x64 (64-bit)** or **Oracle Endeca Server (7.6) for Linux x86-64**.

Each Endeca Server package contains ZIP files for the Oracle Endeca Server installer and the orchestration script for either Windows or Linux. You will be unzipping one of these Endeca Server packages into the `Installers` directory.

To set up the installation source directory:

1. Create a directory for the installation files.

   The name of the installation source directory is arbitrary, but this procedure assumes that `Installers` is the name of the directory.

2. To set up the Oracle WebLogic installer:
   (a) Unpack the `V29856-01.zip` file, which extracts the `wls1036_generic.jar` file.
   (b) Copy the `wls1036_generic.jar` file into the `Installers` directory.
3. To set up the Oracle ADF Runtime installer:
   (a) Rename the `V29673-01.zip` file to: `ofm_appdev_generic_11.1.1.6.0_disk1_1of1.zip`
   (b) Copy the `ofm_appdev_generic_11.1.1.6.0_disk1_1of1.zip` file into the `Installers` directory.
4. Unpack the Windows or Linux version of the Endeca Server package into the `Installers` directory.

   The following files are unpacked:
   - `endecaserver.zip` — Oracle Endeca Server installation ZIP.
   - `windows_OC.zip` or `linux_OC.tar` (depending on which package you unzipped) — ZIP or TAR file containing the Endeca Server orchestration script and configuration file.
5. Unpack the `windows_OC.zip` or `linux_OC.tar` file (depending on your operating system) into the `Installers` directory.

   The unpacking creates a directory named `windows` (from `windows_OC.zip`) or `linux` (from `linux_OC.tar`). These directories contain the orchestration script and the script configuration file.

As a result, the `Installers` directory should contain these artifacts:

- `wls1036_generic.jar` file
- `ofm_appdev_generic_11.1.1.6.0_disk1_1of1.zip` file
- `endecaserver.zip` file
- `windows` or `linux` directory

Note that you should not unpack the `ofm_appdev_generic_11.1.1.6.0_disk1_1of1.zip` or `endecaserver.zip` files. These two ZIP files are automatically unzipped by the orchestration script, and therefore must exist in the ZIP format.

The next task is to edit the configuration file for the orchestration script.

Script configuration file

The orchestration script will read properties from a predefined configuration file for the installation.

Unpacking the `windows_OC.zip` creates a `windows` directory, while unpacking `linux_OC.tar` creates a `linux` directory. Each directory will contain one of these configuration files:

- `config_linux.prop` for Linux installations
- `config_win.prop` for Windows installations

You can use any text editor to edit the configuration file, modifying the parameters listed in the following table.

You will provide the name of this file when you run the orchestration script.

Configuration settings

The possible settings for the configuration parameters are as follows. The listed defaults are the ones provided in the Windows and Linux versions of the configuration files.

Configuration parameter	Possible settings
INSTALL_MODE	Sets the type of installation: • INSTALL_ALL sets non-configuration installation mode. That is, it installs WebLogic, ADF, and Endeca Server, but does not perform configuration tasks (that is, does not create a WebLogic domain, does not create SSL certificates, and does not register the Data Enrichment plugins). • INSTALL_ALL_AND_CONFIGURE sets configuration installation mode. That is, it installs WebLogic, ADF, and Endeca Server, and then performs the configuration tasks. The configuration tasks are creating a WebLogic domain for Endeca Server, creating SSL certificates (if DEPLOY_ENDECA_SERVER_IN_SECURE_MODE is set to TRUE).
START_MODE	Configures the WebLogic Server Start Mode: • DEV starts WebLogic Server in development mode. • PROD starts WebLogic Server in production mode.
JAVA_HOME	The absolute path to the installed Java SDK. Although default Linux and Windows locations are provided, you must set the location for your specific use.
ORACLE_HOME	The absolute path of the Oracle Middleware directory in which the components will be installed (for example, C:\Oracle\Middleware on Windows). Note that the Middleware directory must not exist because the script will create it. Although default Linux and Windows locations are provided, you must set the location for your specific use.
ORACLE_INV_PTR	Linux only. The absolute path to the Oracle Installer Inventory Pointer file location, such as the /etc/oraInst.loc location.
INSTALLER_LOCATION	The absolute path of the directory that contains the installation files. Although default Linux and Windows locations are provided, you should set the location for your specific use.
ENDECA_SERVER_DOMAIN_NAME	The name of the WebLogic domain for Endeca Server, such as endeca_server_domain.
ENDECA_SERVER_PORT	The HTTP port on which Endeca Server listens for requests (if Endeca Server is installed in non-secure mode). 7001 is typically used as the HTTP port.

Configuration parameter	Possible settings
DEPLOY_ENDECA_SERVER_IN_SECURE_MODE	If set to TRUE (the default), specifies that Endeca Server should be installed in secure mode (Endeca Server will use the HTTPS port). If set to FALSE, specifies Endeca Server should be installed in non-secure mode (Endeca Server will use the HTTP port).
ENDECA_SERVER_SECURE_PORT	The HTTPS port on which Endeca Server listens for requests (if Endeca Server is installed in secure mode). 7002 is typically used as the HTTPS port.

Configuration file example

The following configuration file example is for the Windows version of the orchestration script:

```
# Install in configuration mode, which creates a WebLogic domain.
INSTALL_MODE=INSTALL_ALL_AND_CONFIGURE

#Start WebLogic Server in production mode.
START_MODE=PROD

#Path to the Java SDK.
JAVA_HOME=C:\jdk1.6.0_43

#Path of the WebLogic root directory.
ORACLE_HOME=C:\Oracle\Middleware

#Path to the installation source directory.
INSTALLER_LOCATION=C:\Installers

#Name and HTTP port of the WebLogic domain for Endeca Server.
ENDECA_SERVER_DOMAIN_NAME=endeca_server_domain
ENDECA_SERVER_PORT=7001

#Install in secure (SSL) mode.
DEPLOY_ENDECA_SERVER_IN_SECURE_MODE=TRUE
ENDECA_SERVER_SECURE_PORT=7002
```

Orchestration script syntax

This topic describes the syntax of the Endeca Server orchestration script.

The orchestration windows and linux directories also contain the Endeca Server orchestration script for your operating system.

The orchestration script is named run_endecaserver_install.sh for Linux and run_endecaserver_install.bat for Windows. The syntax to run the script is:

```
run_endecaserver_install.bat|sh config_file [--temp-directory temp_dir]
```

where:

- *config_file* is the name of the script configuration file (such as config_linux.prop). If the file is not in the same directory as the orchestration script, then the name must include the absolute path of its location.

- `--temp-directory` is an optional flag that specifies the absolute path of the temporary directory to use. The script extracts and executes the installers in this directory. If this flag is not used, then the default behavior is to use the operating system's configured temporary directory. Note that the contents of the directory are first deleted before the script unpacks the installer files.

A sample use on Linux is:

```
./run_endecaserver_install.sh config_linux.prop --temp-directory /tmp
```

Note that a path is not needed for the configuration file because it is in the same directory as the script.

Orchestration script directory contents

The orchestration script and its resources are shipped in a ZIP file for Windows and a TAR file for Linux. When you unpack these files, a directory (named `windows` or `linux`) is created.

Both directories contain these items:

- orchestration script (`run_endecaserver_install.sh` or `run_endecaserver_install.bat`)
- script configuration file (`config_linux.prop` or `config_win.prop`)
- `utils` directory, which contains utilities used during the installation
- `rsp.template` directory, which contains the response files used for the WebLogic, ADF, and Endeca Server silent installations

You can unpack the ZIP/TAR files in any directory, such as your installer source directory.

Script log directory

When the orchestration script runs, it creates a `log` directory (in the temporary directory) in which it writes the various log files for the installation. For example, the `ENDECA_INSTALL.log` contains information on the Endeca Server installation.

Installing in configuration mode

This topic describes how run the orchestration script in `INSTALL_ALL_AND_CONFIGURE` mode.

Before running the orchestration script in configuration mode, you must have already done the following:

- Installed the Java 6 SDK on the machine.
- Created an installation source directory and placed the WebLogic, ADF, and Endeca Server installers into it.
- Unpacked the orchestration script ZIP file (for Windows) or TAR file (for Linux).
- Edited the script configuration file with the settings that the script will use for your environment. In particular, make sure the `INSTALL_MODE` parameter has the `INSTALL_ALL_AND_CONFIGURE` setting.
- Determined the name and password of the WebLogic administrator.
- Determined the name and password of the Endeca Server administrator.
- If installing in secure mode, determined the pass phrase for the SSL certificates.

Note that passwords and pass phrases have a minimum of 8 characters, should contain a number, and not start with a number.

Also keep the following requirements in mind:

- On Windows, the orchestration script must be run with administrator rights.
- On Linux, the orchestration script must be run as a non-root user. In addition, if the `--temp-directory` flag is not used, the user must have access to the default OS `/tmp` directory (otherwise, the install will fail as it tries to delete files from `/tmp`).
- If you use the optional `--temp-directory` flag, make certain that you specify the absolute path of the temporary directory to use. A relative path will cause the script to fail.

To run the orchestration script in configuration mode:

1. Open a command prompt and navigate to the directory that contains the orchestration script.
2. Run the orchestration script for your operating system, as in this Windows example:

   ```
   run_endecaserver_install.bat config_win.prop --temp-directory c:\temp
   ```

   The script first sets the temp directory and then verifies the correct Java version.
3. Enter the WebLogic Server administrator username. The default is "weblogic".
4. Enter the WebLogic Server administrator password and then re-enter it to verify it. There is no default password.
5. Enter the Endeca Server administrator username. The default is "ESAdmin".
6. Enter the Endeca Server administrator password and then re-enter it to verify it. There is no default password.
7. If installing in secure mode, enter the SSL pass phrase, and then re-enter it to verify it. There is no default pass phrase.

The installer files are extracted to the temp directory, the individual components are installed, and the domain is created. If SSL certificates are generated, WebLogic Server will be automatically restarted.

Note that if the orchestration script fails, it prints an error message telling you that the `ORACLE_HOME` directory specified in the configuration file exists. At this point, you must either delete the directory or provide a new location (in the configuration file) before you can re-run the script.

After the installation is finished, you can verify the installation in one of two ways:

- To verify that the Endeca Server application was correctly deployed in WebLogic Server, see *Verifying the Endeca Server deployment on page 72*.
- To verify the installation by creating an Endeca data domain, see *Verifying a single-machine installation on page 109*.

Installing in non-configuration mode

This topic describes how run the orchestration script in `INSTALL_ALL` mode.

Before running the orchestration script in configuration mode, you must have already done the following:

- Installed the Java 6 SDK on the machine.
- Created an installation source directory and placed the WebLogic, ADF, and Endeca Server installers into it.

- Unpacked the orchestration script ZIP file (for Windows) or TAR file (for Linux).
- Edited the script configuration file with the settings that the script will use for your environment. In particular, make sure the `INSTALL_MODE` parameter has the `INSTALL_ALL` setting.

Also keep the following requirements in mind:

- On Windows, the orchestration script must be run with administrator rights.
- On Linux, the orchestration script must be run as a non-root user. In addition, if the `--temp-directory` flag is not used, the user must have access to the default OS `/tmp` directory (otherwise, the install will fail as it tries to delete files from `/tmp`).
- If you use the optional `--temp-directory` flag, make certain that you specify the absolute path of the temporary directory to use. A relative path will cause the script to fail.

Because a WebLogic domain will not be created, the script will not prompt for any user input.

To run the orchestration script in non-configuration mode:

1. Open a command prompt and navigate to the directory that contains the orchestration script.
2. Run the orchestration script for your operating system, as in this Windows example:

   ```
   run_endecaserver_install.bat config_win.prop --temp-directory c:\temp
   ```

   The script first sets the temp directory, then verifies the correct Java version, and finally installs the WebLogic, ADF, and Endeca Server components without any user input. Note that WebLogic Server is not started.

Note that if the orchestration script fails, it prints an error message telling you that the `ORACLE_HOME` directory specified in the configuration file exists. At this point, you must either delete the directory or provide a new location (in the configuration file) before you can re-run the script.

The non-configuration mode installation does not perform the tasks of creating a WebLogic domain, generating SSL certificates, and registering the Data Enrichment plugins. If you want to manually perform these tasks, refer to the following links:

- To create a WebLogic domain for Endeca Server, see *Creating the WebLogic domain for Endeca Server on page 61*.
- To generate SSL keys, see *Creating SSL certificates on page 70*.
- To run the Data Enrichment registration script, see *Registering the Data Enrichment plugins on a single machine on page 71*.

Keep in mind that you must create the WebLogic domain for Endeca Server before you can generate SSL certificates and register the Data Enrichment plugins.

After the entire installation is finished, you can verify the installation in one of two ways:

- To verify that the Endeca Server application was correctly deployed in WebLogic Server, see *Verifying the Endeca Server deployment on page 72*.
- To verify the installation by creating an Endeca data domain, see *Verifying a single-machine installation on page 109*.

Troubleshooting installation problems

This section provides information and suggested solutions to some orchestration script installation problems.

Disabling the Prerequisites Check for Linux

You can modify the Linux version of the orchestration script if you want to skip the Prerequisites Check step.

The Linux version of the orchestration script may fail the Prerequisites Check step of the ADF and/or Endeca Server installers due to some missing files in your Linux 5 or 6 OS . These files should not be needed to successfully run the ADF and Endeca Server products.

For example, the following abbreviated log shows an indication of ADF library checking failing for some libraries that are not actually needed by Endeca Server. The check failures are marked in boldface:

```
Preparing to launch Oracle Universal Installer from /tmp/OraInstall2013-11-13_05-30-04AM.
Please wait ...Log: /home/endeca/oraInventory/logs/install2013-11-13_05-30-04AM.log
Copyright (c) 1999, 2011, Oracle and/or its affiliates. All rights reserved.
Reading response file.
...
Checking for binutils-2.20.51.0.2-5.11.el6-x86_64; found binutils-2.20.51.0.2-5.36.el6-x86_64. Passed
Checking for compat-libcap1-1.10-1-x86_64; Not found. Failed
Checking for compat-libstdc++-33-3.2.3-69.el6-x86_64; Not found. Failed
Checking for compat-libstdc++-33-3.2.3-69.el6-i686; Not found. Failed
Checking for libgcc-4.4.4-13.el6-i686; Not found. Failed
Checking for libgcc-4.4.4-13.el6-x86_64; found libgcc-4.4.7-3.el6-x86_64. Passed
Checking for libstdc+-4.4.4-13.el6-x86_64; found libstdc+-4.4.7-3.el6-x86_64. Passed
Checking for libstdc++-4.4.4-13.el6-i686; Not found. Failed
Checking for libstdc++-devel-4.4.4-13.el6-x86_64; Not found. Failed
Checking for sysstat-9.0.4-11.el6-x86_64; found sysstat-9.0.4-20.el6-x86_64. Passed
Checking for gcc-4.4.4-13.el6-x86_64; Not found. Failed
Checking for gcc-c++-4.4.4-13.el6-x86_64; Not found. Failed
Checking for glibc-2.12-1.7.el6-i686; Not found. Failed
Checking for glibc-2.12-1.7.el6-x86_64; found glibc-2.12-1.107.el6_4.5-x86_64. Passed
Checking for glibc-devel-2.12-1.7.el6-x86_64; Not found. Failed
Checking for glibc-devel-2.12-1.7.el6; Not found. Failed
Checking for libaio-0.3.107-10.el6-x86_64; found libaio-0.3.107-10.el6-x86_64. Passed
Checking for libaio-devel-0.3.107-10.el6-x86_64; Not found. Failed
Check complete. The overall result of this check is: Failed

Problem: Some recommended packages are missing (see above).
Recommendation: You may actually have installed packages which have obsoleted these,
in which case you can successfully continue with the install. If you have not,
it is recommended that you do not continue. Refer to the product release notes
to find out how to get the missing packages and update the system.
Error: Check:Packages failed.
...
Prereq failed. Aborting Install
```

Because these files are not needed for ADF and Endeca Server, you can modify the orchestration script to add the `-ignoreSysPrereqs` argument to the lines that run the ADF and Endeca Server installers, which will disable the Prerequisites Check.

To disable the Prerequisites Check in the Linux orchestration script:

1. In the `linux` directory (which was created when you unpacked the `linux_OC.tar` file), make a back-up copy of the `run_endecaserver_install.sh` script.

2. Open the `run_endecaserver_install.sh` script with a text editor.
3. Search for the string "Install Oracle ADF".
4. In the next line, which installs ADF), add the `-ignoreSysPrereqs` argument just before the `-silent` argument:

```
# Install Oracle ADF
$TEMPDIR/bin/Disk1/runInstaller -jreLoc $JAVA_HOME -ignoreSysPrereqs -silent
   -responseFile $TEMPDIR/rsp/adf.silent.rsp -invPtrLoc $ORACLE_INV_PTR
   &> $TEMPDIR/log/ADF_INSTALL.log
```

5. In the line which installs Endeca Server, also add the `-ignoreSysPrereqs` argument just before the `-silent` argument:

```
printf "Installing Endeca Server.."
$TEMPDIR/bin/endecaserver/Disk1/runInstaller -jreLoc $JAVA_HOME -ignoreSysPrereqs
   -silent -responseFile $TEMPDIR/rsp/endeca.silent.rsp -invPtrLoc $ORACLE_INV_PTR
   &> $TEMPDIR/log/ENDECA_INSTALL.log
```

6. Save the file.

Hostname resolution warning

The orchestration script will check for a properly configured hostname.

You may receive a warning when the orchestration script runs, informing you that the hostname cannot be resolved.

Because the message is only a warning, the orchestration script will continue to run. However, the warning may indicate problems with later starting Endeca Server. You, therefore, should check that the `/etc/hosts` file includes a mapping from the site-local, externally resolvable IP address to FQDN, or the first portion of the correct, Fully Qualified Domain Name. If `/etc/hosts` includes a mapping to `localhost`, it should not be the only entry, or the first entry in this file. Do not use any other OS-specific methods for determining the hostname — only use the configuration in `/etc/hosts`. This is because the mappings in `/etc/hosts` always override the mappings from DNS (even if they are present), and Endeca Server relies on `/etc/hosts`.

For further details, see the "Hostname resolution in the Endeca Server" topic in Chapter 2 of the *Oracle Endeca Server Administrator's Guide*.

Part III

Manual Installation

Chapter 4

Installing WebLogic Server and Application Developer Framework

This section contains instructions for installing the Oracle WebLogic Server and the Oracle Application Developer Framework products.

Installing WebLogic Server

This topic provides a brief description of how to install Oracle WebLogic Server, which is the Web server container in which the Endeca Server application is hosted.

This topic describes the installation of Oracle WebLogic Server 10.3.6, which is part of the WebLogic Server 11g product. This procedure applies to the Generic version of the installer (the installer file is named `wls1036_generic.jar`).

Important: This guide relies on those components that are available in the WebLogic Server installation under the Oracle Restricted Use License. If your site already has access to the fuller version of the WebLogic Server, additional components may be available to you. However, the instructions in this topic do not guarantee that any other components of the WebLogic Server can be used with the Endeca Server. Additionally, certain components, such as the Enterprise Manager, are not discussed in this guide.

Before starting this procedure, make sure that you have downloaded these two components:

1. The Generic version of the WebLogic installer, which is downloaded as a `V29856-01.zip` file as described in *Oracle WebLogic Server requirement on page 13*.
2. The Java 6 version of the Oracle Sun Java SE JDK, as described in *Sun Java 6 JDK requirement on page 13*.

The installation instructions in this topic are a distillation of the complete instructions in the *Oracle Installation Guide for Oracle WebLogic Server*, which is available online at:
http://docs.oracle.com/cd/E23943_01/doc.1111/e14142/toc.htm

These distilled instructions concentrate on installing only those WebLogic Server components that are mandatory for an Endeca Server environment.

To install WebLogic Server:

1. Make sure that you have installed the Java 6 version of the Oracle Sun SE 6 JDK on the machine on which you are installing WebLogic Server.
2. Unpack the `V29856-01.zip` file, which extracts the `wls1036_generic.jar` file.

3. From a command prompt, navigate to the directory where the `wls1036_generic.jar` installer file is stored.

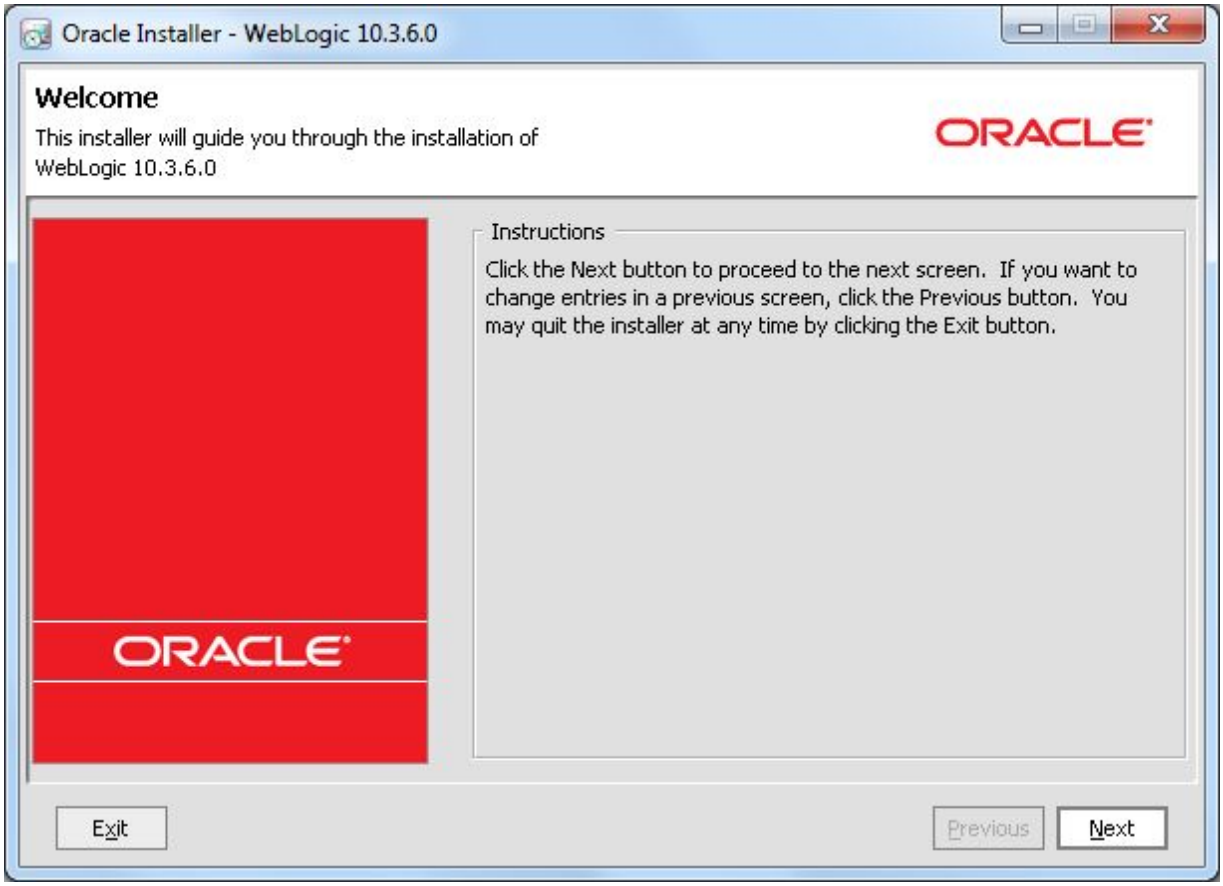
   When installing WebLogic Server on Linux, do not run the installation program as the root user.

4. Launch the installer in Graphical Mode with this command:

   ```
   java -jar wls1036_generic.jar
   ```

   When the installer runs, it displays the installation wizard's **Welcome** screen.

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

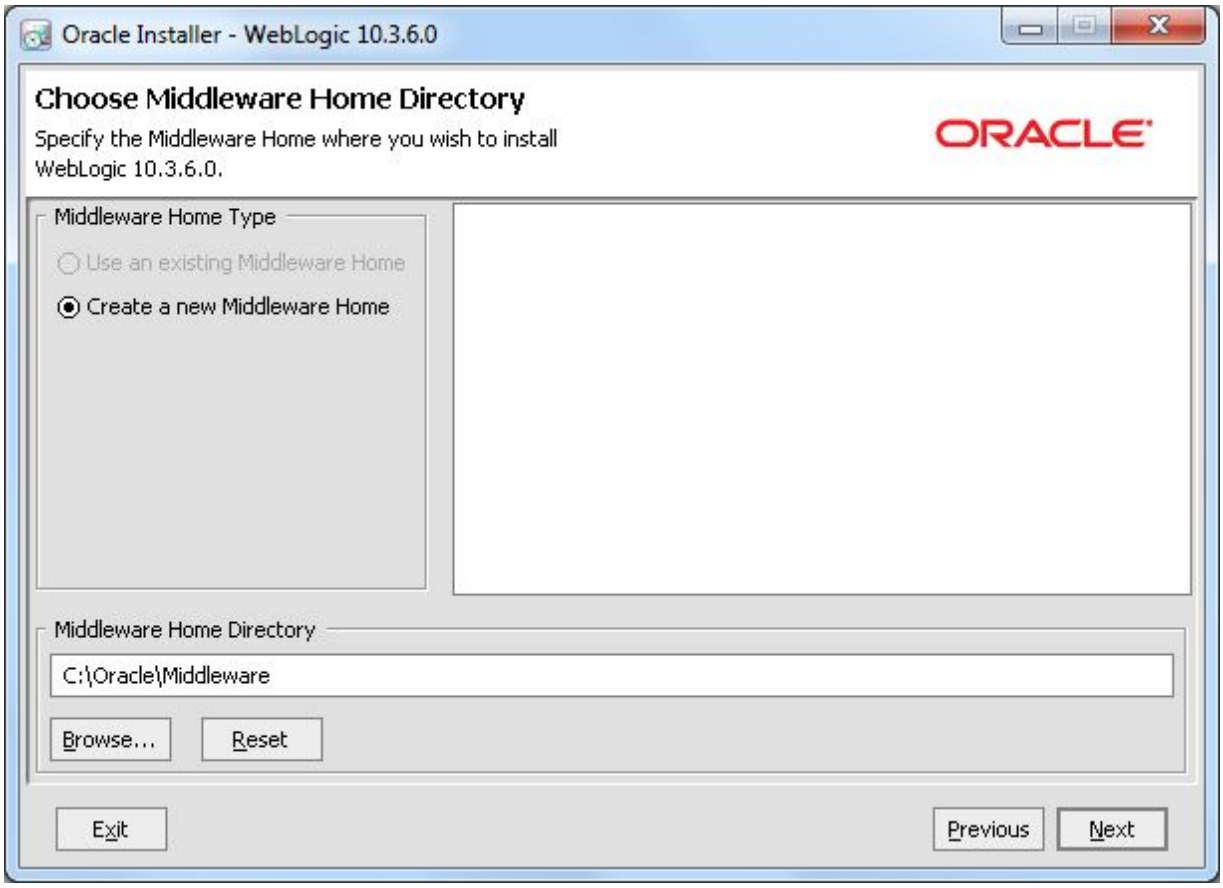


6. At the **Choose Middleware Home Directory** screen, do the following:

   (a) Select **Create a new Middleware Home**.

   (b) In the **Middleware Home Directory** field, enter the name of the Middleware home directory. (This will be the `$MW_HOME` directory of your installation.) You can either accept the default location or enter another one. The Oracle Middleware Home Directory name may only contain alphanumeric, hyphen (-) , dot (.), and underscore (_) characters, and it must begin with an alphanumeric character.

(c) When you have finished, click **Next**.



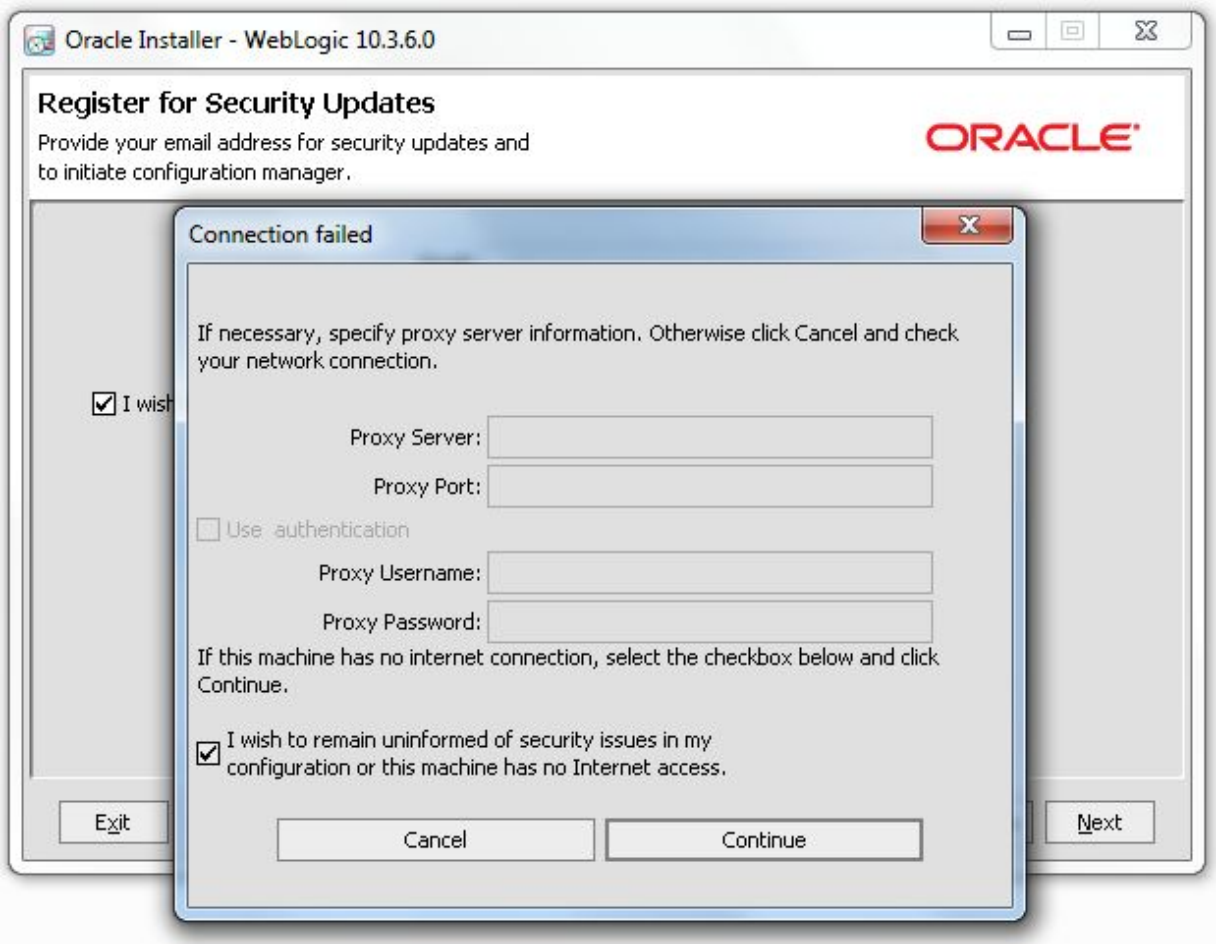
7. At the **Register for Security Updates** screen, enter your support details if you want to receive security updates and then click **Next**. If you do not want to receive security updates (or if your machine has no Internet access), you can bypass the screen as follows:

   (a) Click **Next** without entering an email address.

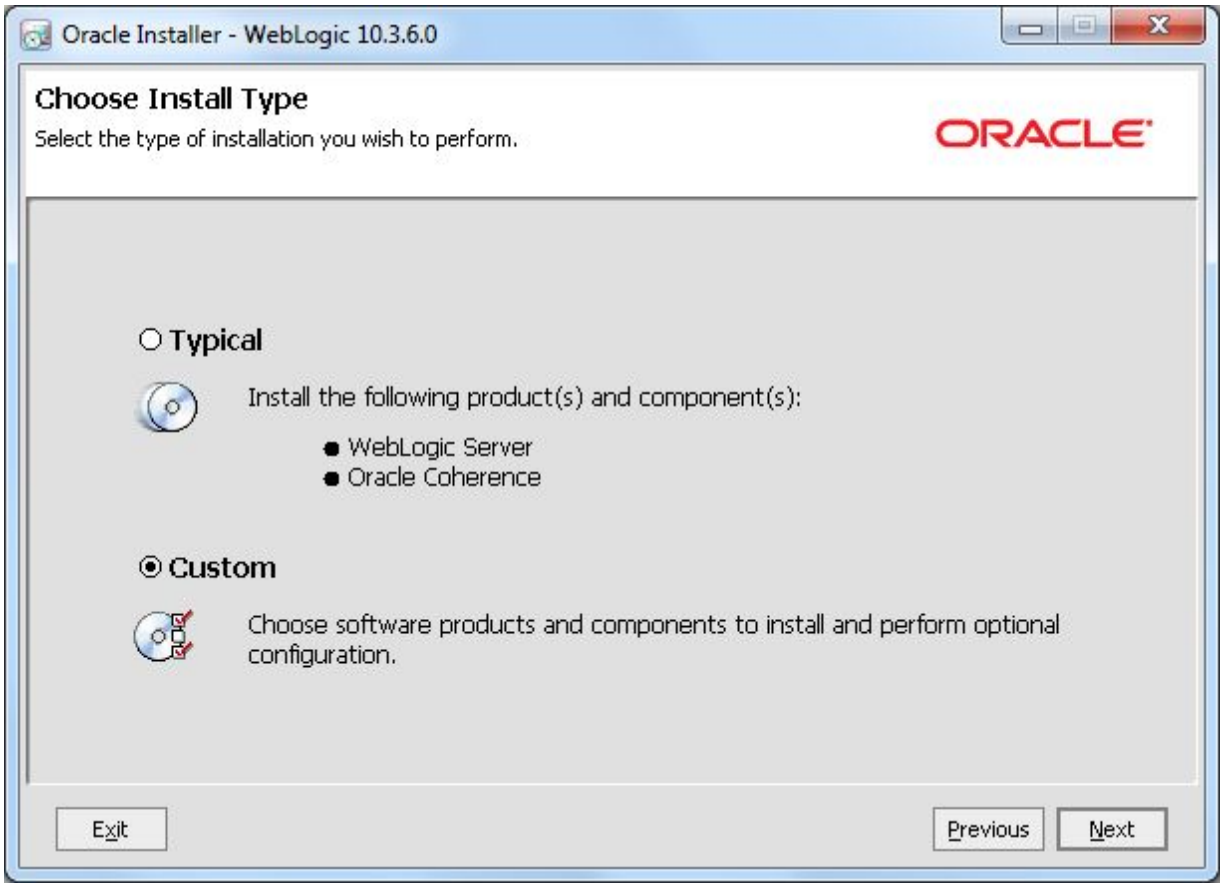
   (b) At the **Email Address Not Specified** pop-up, click **Yes**.

   (c) At the **Are You Sure?** prompt, click **Yes**.

(d) In the **Connection Failed** dialog, click the **I wish to remain uninformed of security issues in my configuration or the machine has no Internet access** checkbox and then click **Continue**.

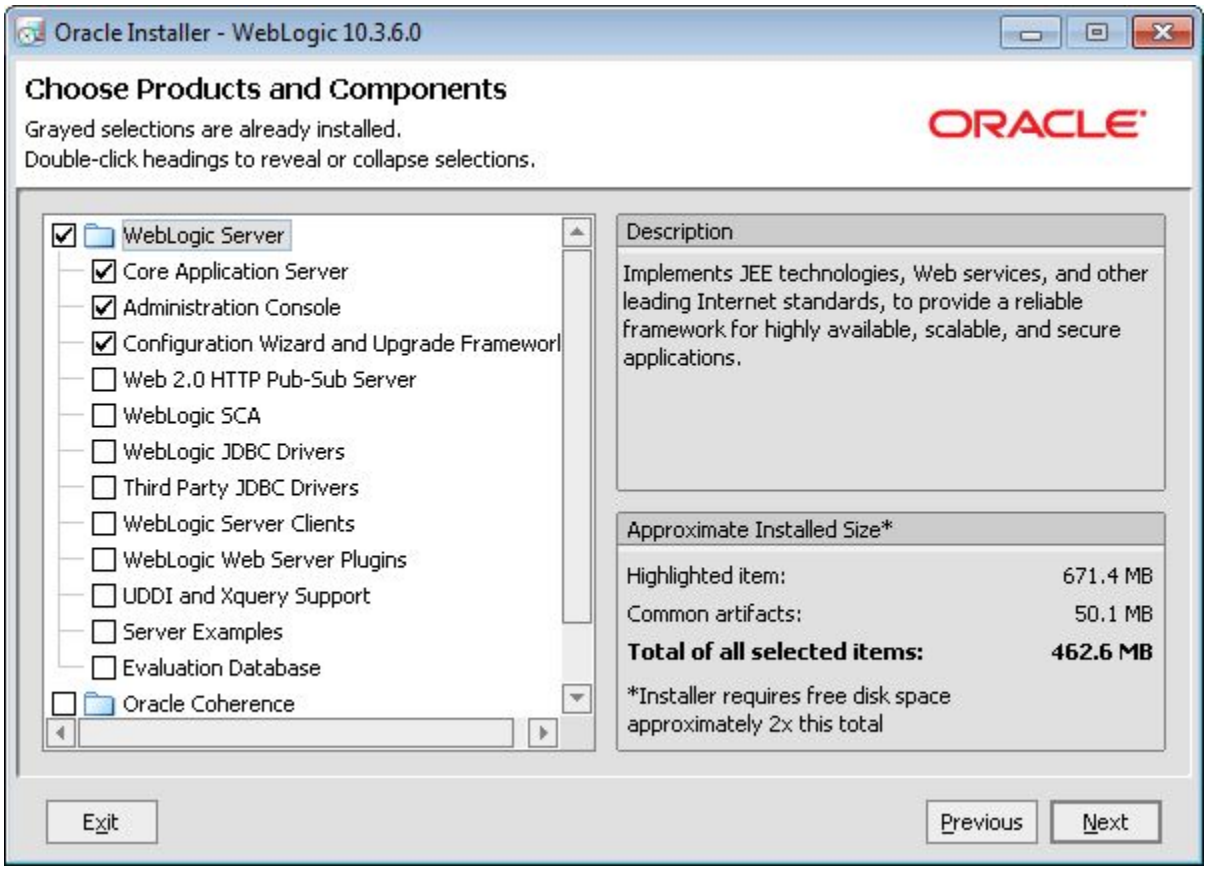


8. At the **Choose Install Type**, select **Custom** and click **Next**.



9. At the **Choose Products and Components** screen, select these components and click **Next**:
   (a) Core Application Server
   (b) Administration Console

(c) Configuration Wizard and Upgrade Framework

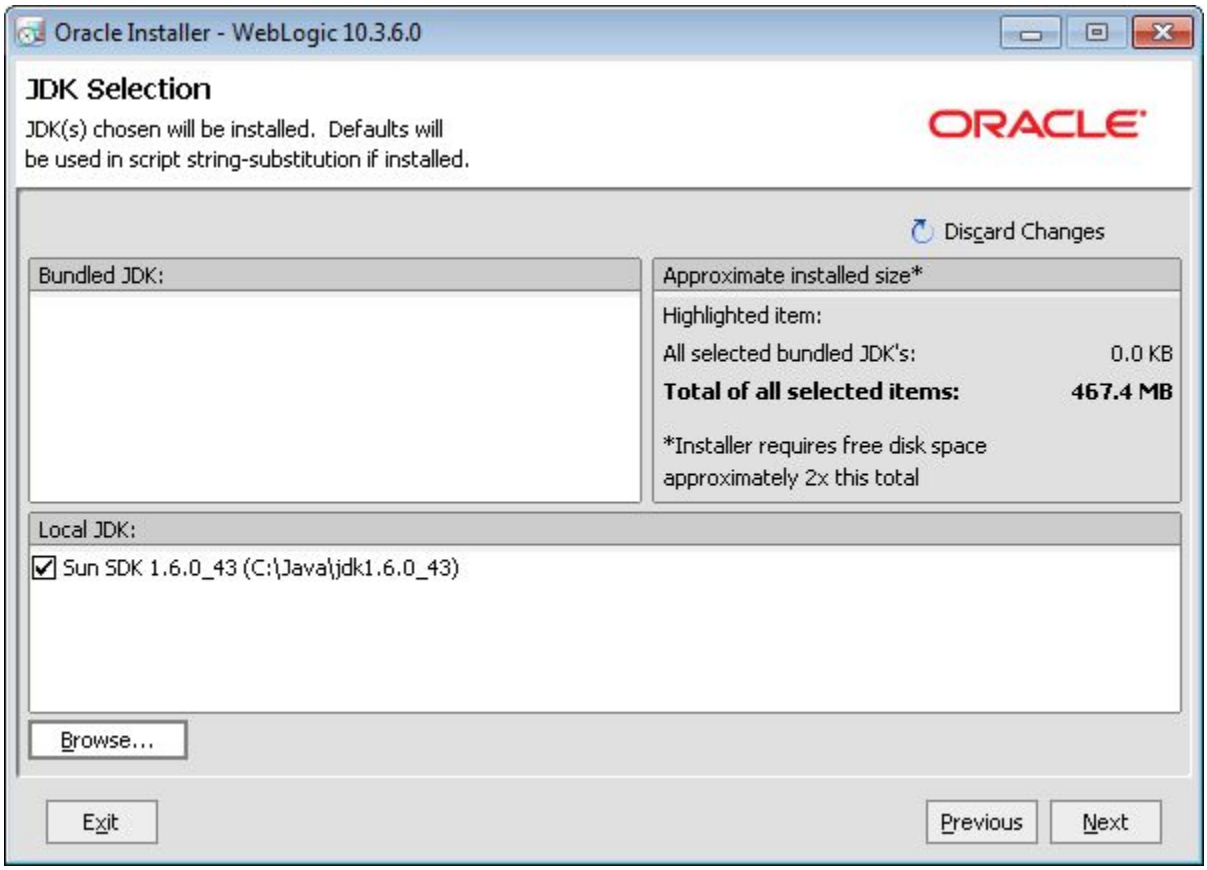


10. At the **JDK Selection** screen, do the following:

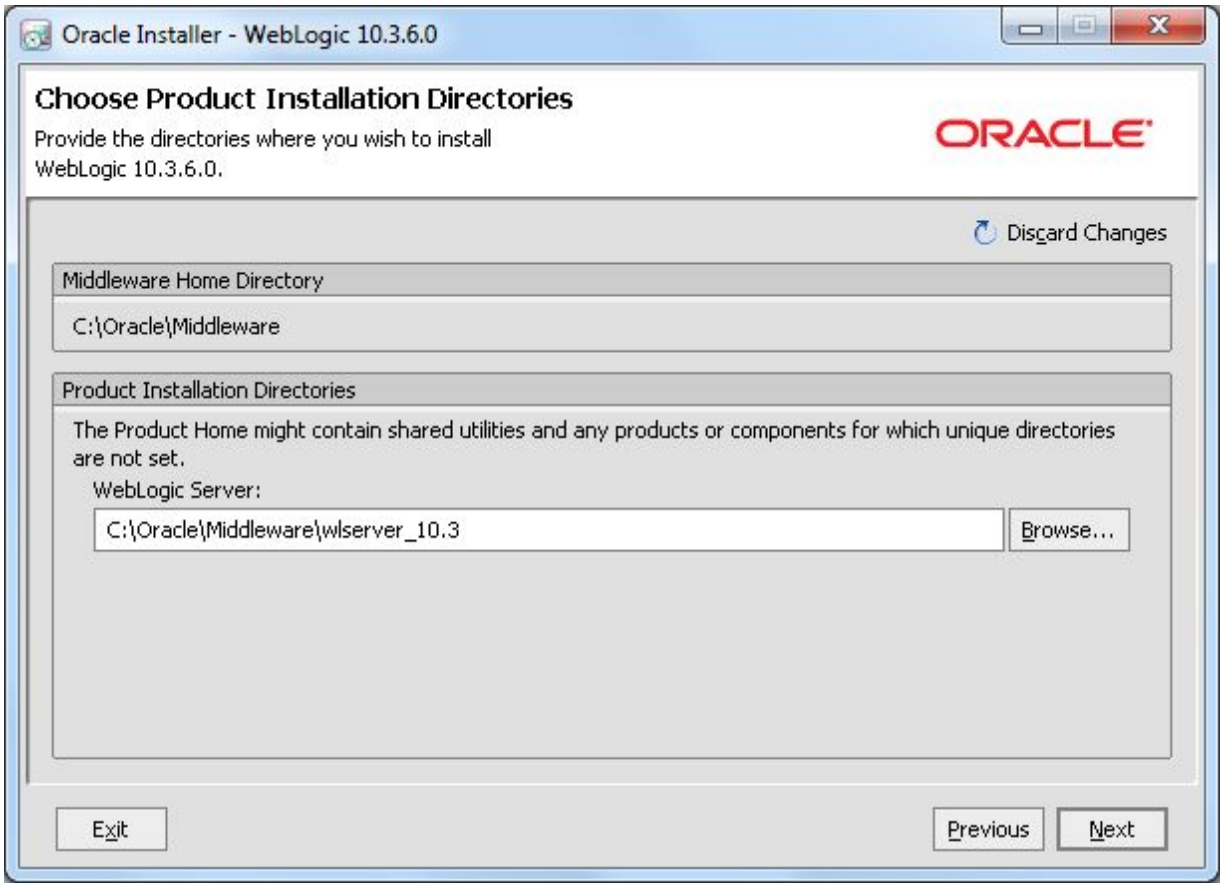
(a) Click the **Browse** button in the **Local JDK** pane.

(b) Browse to a local directory that contains the Oracle Java 6 JDK and select it. (The JDK will appear in the **Local JDK** pane with a checked box next to it.)

(c) Click **Next**.

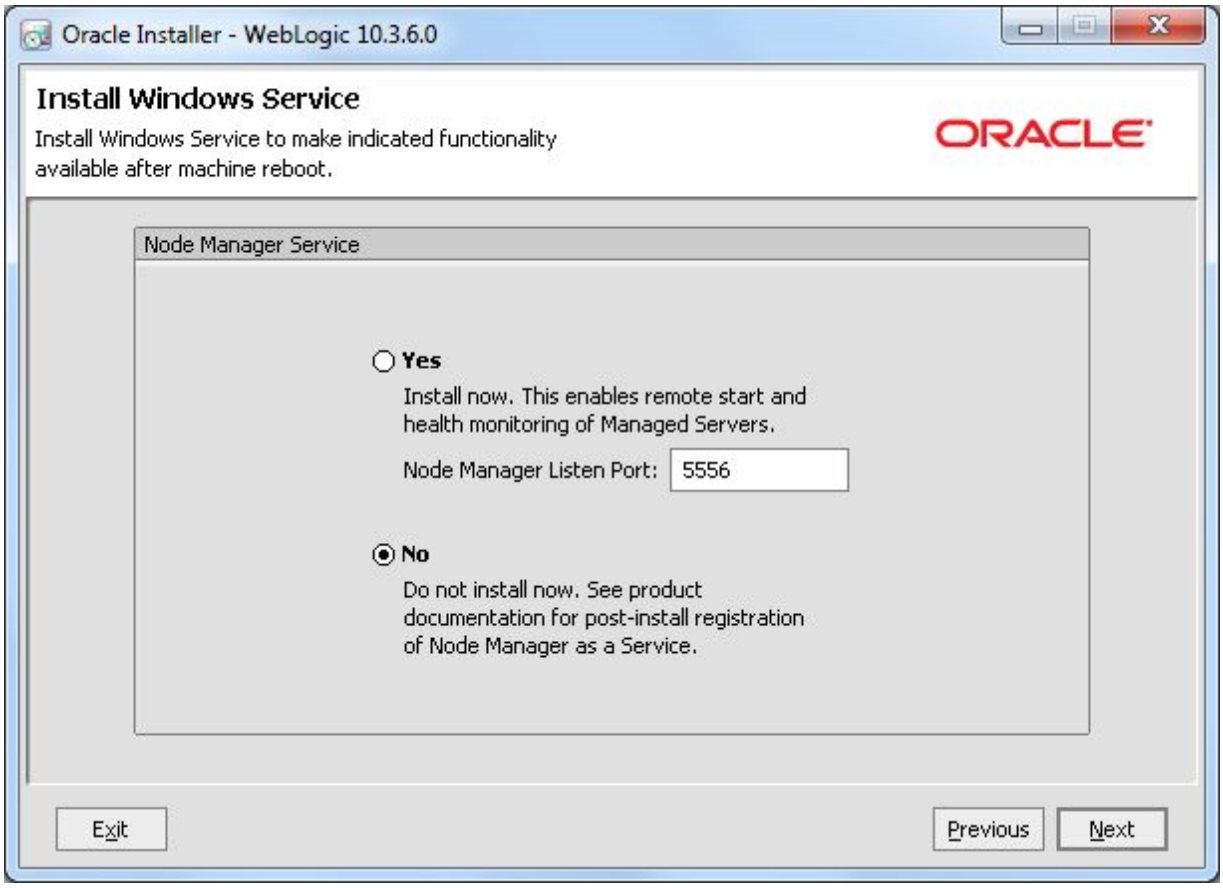

Oracle Installer - WebLogic 10.3.6.0
JDK Selection
JDK(s) chosen will be installed. Defaults will be used in script string-substitution if installed.
ORACLE
Discard Changes
Bundled JDK:
Approximate installed size*
Highlighted item:
All selected bundled JDK's: 0.0 KB
Total of all selected items: 467.4 MB
*Installer requires free disk space approximately 2x this total
Local JDK:
Sun SDK 1.6.0_43 (C:\Java\jdk1.6.0_43)
Browse...
Exit
Previous
Next

11. At the **Choose Product Installation Directories** screen, enter the name of the WebLogic Server installation directory. You can either accept the default installation directory or browse to another one. Then click **Next**.



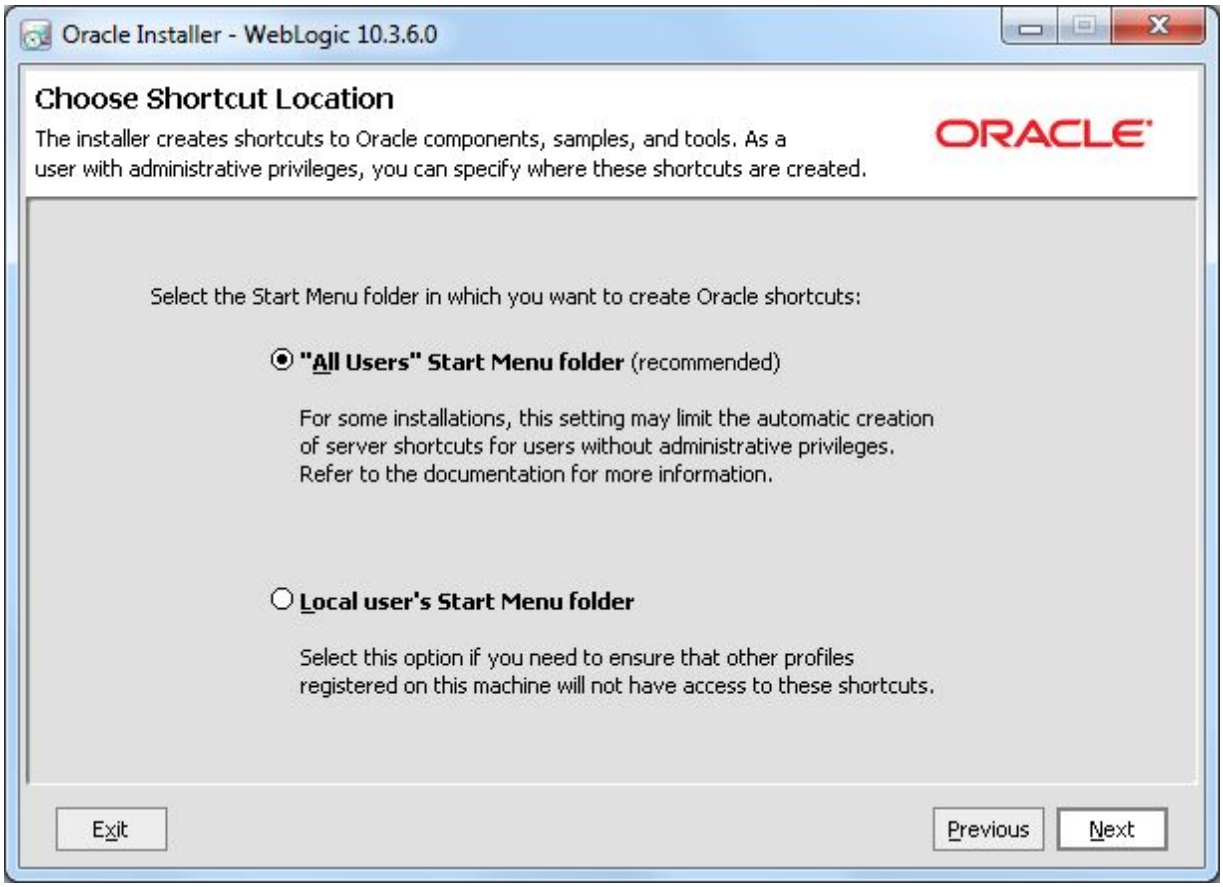
12. At the **Install Windows Service** screen, leave the **No** button selected and click **Next**.

    Note that you may not get this screen. It is typically displayed if all these conditions are true: you have Administrator privileges, you are performing an initial installation, you are installing on Windows, and you are performing a Custom installation.

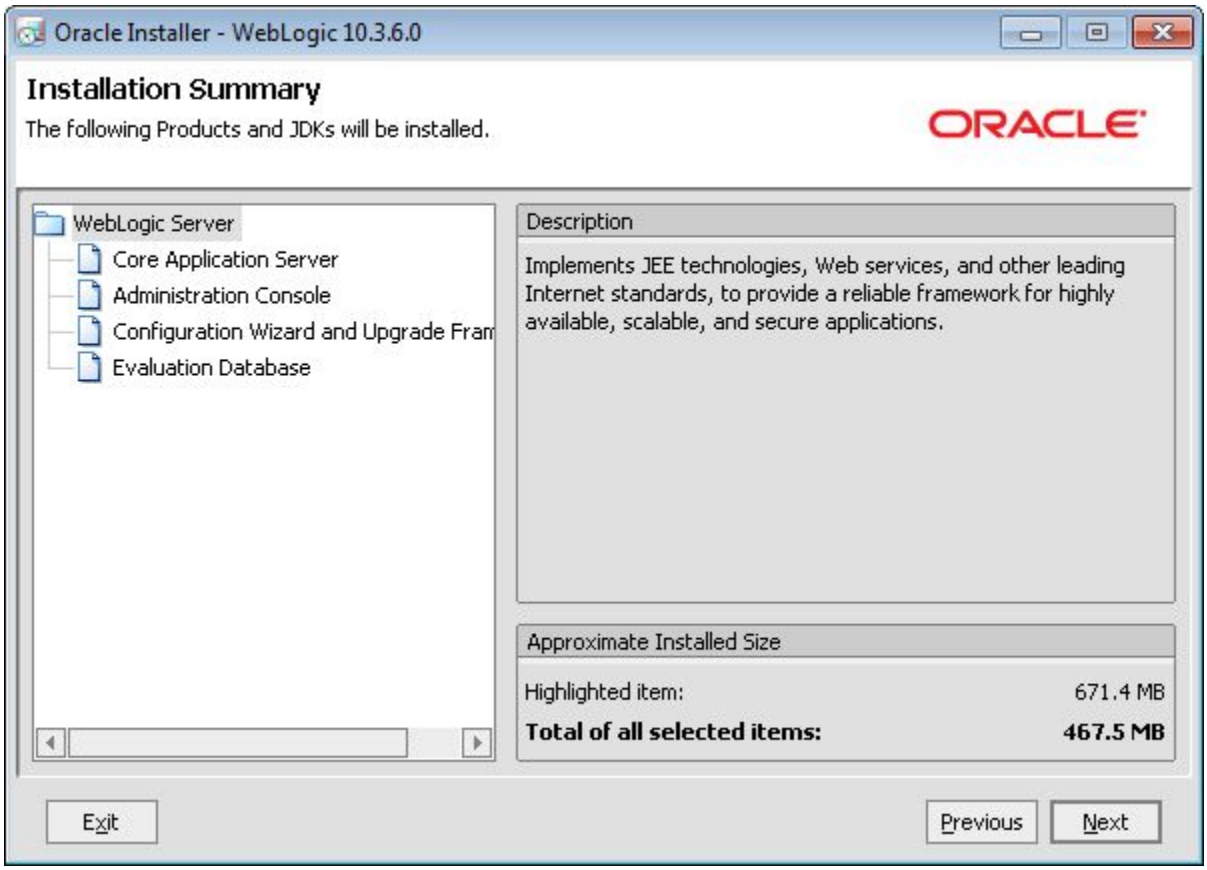


13. At the **Choose Shortcut Location** screen, select the **Start Menu** folder in which to create Oracle shortcuts and then click **Next**.

    Note that you may not get this screen. It is typically displayed if all these conditions are true: you have Administrator privileges, you are performing an initial installation, you are installing on Windows, and you are performing a Custom installation.

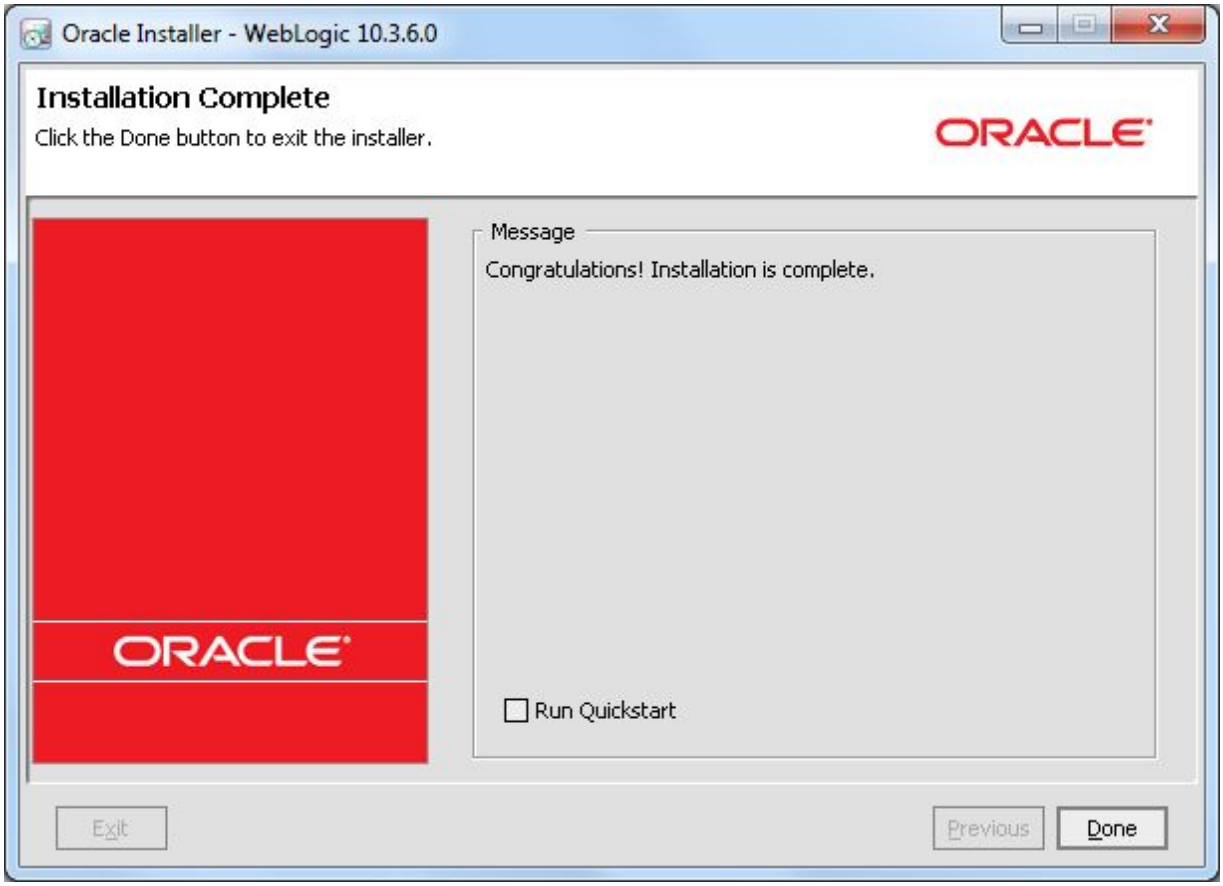


14. At the **Installation Summary** screen, verify that you are installing the correct products, and click **Next**.



15. At the **Installation Complete** screen, de-select **Run Quickstart** and click **Done** to exit the installer.

    Note that you can run the Quickstart application later.



On Windows, an **Oracle WebLogic** shortcut is created in the **Start Menu**. One of the sub-entries in this shortcut is to the WebLogic Server documentation.

The next step is to install the Oracle Application Development Framework Runtime package.

Installing Oracle ADF Runtime package

This topic describes how to install the ADF (Application Development Framework) Runtime 11.1.1.6 product, which contains the JRF on which the Endeca Server package depends.

This topic assumes that you have:

- Installed Oracle WebLogic Server 10.3.6.
- Downloaded the Oracle ADF (Application Development Framework) Runtime 11.1.1.6 product installer, as described on *Oracle ADF Runtime requirement on page 13*.

Important: The installation instructions in this topic are a distillation of the complete instructions in the *Oracle Fusion Middleware Installation Guide for Application Developer*. The complete instructions provide detailed information about installing the software, such as system requirements. The complete instructions are available online at: *http://docs.oracle.com/cd/E23943_01/doc.1111/e14827/toc.htm*

Before proceeding to install Oracle ADF Runtime on Linux, ensure you:

- Do not run the installation program as the root user.
- Have an X-Windows (X11) environment. The installer requires that your monitor must be configured to display at least 256 colors.

To install Oracle ADF Runtime:

1. Unpack the ADF ZIP package.

   As a result, you will see a *readme.htm* file and two subdirectories named `Disk1` and `Disk2`.

2. From a command prompt, change to the `Disk1` directory and run the installer:
   - For Linux, use this command:

     `./runInstaller -jreLoc <jre_location>`

   - For Windows, use this command:

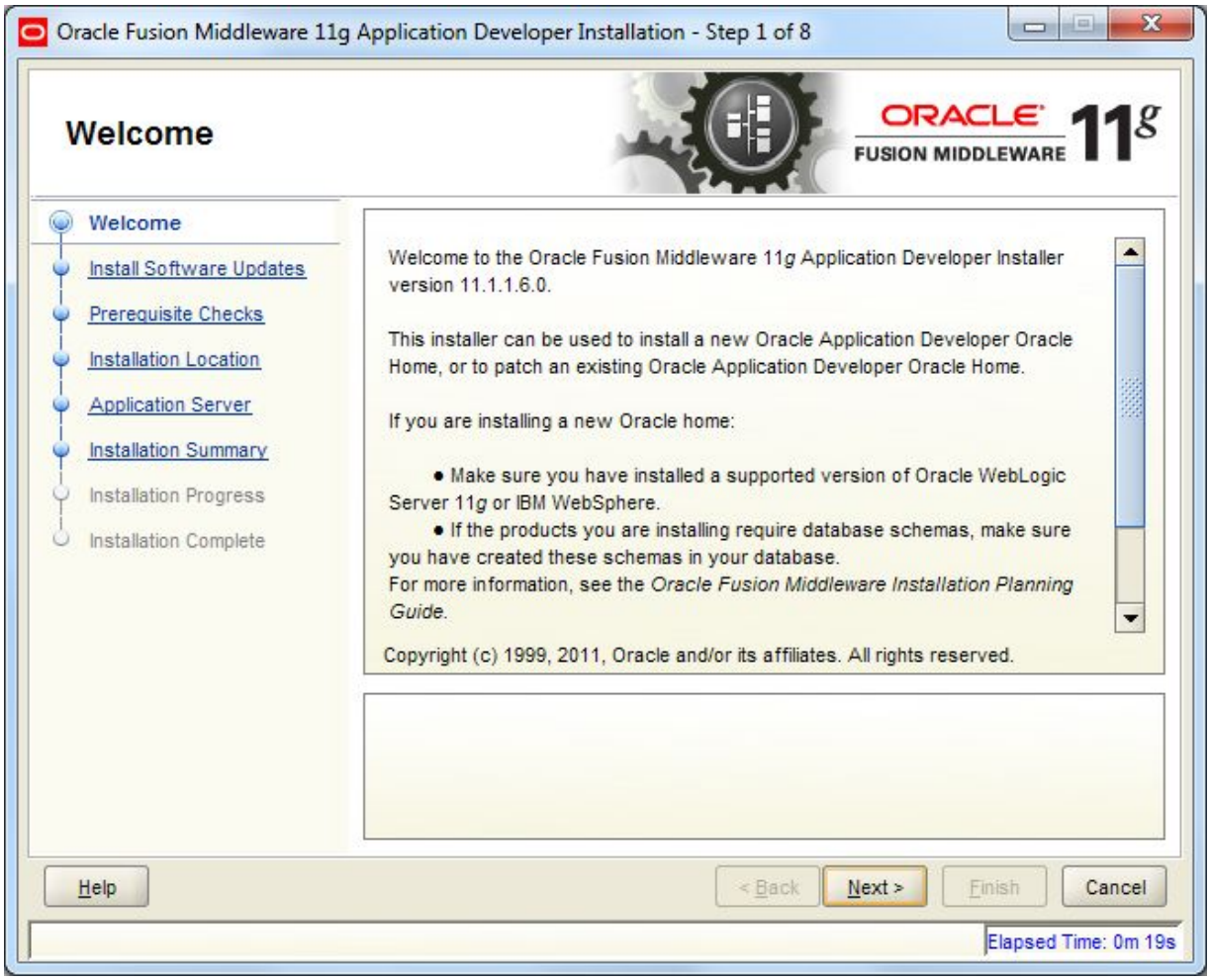
     `setup.exe -jreLoc <jre_location>`

   For both commands, *jre_location* is the full path to the location of a Java 6 JDK directory on your system. Note that the path cannot contain spaces. For example:

   ```
   setup.exe -jreLoc c:\java\jdk1.6.0_43
   ```

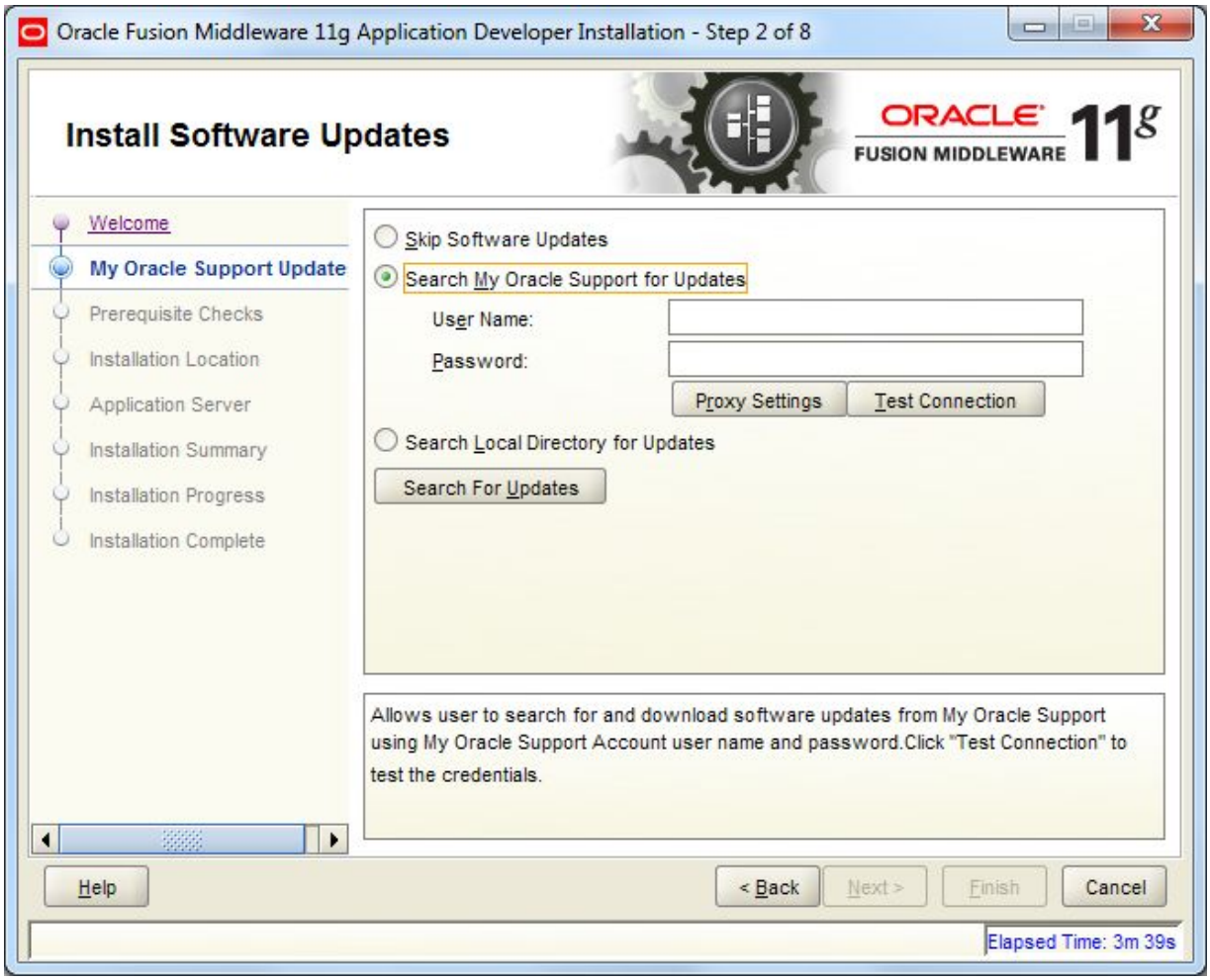
3. If you are installing on a Linux system and this is the first time any Oracle product is being installed on your system with the Oracle Universal Installer, you will be asked to provide the location of an inventory directory. This is the location where the installer will set up subdirectories and maintain inventory data for each Oracle product that is installed on this system. Follow the directions on the screen.

4. At the **Welcome** screen, read the information and click **Next**.

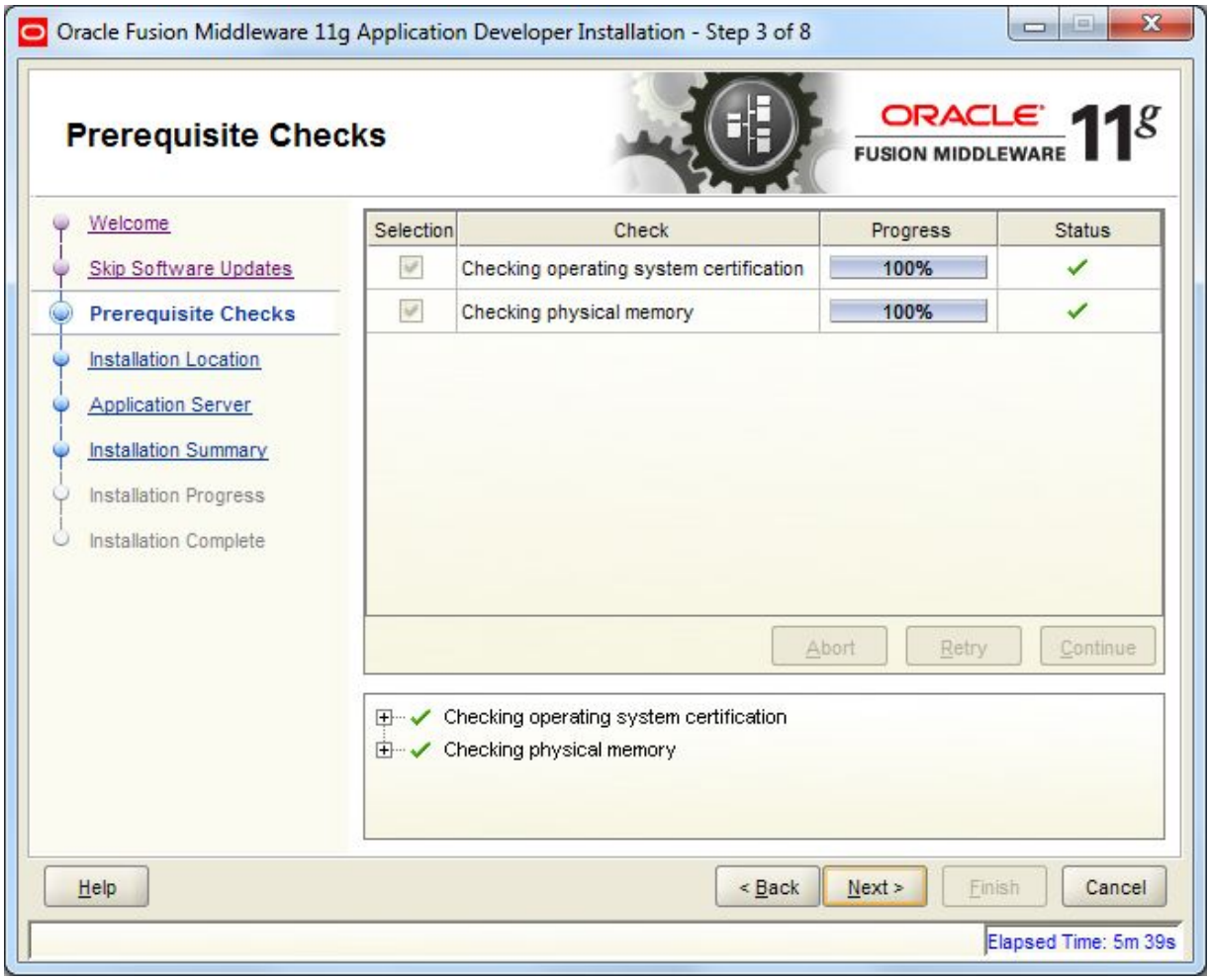


5. At the **Install Software Updates** screen, either select **Skip Software Updates** or search for updates. Then click **Next**.

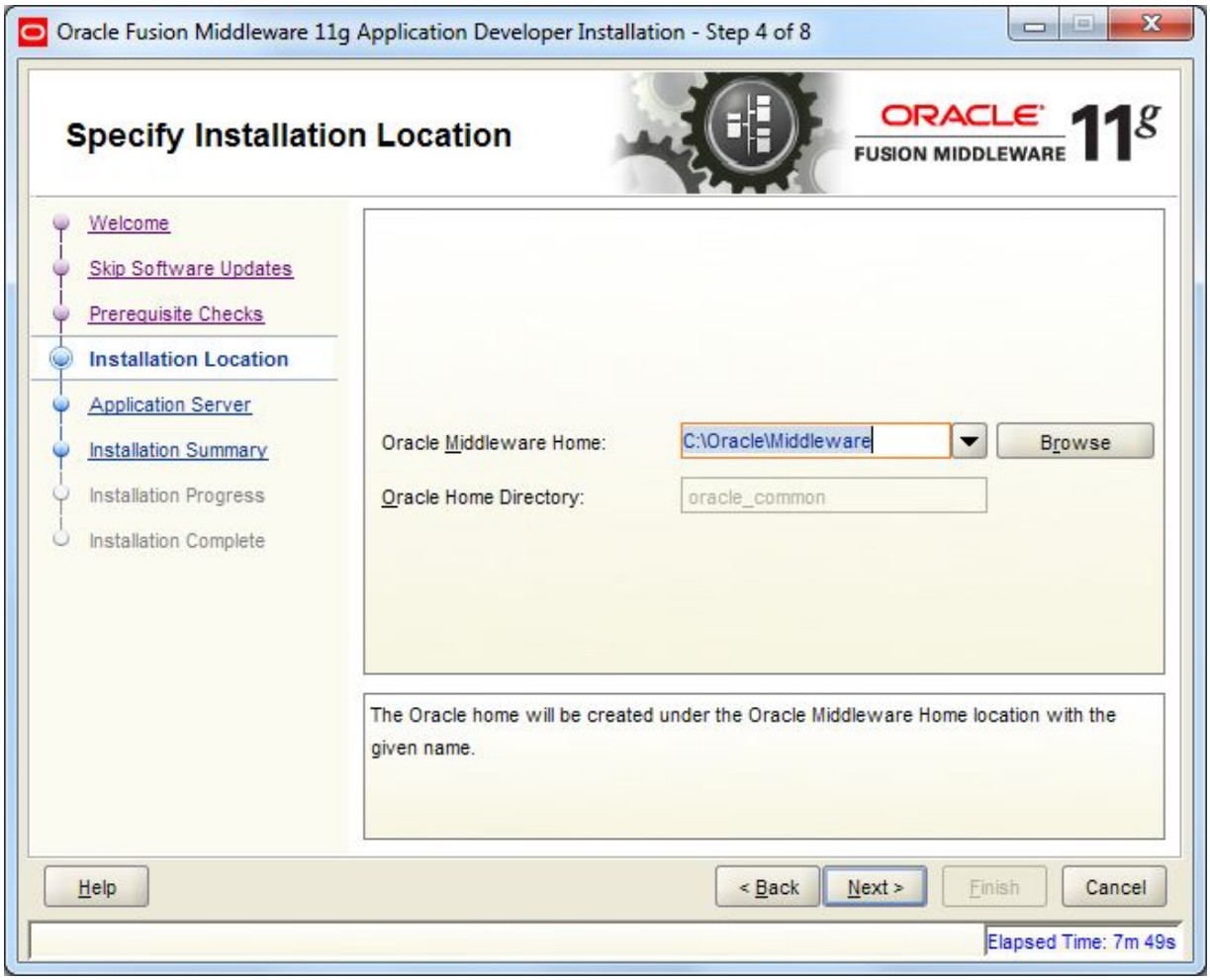
   This procedure assumes that you selected the **Skip Software Updates** option. Keep in mind that you can search for software updates after you finish all the installation steps.



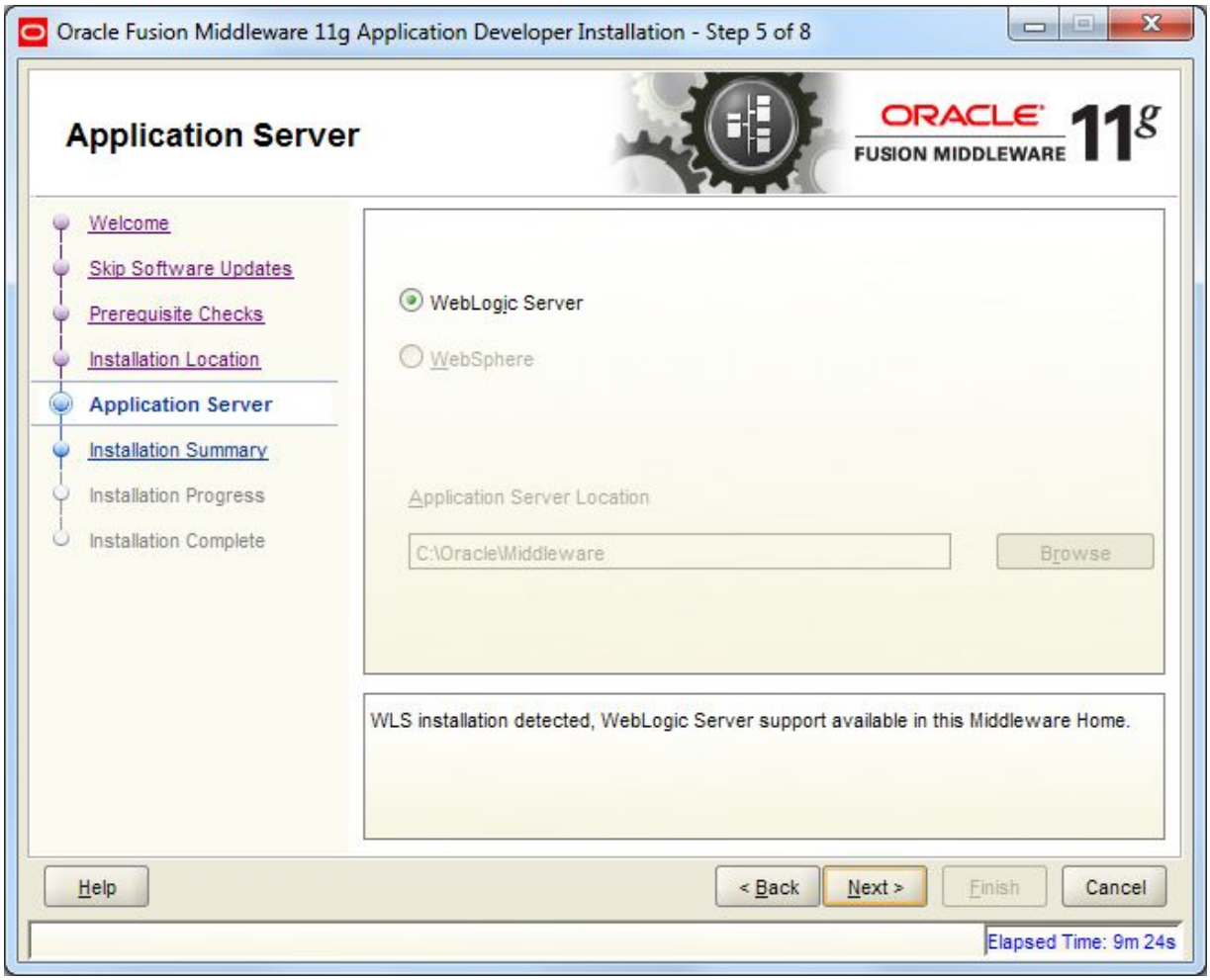
6. At the **Prerequisite Checks** screen, wait until the installation process passes all the necessary checks. It is important that the WebLogic Server passes its "number of file descriptors" check that is part of this step. If everything passes the checks, click **Next**.



7. At the **Specify Installation Location** screen, verify that the Oracle Middleware Home directory is the location where you installed the WebLogic software. Then click **Next**.

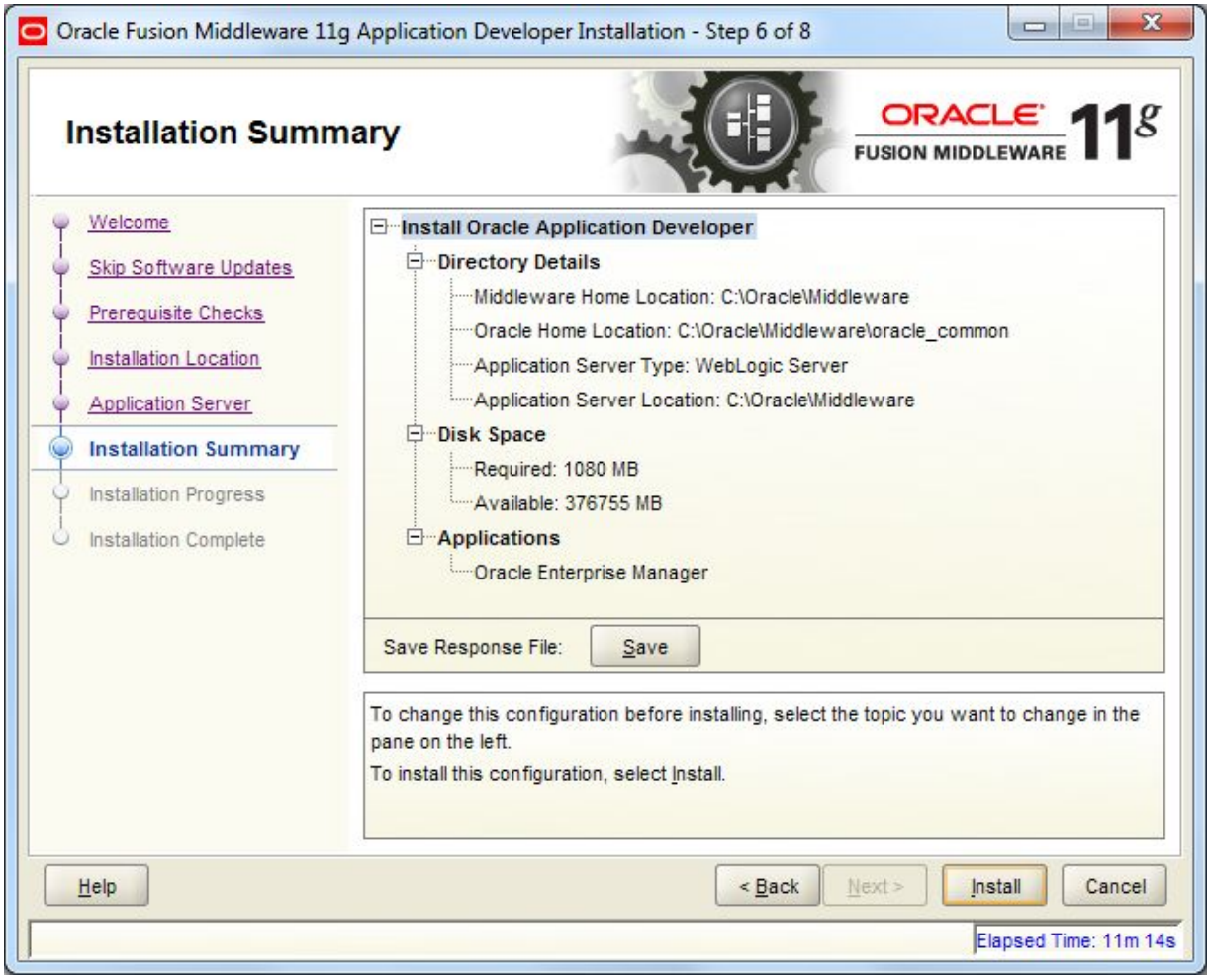


8. At the **Application Server** screen, select **WebLogic Server** and click **Next**.

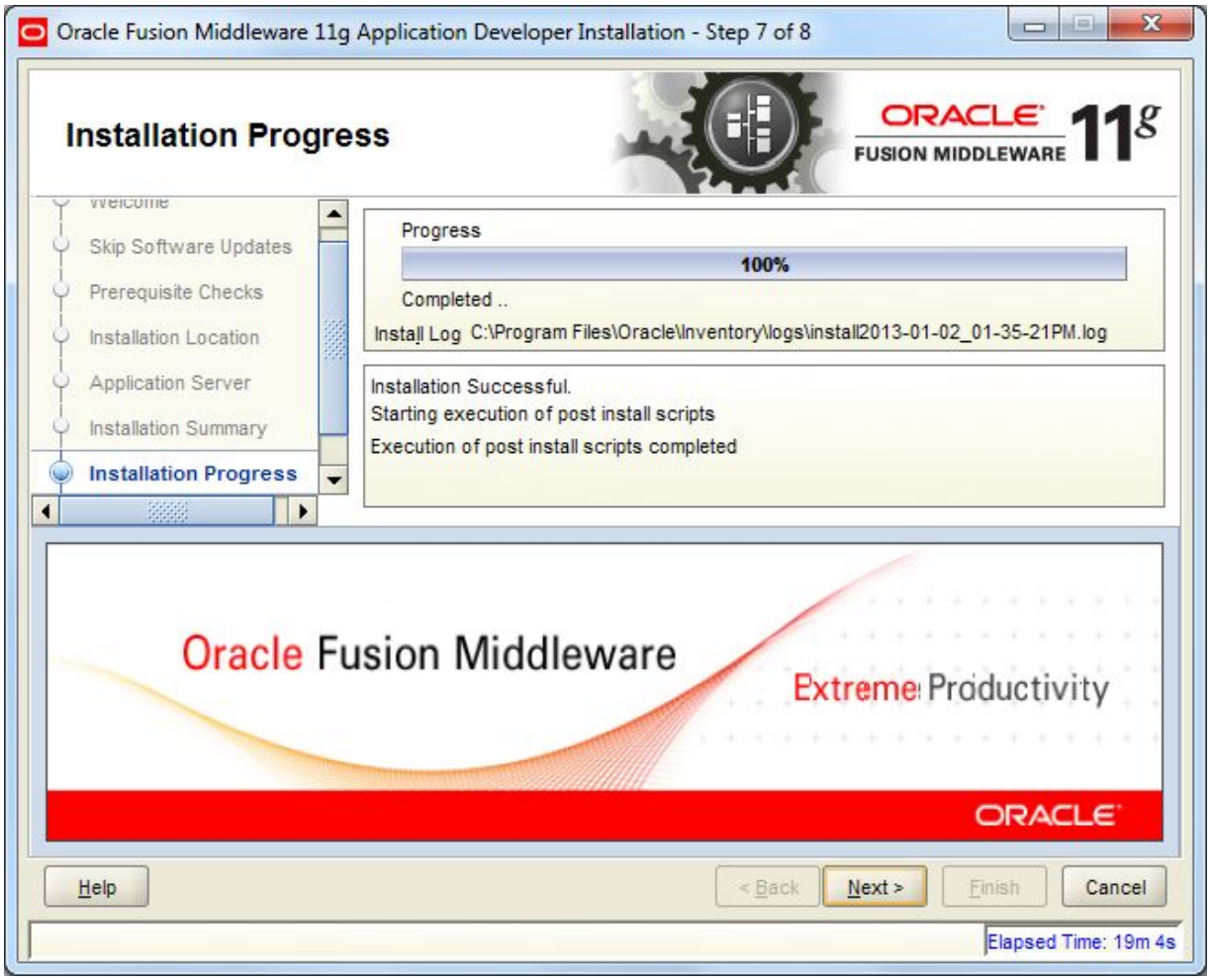


9. At the **Installation Summary** screen, verify the installation details and click **Install**.

   The **Installation Progress** screen shows the progress. When it finishes, the screen should look like this:

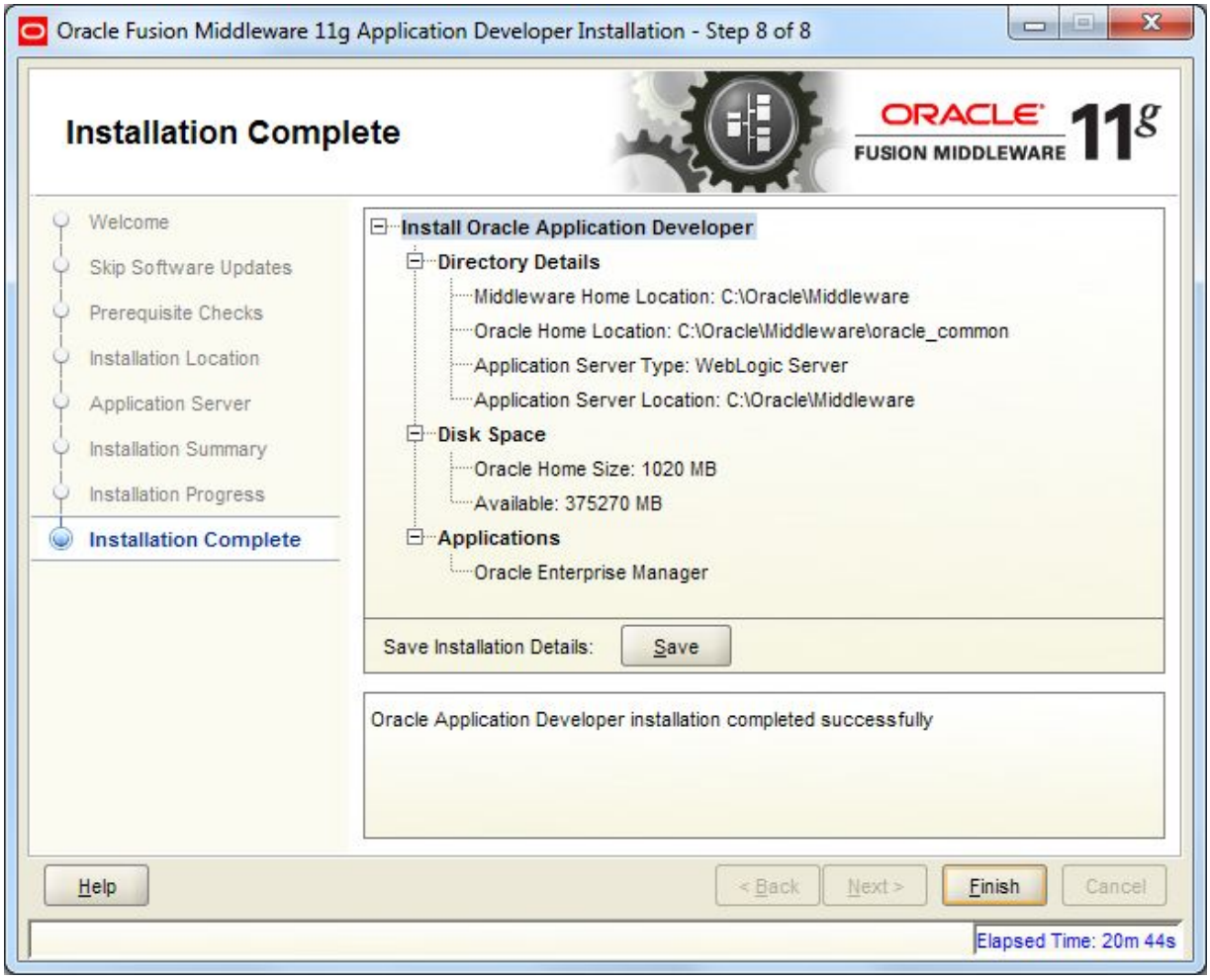


10. At the **Installation Progress** screen, click **Next** when the installation progress has completed.



11. At the **Installation Complete** screen, click **Finish** to exit the installer.

    Before exiting the installer, you have the option of first saving the installation details to a disk file.



On Windows, two shortcuts are created in the **Start Menu**: **Oracle Application Developer 11g** and **Oracle Common Home 11g**.

The next step is to install Oracle Endeca Server.

Chapter 5

Manually Installing Endeca Server on a Single Machine

This section contains instructions for installing the Oracle Endeca Server on a single machine.

Installing Oracle Endeca Server

This topic describes how to install the Oracle Endeca Server package.

Before you install Endeca Server, both Oracle WebLogic Server and the Application Developer Framework Runtime must be installed on the machine.

The order of installation for Oracle Endeca Server is:

1. Run the Endeca Server installer.
2. Create a WebLogic domain for the Endeca Server application. (If you are deploying an Endeca Server cluster, this step is needed only when you install on the machine that will become the Admin Server in the WebLogic domain created for the Endeca Server.)
3. Run the post-installation script to create SSL certificates if you installed in a secure mode. (If you are deploying an Endeca Server cluster, this step needs to be completed on the Admin Server only and before you clone this server to create Managed Servers.)
4. If you will use enrichments in your Studio application, you must register the Data Enrichment plugins.
5. Verify that the Endeca Server application is correctly deployed in WebLogic Server.

Note the following about the Endeca Server installation:

- The Endeca Cluster Coordinator software is installed as part of the package.
- You can install Endeca Server in either secure (SSL) or non-secure mode. Secure mode is highly recommended for production deployments, while non-secure installations can be used for development environments.
- When installing Endeca Server on Linux, do not run the installation program as the root user.
- You must have an X-Windows (X11) environment on Linux. The installer requires that your monitor must be configured to display at least 256 colors.

To install Oracle Endeca Server:

1. Unpack the Endeca Server ZIP file (`endecaserver.zip`) to a temporary directory.

   As a result, you will see an `endecaserver` directory, which has a `Disk1` subdirectory.

2. From a command prompt, change to the `Disk1` directory and run the installer:
   - For Linux, use this command:

     `./runInstaller -jreLoc <jre_location>`
   - For Windows, use this command:

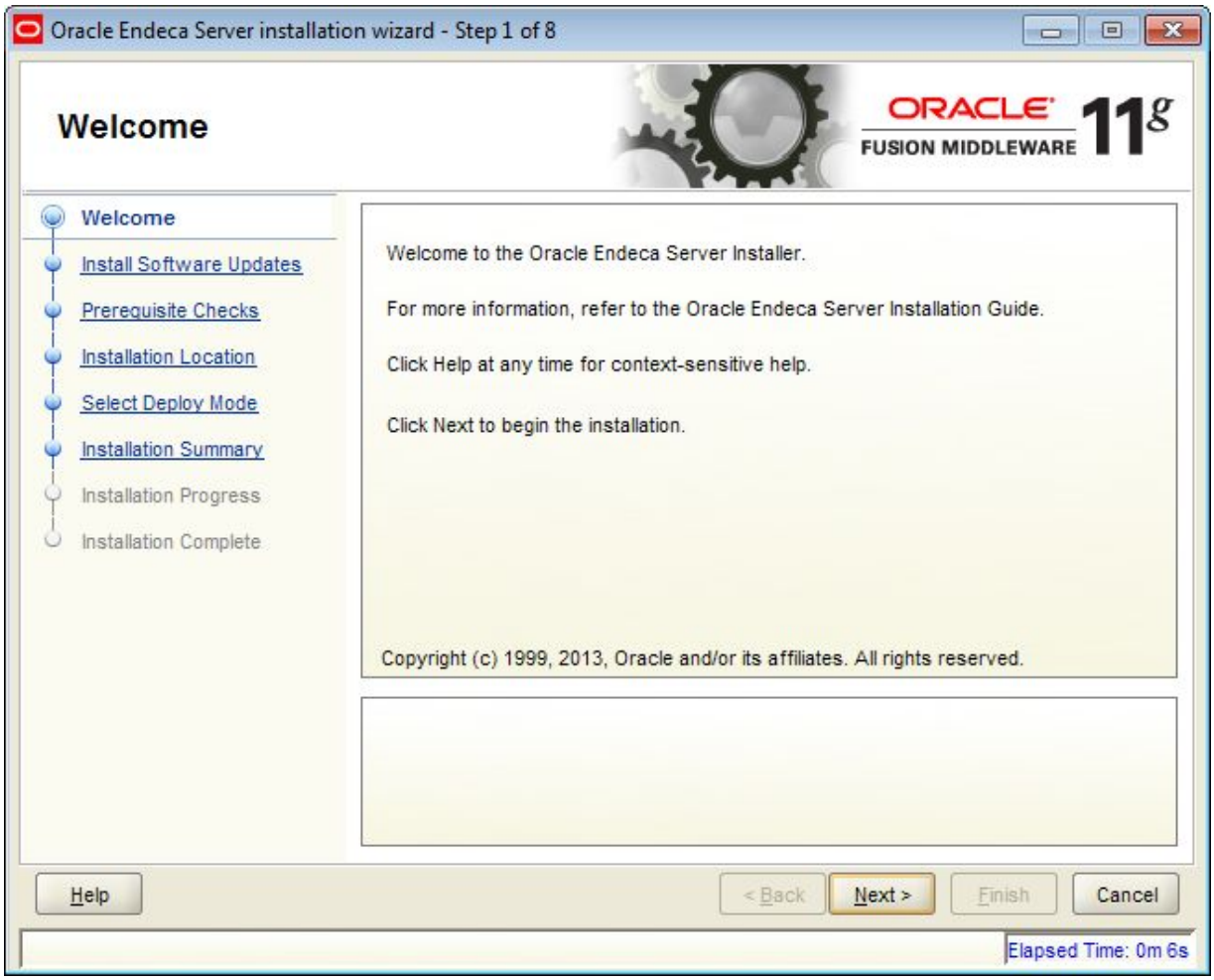
     `setup.exe -jreLoc <jre_location>`

   For both commands, *jre_location* is the full path to the location of a Sun Java SE 6 SDK directory on your system. Note that the path cannot contain spaces. For example on Windows:

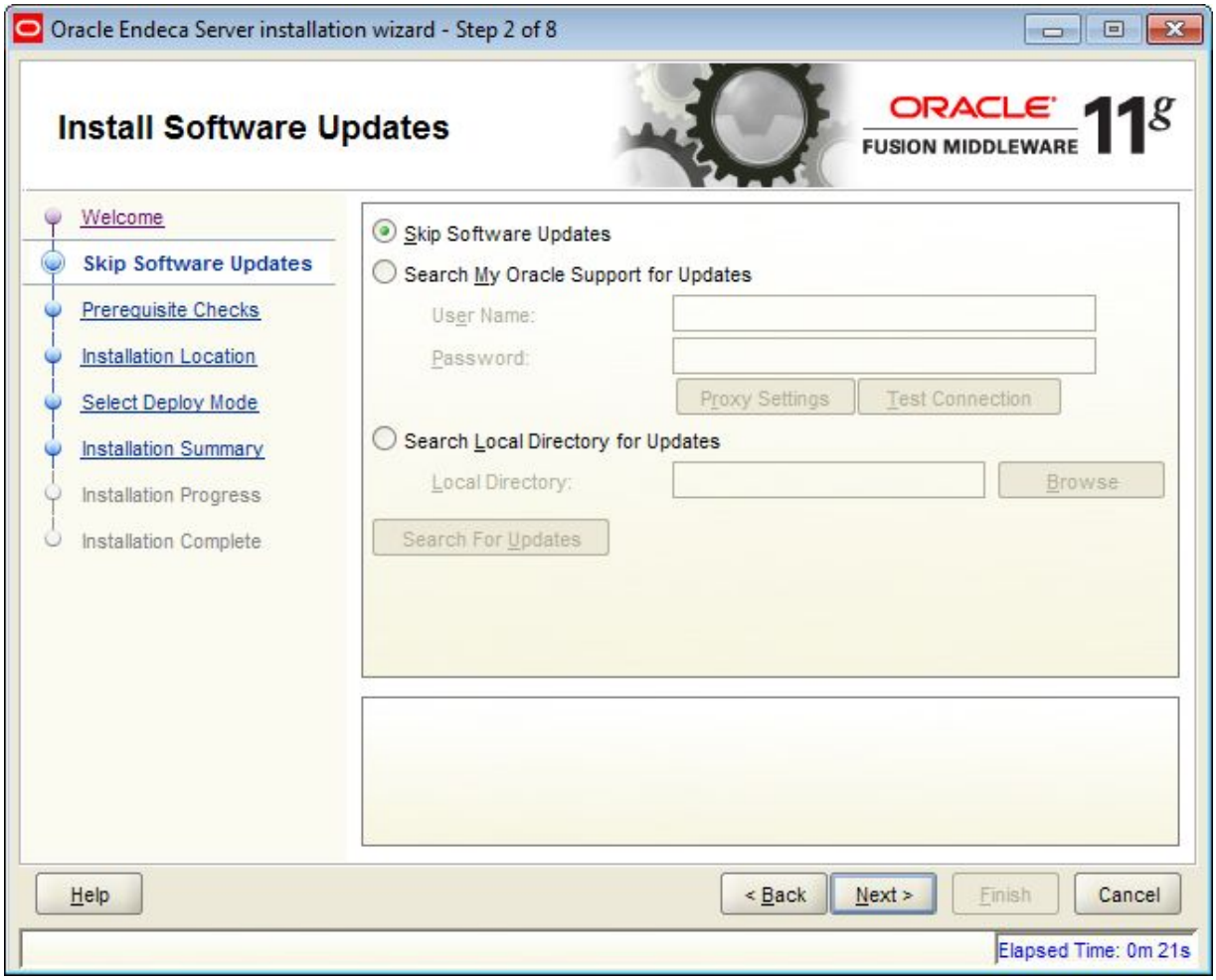
   ```
   setup.exe -jreLoc c:\java\jdk1.6.0_43
   ```

   When the installer runs, it displays the installation wizard's **Welcome** screen.

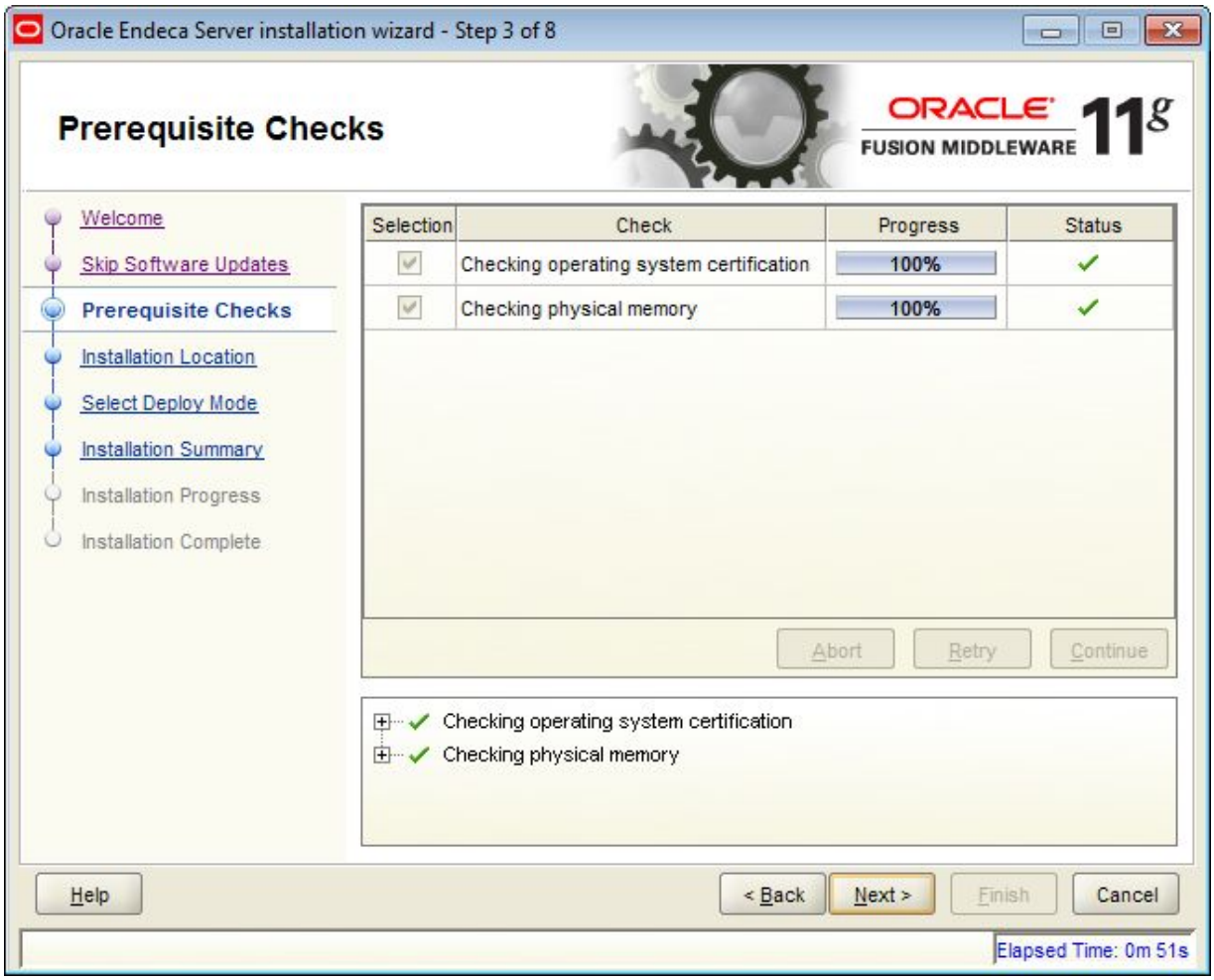
3. At the **Welcome** screen, read the information and click **Next**.



4. At the **Install Software Updates** screen, select **Skip Software Updates** and then click **Next**.
   Do not select either of the two search options as those features are not implemented.



5. At the **Prerequisite Checks** screen, click **Next** if everything passes the checks.



6. At the **Specify Installation Location** screen, do the following:

   (a) In the **Oracle Middleware Home** field, verify the name of the Oracle Middleware home directory. You can either accept the default location or browse to another location.

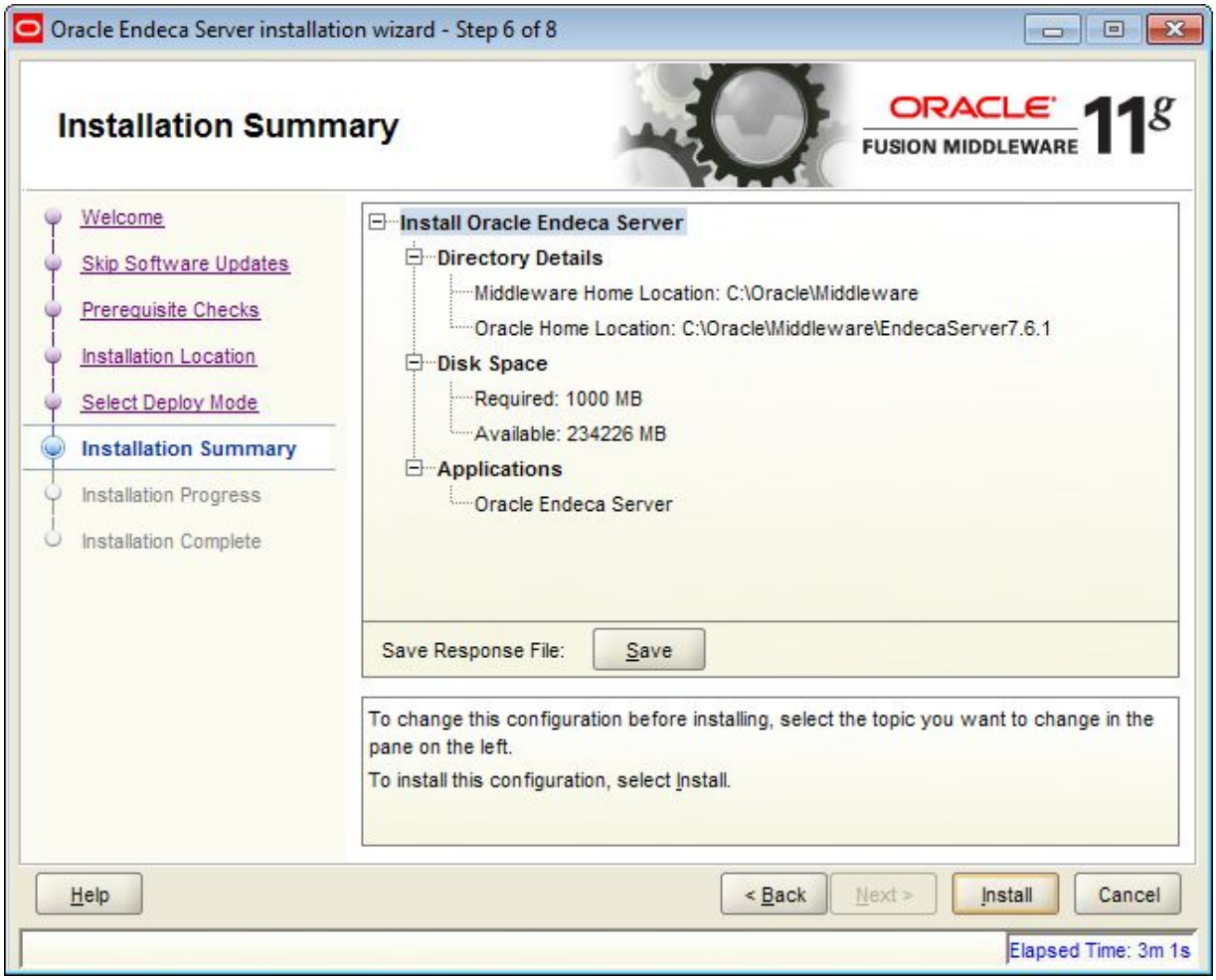
   (b) In the **Oracle Home Directory** field, either accept the default name of the Endeca Server home directory or enter a new name (for example: EndecaServer7.6.1). This will be the root directory of the Endeca Server installation. The Endeca Server Home directory name may only contain alphanumeric, hyphen (-) , dot (.), and underscore (_) characters, and it must begin with an alphanumeric character.

(c) When you have finished, click **Next**.

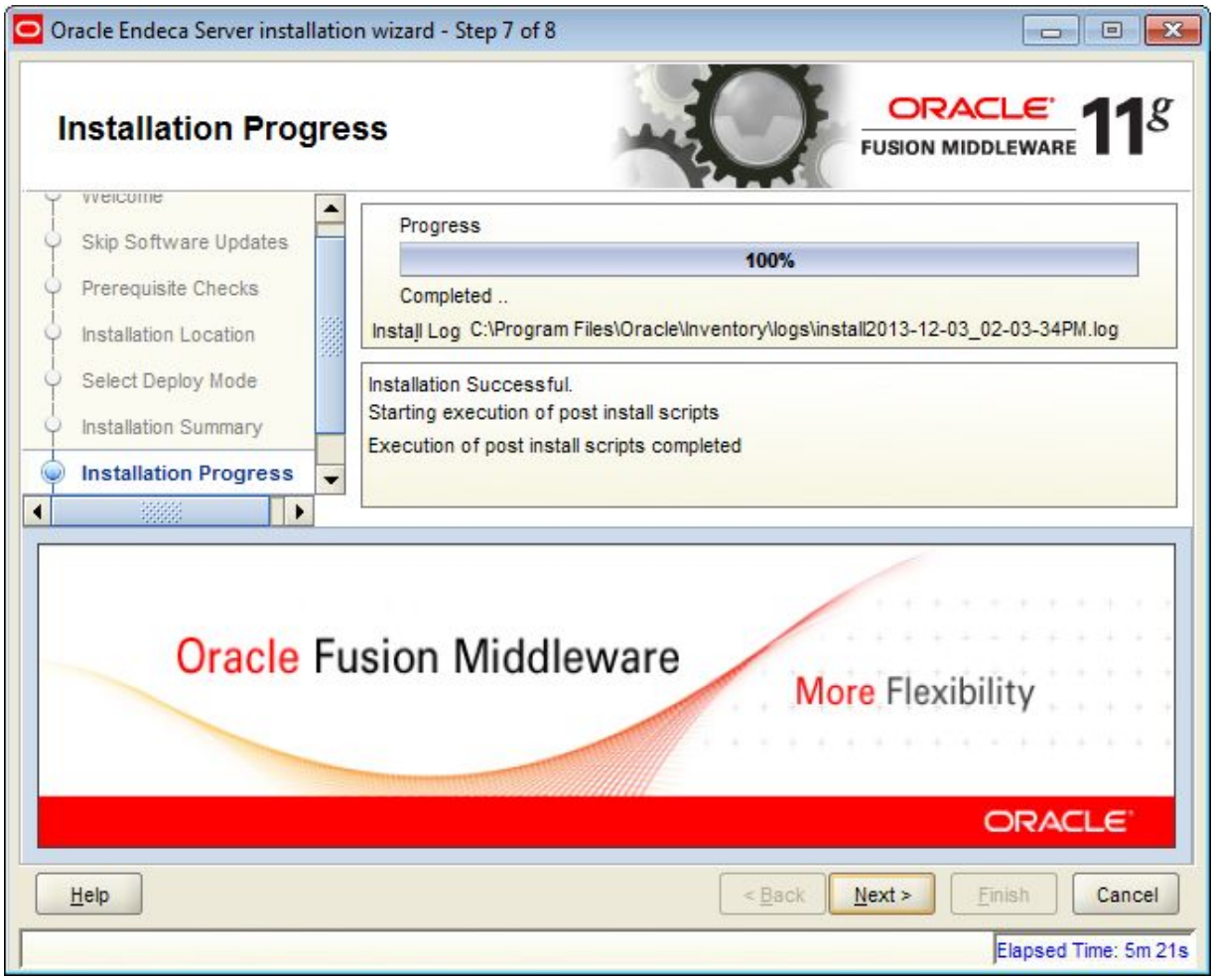
7. At the **Select Deploy Mode** screen, either leave the **YES** checkbox checked (to deploy Endeca Server in an SSL mode) or uncheck it (for a non-SSL mode). Then click **Next**.

8. At the **Installation Summary** screen, verify the installation details and click **Install**.

   Note that the **Save** button allows you to save a Response File for silent-mode installations.

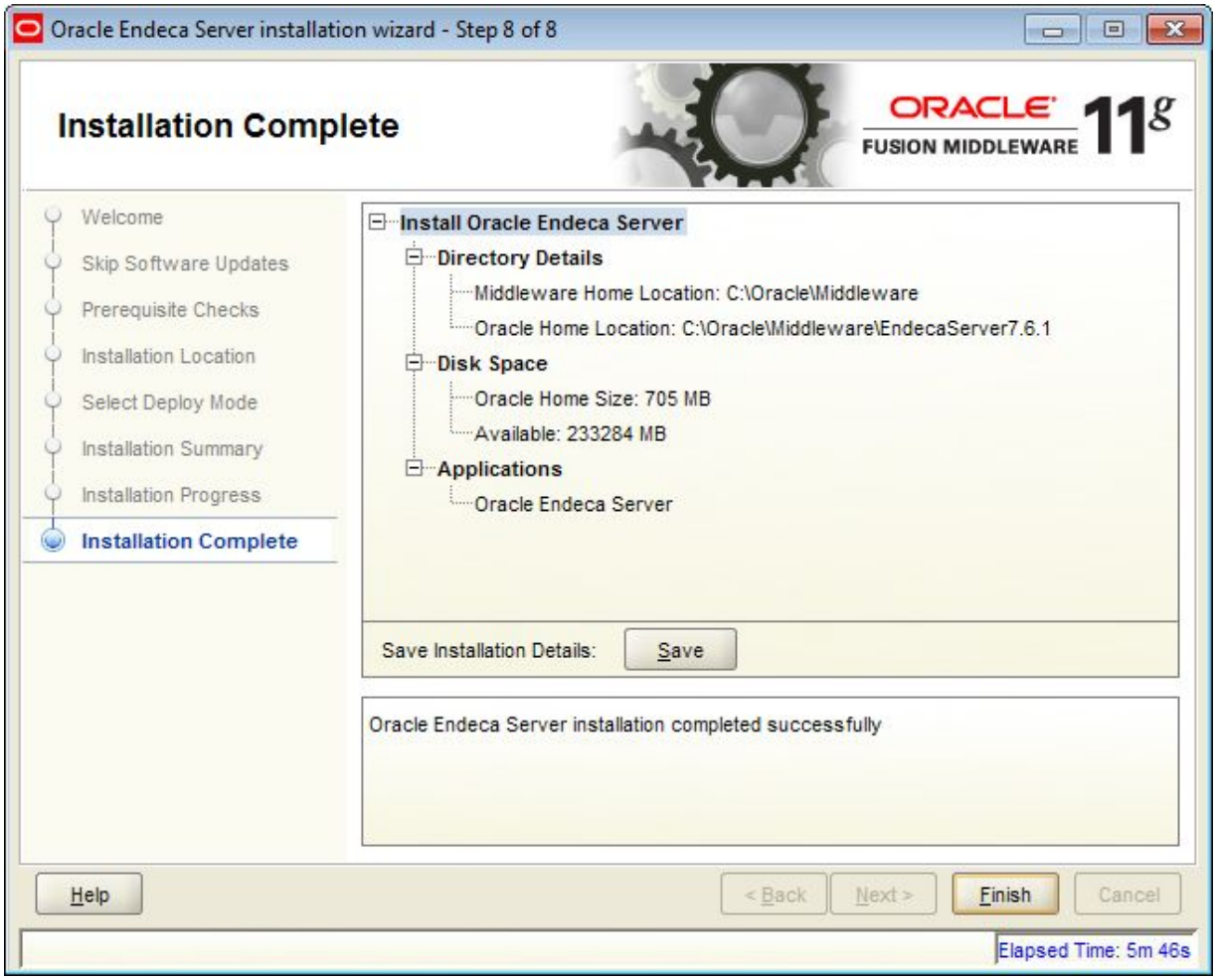


9. At the **Installation Progress** screen, click **Next** when the installation progress has completed.



10. At the **Installation Complete** screen, click **Finish** to exit the installation wizard.

    Before exiting the installation wizard, you have the option of first saving the installation details to a disk file.



When the installation finishes, the Endeca Server files and directories are written to the Oracle Home Location (as indicated in the **Installation Complete** screen).

The next step is to create a WebLogic domain for the Oracle Endeca Server application.

Note: If you are deploying the Endeca Server cluster, then the step for creating a WebLogic domain should occur on the machine that is going to serve as the Admin Server in your WebLogic domain. That is, on those machines that will become the Managed Servers, you do not need to create a WebLogic domain since it has already been created on the machine serving as the Admin Server.

Creating the WebLogic domain for Endeca Server

You must create a WebLogic domain for the Endeca Server application to run in.

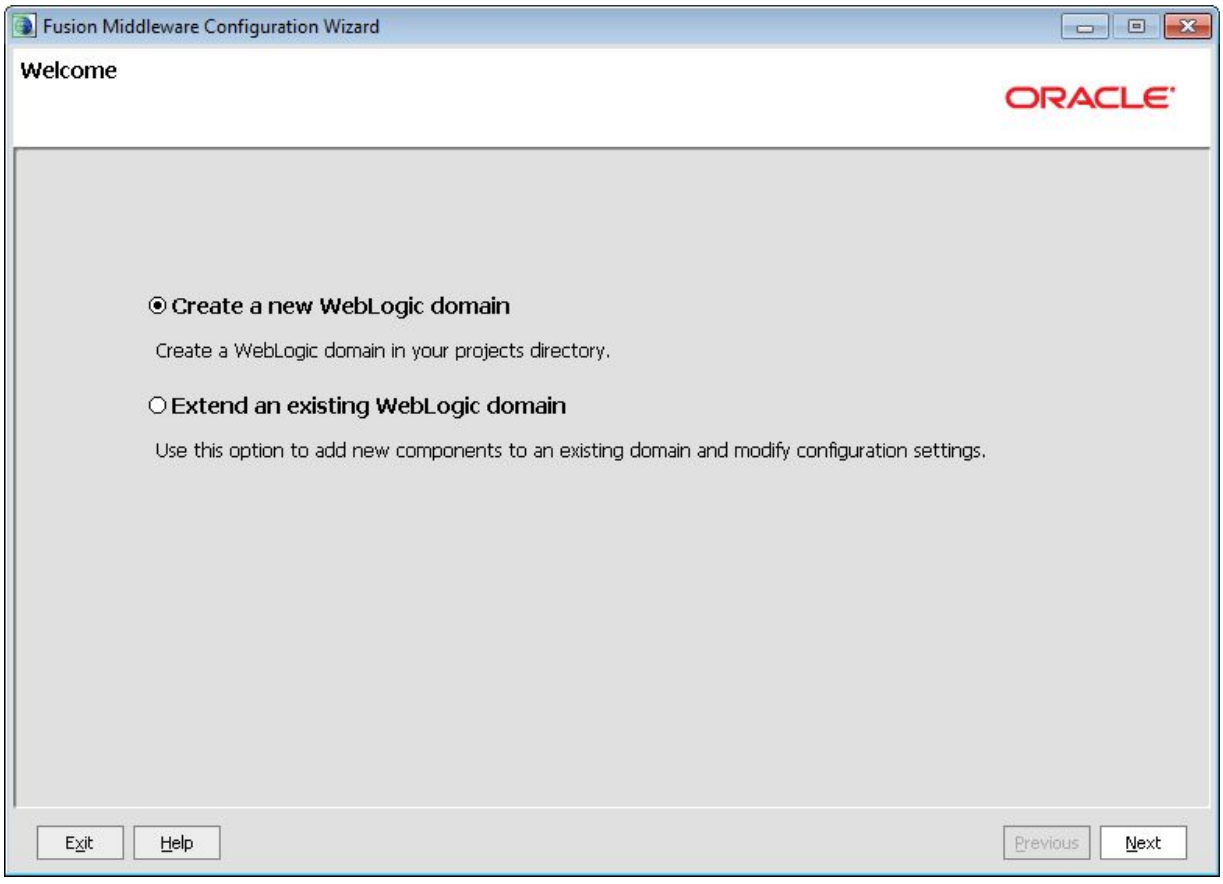
The prerequisites to this task are that WebLogic Server, Application Development Framework Runtime, and Endeca Server must be installed. Note that WebLogic Server does not have to be running for this procedure.

For single-machine development environments, you can deploy the Endeca Server instance in the single Admin Server in the WebLogic domain. You can later use this WebLogic domain when you expand your deployment to an Endeca Server cluster.

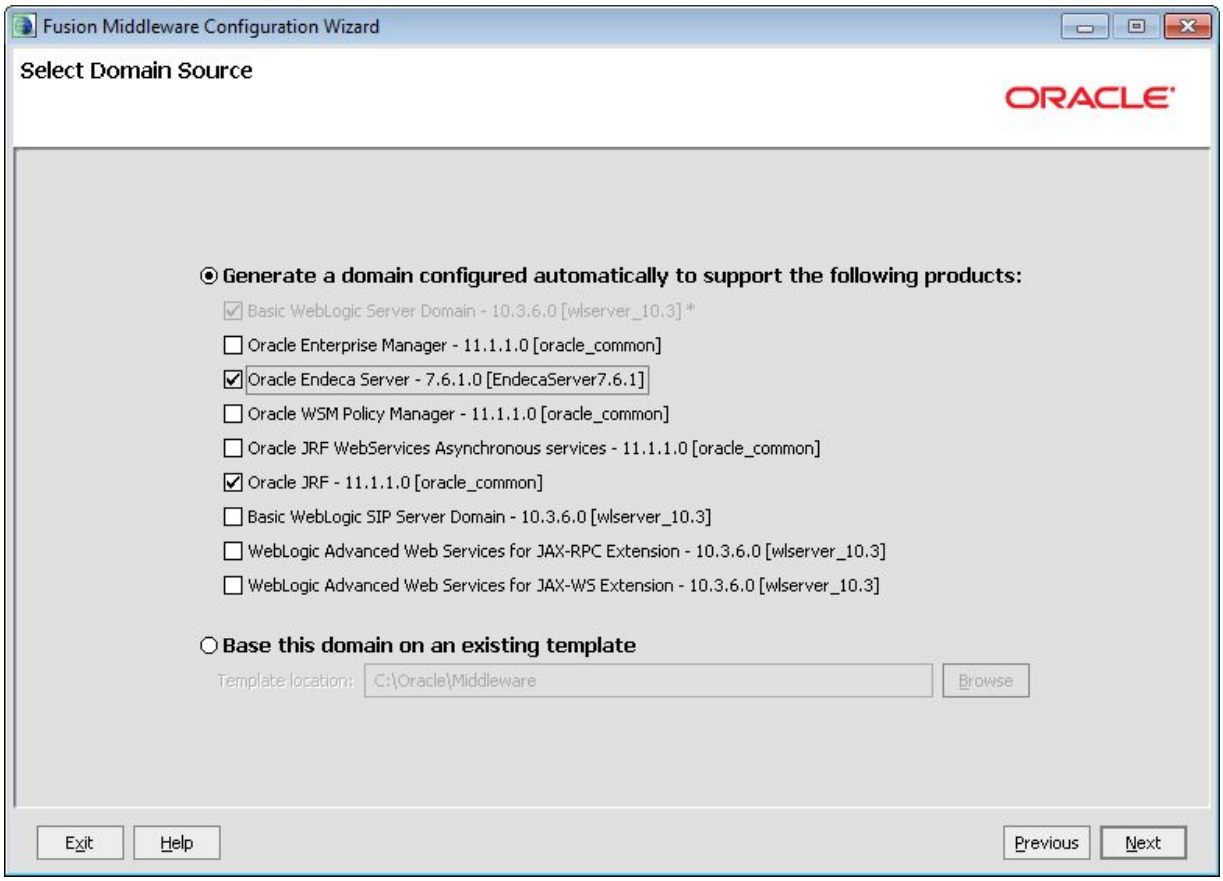
To create a WebLogic domain for the Endeca Server application:

1. From a command prompt, change to the directory that contains the Configuration Wizard start-up program:
   - For Linux: `$MW_HOME/wlserver_10.3/common/bin`
   - For Windows: `$MW_HOME\wlserver_10.3\common\bin`
2. Run the command to start the Configuration Wizard:
   - For Linux: `./config.sh`
   - For Windows: `config.cmd`

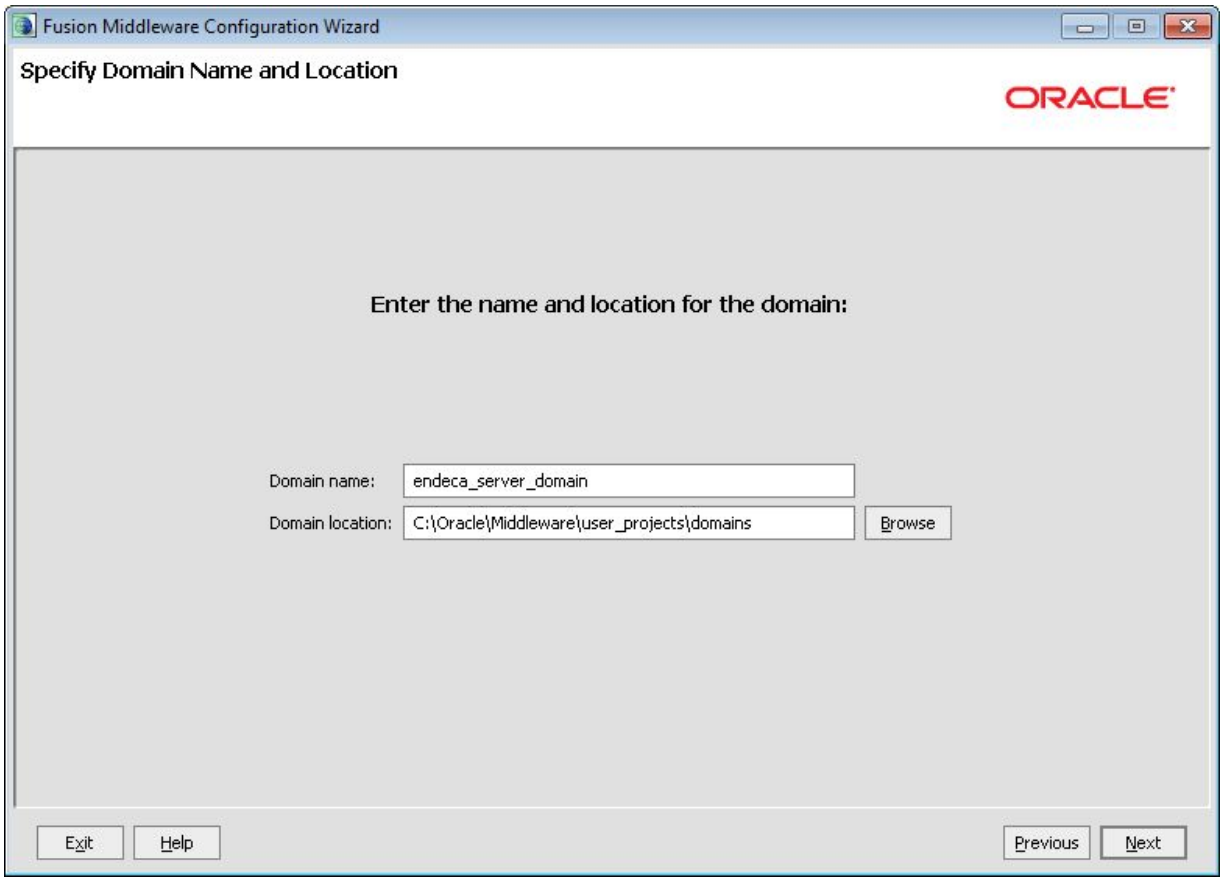
   The Configuration Wizard Welcome screen is displayed.
3. At the Configuration Wizard's **Welcome** screen, select **Create a new WebLogic domain** and click **Next**.



4. At the **Select Domain Source** screen, select **Oracle Endeca Server** (note that this also automatically selects **Oracle JRF**). Then click **Next**.

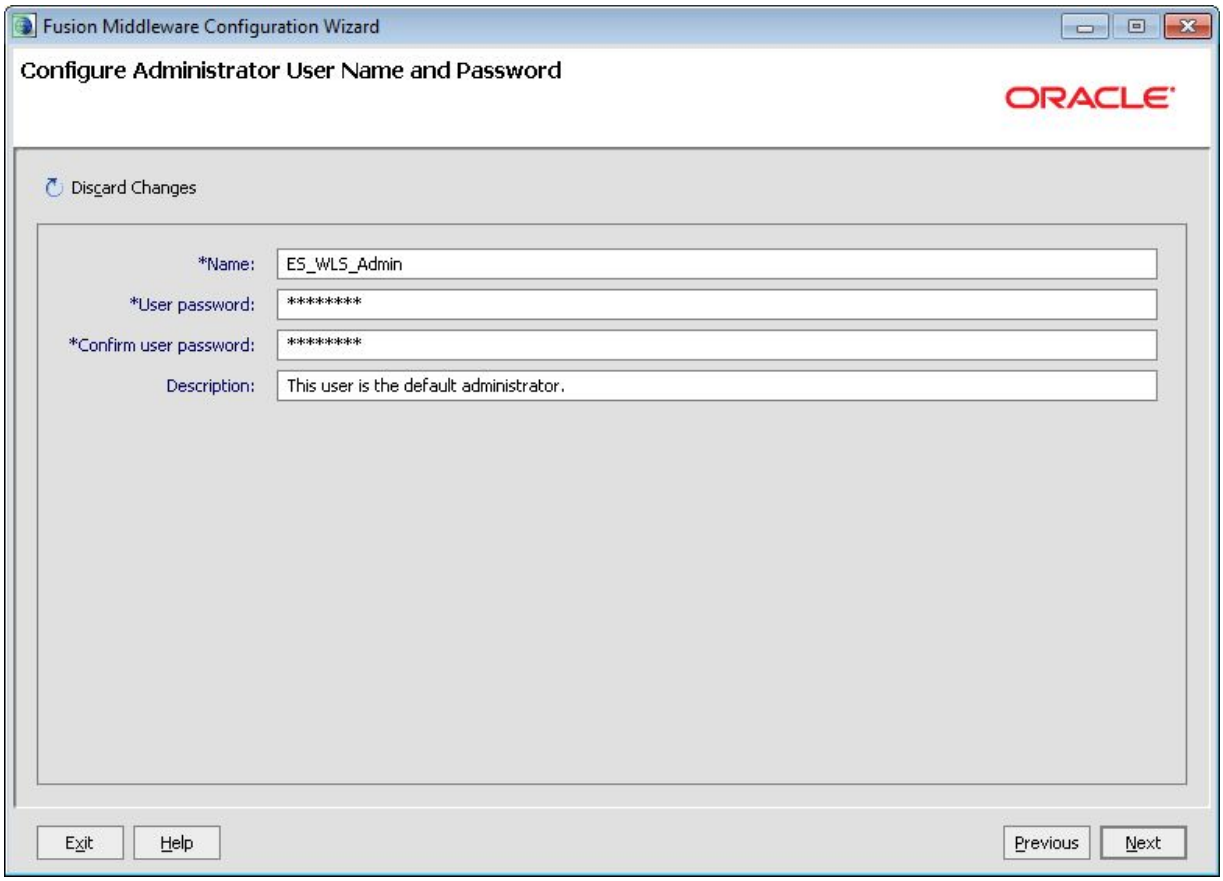


5. At the **Specify Domain Name and Location** screen, specify the domain name (such as `endeca_server_domain`) and keep the default domain location. Then click **Next**.



6. At the **Configure Administrator User Name and Password** screen, enter the name and password you want to use for the administrator. Optionally, you can enter a description. Then click **Next**.

   You will be using this name and password to start the WebLogic Server. Note that the password has a minimum length of eight characters.

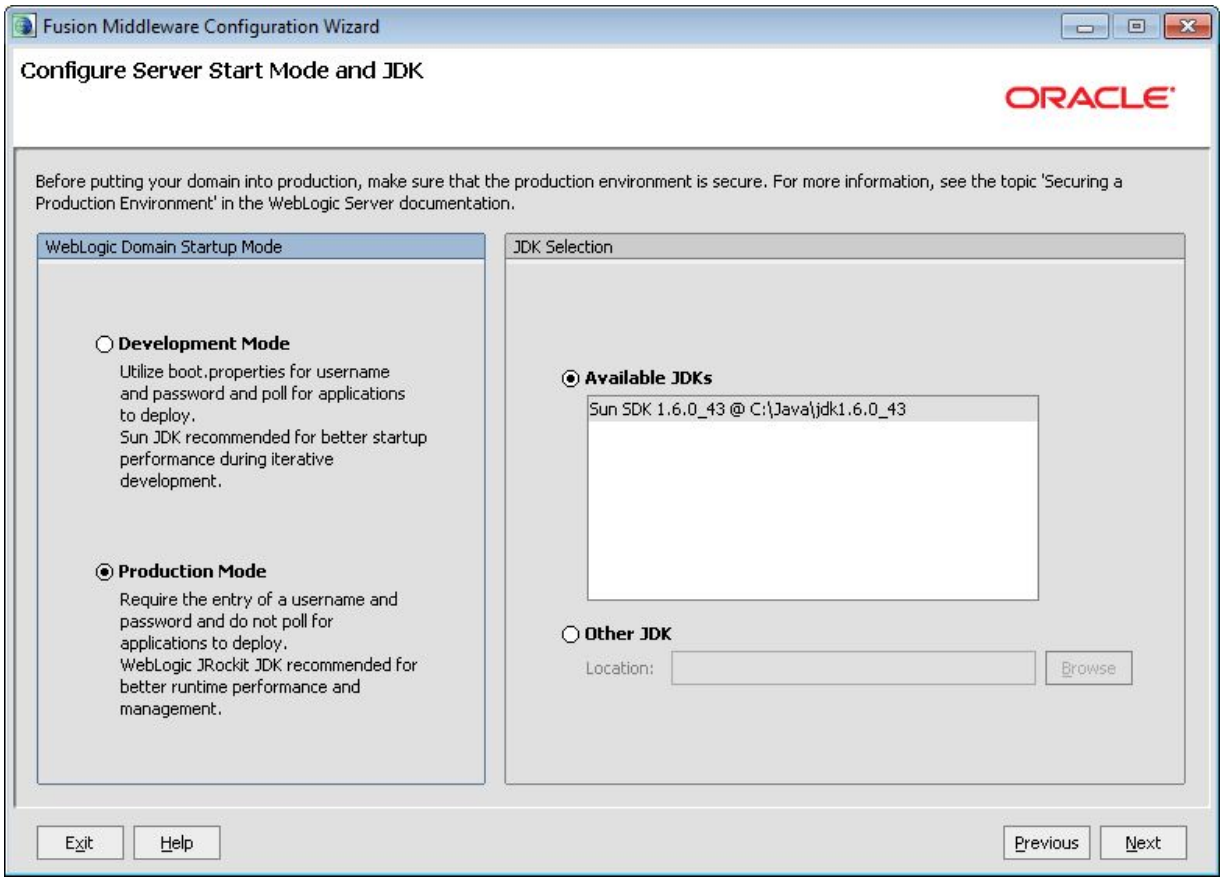


7. At the **Configure Server Start Mode and JDK** screen, do the following:

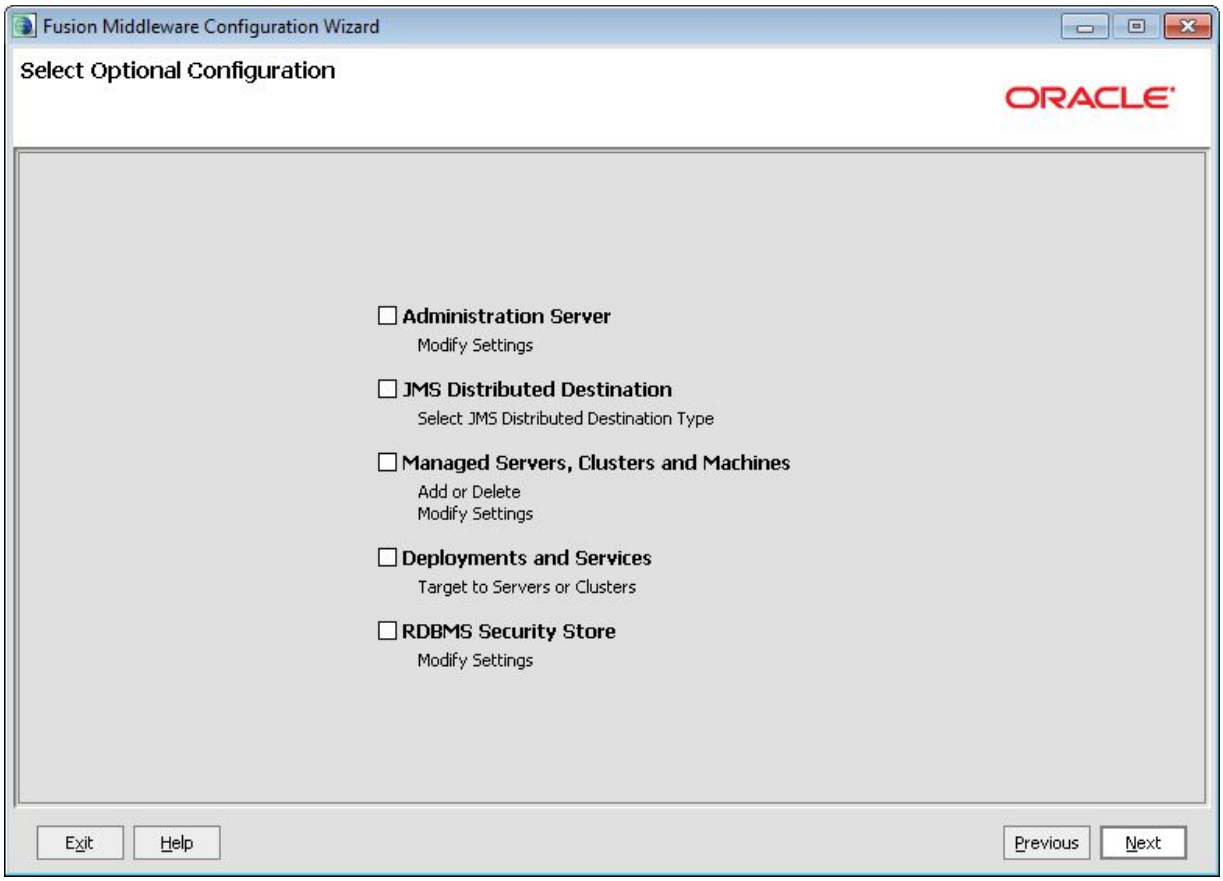
   (a) In the **WebLogic Domain Startup Mode** pane, select **Production Mode**.

   (b) In the **JDK Selection** pane, click **Available JDKs** and select the **Sun SDK**. (Note that if the Sun JDK is not displayed in this pane, click the **Other JDK** button and browse for the Sun JDK home.)

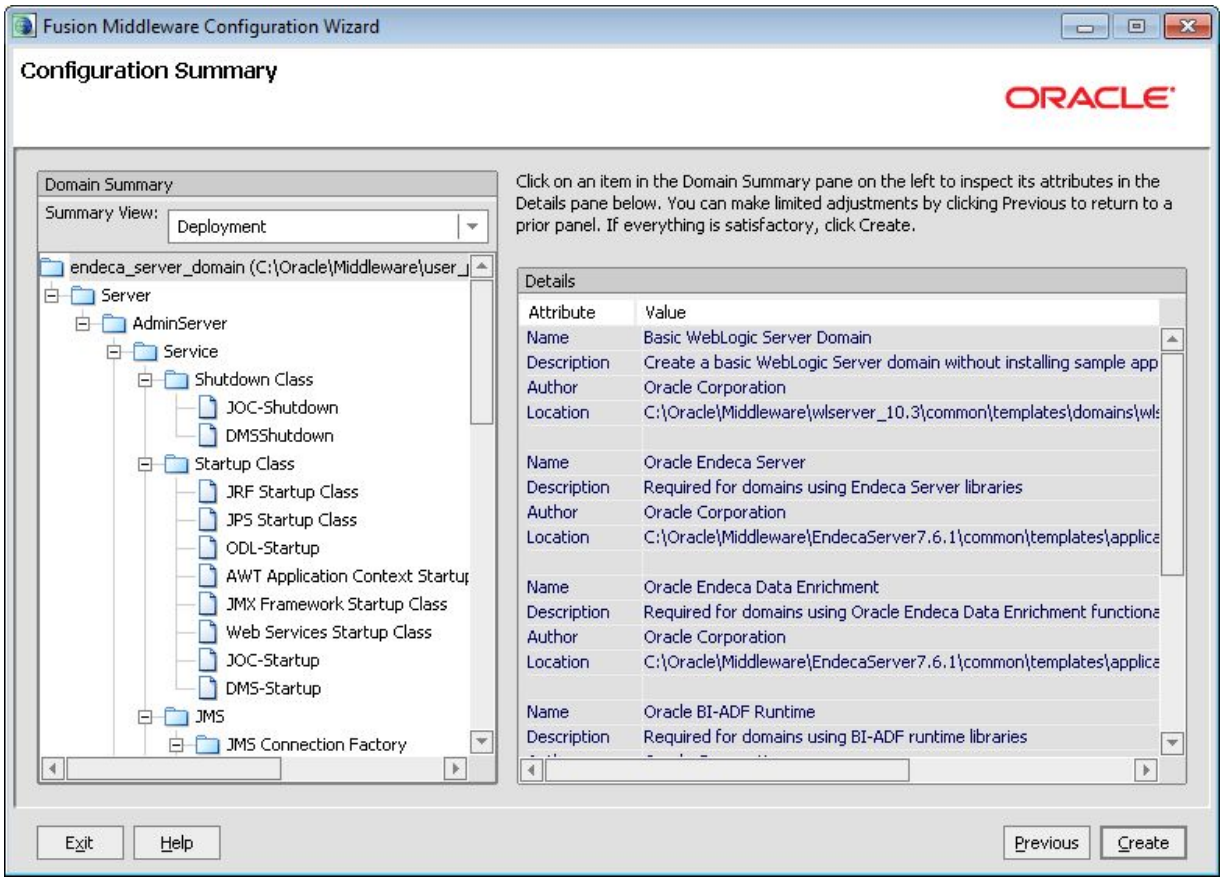
(c) Click **Next**.


Fusion Middleware Configuration Wizard
Configure Server Start Mode and JDK
ORACLE
Before putting your domain into production, make sure that the production environment is secure. For more information, see the topic 'Securing a Production Environment' in the WebLogic Server documentation.
WebLogic Domain Startup Mode
Development Mode
Utilize boot.properties for username and password and poll for applications to deploy.
Sun JDK recommended for better startup performance during iterative development.
Production Mode
Require the entry of a username and password and do not poll for applications to deploy.
WebLogic JRockit JDK recommended for better runtime performance and management.
JDK Selection
Available JDKs
Sun SDK 1.6.0_43 @ C:\Java\jdk1.6.0_43
Other JDK
Location:
Browse
Exit
Help
Previous
Next

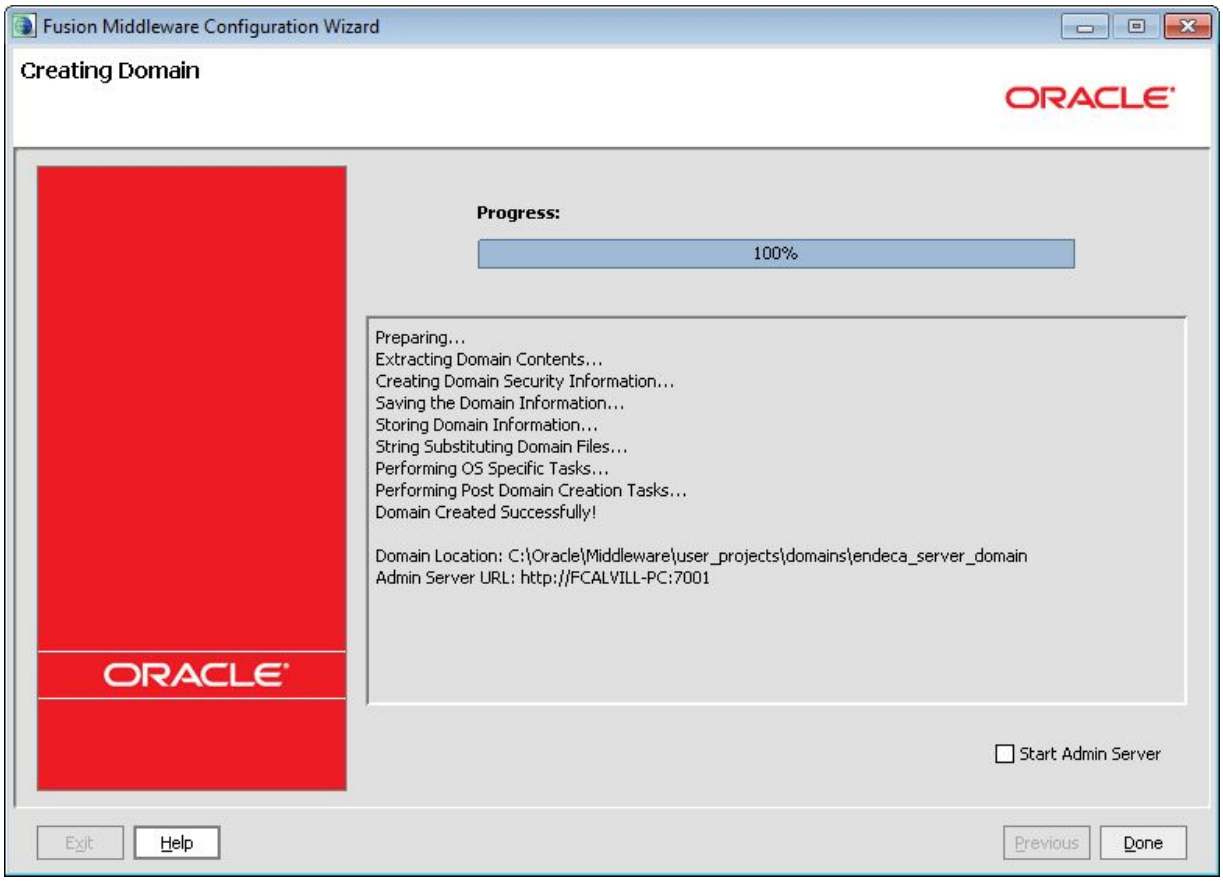
8. At the **Select Optional Configuration** screen, do not select any optional configurations. Click **Next**. (Note that accepting the default configuration means that WebLogic Server will run on port 7001.)



9. At the **Configuration Summary** screen, click **Create** to create the domain.



10. At the **Creating Domain** screen, the message `"Domain Created Successfully!"` signifies the end of the create process (as shown in the example below). Click **Done** to exit the Configuration Wizard.



As a result, the WebLogic domain is created with a WebLogic Server port of 7001.

The next step depends on whether you installed Endeca Server in secure (SSL) mode and on whether you are installing and deploying the Endeca Server cluster:

- For secure mode, start WebLogic Server and run the `generate_ssl_keys` utility, as described in the next topic. After that, you can verify the Endeca Server deployment.

  Note: If you are deploying a cluster, make sure to generate SSL keys after you have installed the Endeca Server on the Admin Server, but before you clone the Admin Server to create additional Managed Servers. Additionally, in the Endeca Server cluster, the Endeca Server instance that was running on the Admin Server should be stopped, and the Endeca Server should be started on the Managed Servers in the WebLogic domain that you create. For detailed instructions, see *Installing and Deploying an Endeca Server Cluster on page 79*.

- For non-secure mode, start WebLogic Server and verify the Endeca Server deployment.

Creating SSL certificates

This topic describes how to generate certificates if your Endeca Server deployment is installed in secure (SSL) mode.

The prerequisite to this task is that you must have installed Endeca Server in SSL mode.

There are specific versions of the `generate_ssl_keys` utility for each operating system:

- Linux: `generate_ssl_keys.sh`
- Windows: `generate_ssl_keys.bat`

The utility is located in the `$DOMAIN_HOME/EndecaServer/bin` directory. For more information on the `generate_ssl_keys` utility, see the *Oracle Endeca Server Security Guide*.

Important: If you are deploying an Endeca Server cluster, make sure to generate SSL certificates after you have installed the Endeca Server on the Admin Server and before you have cloned the Admin Server to create Managed Servers.

To generate SSL certificates:

1. Start the Admin Server for the Endeca Server domain.
2. From a command prompt, change to the `$DOMAIN_HOME/EndecaServer/bin` directory.
3. Run the `generate_ssl_keys` utility with a valid WebLogic administrator name (the `--username` flag), administrator password (the `--password` flag), and a strong passphrase for the keys (the `--sslPassphrase` flag). For example:

   ```
   generate_ssl_keys --username ES_WLS_Admin --password welcome1 --sslPassphrase thx1138
   ```

   A successful procedure is indicated when you see a message that ends as follows:

   ```
   The following non-dynamic attribute(s) have been changed on MBeans
   that require server re-start:
   MBean Changed : com.bea:Name=AdminServer,Type=SSL,Server=AdminServer
   Attributes changed : HostnameVerificationIgnored, JSSEEnabled

   Activation completed

   Done! Your WLS server(s) may need to be restarted for
   all changes to take effect.
   ```

4. Stop and then re-start the WebLogic Server.

The `generate_ssl_keys` utility:

- Creates the SSL certificates in the `$DOMAIN_HOME/config/ssl` directory.
- Updates the `EndecaServer.properties` and `EndecaCmd.properties` files (in the `$DOMAIN_HOME/config` directory) with the pathnames of the key files.
- Enables the SSL Listen Port of 7002 in WebLogic Server, and sets 7002 as the port on which Endeca Server is started.

Keep in mind that when issuing Endeca Server commands, you should use the SSL version of the `endeca-cmd` script, which resides by default in the `$DOMAIN_HOME/EndecaServer/bin` directory.

Registering the Data Enrichment plugins on a single machine

This topic describes how to run a command-line script that registers the Endeca Server Data Enrichment plugins, if you are installing on a single machine.

Note: This procedure is for the single-machine installation of the Endeca Server. if you are installing and deploying Endeca Server in the cluster, see *Step 8: Registering the Data Enrichment plugins in the Endeca Server cluster on page 100*.

If you intend to use enrichments in your Studio application, you must register the Data Enrichment plugins. Note that the plugins are automatically registered if you installed Endeca Server via the orchestration script in the configuration mode.

This procedure assumes that Endeca Server has been installed and that a WebLogic domain has been created for Endeca Server. It also assumes that the SSL certificates have been generated if Endeca Server was installed in secure mode.

The registration script is named `enrichment-metadata.bat` (for Windows) or `enrichment-metadata.sh` (for Linux) and resides in the `$ENDECA_HOME/endeca-data-enrichment/install` directory.

The syntax of the script is:

```
enrichment-metadata.bat|sh <java-home> <host> <port> <protocol> <oracle-home> <endeca-home>
<endeca-domain-home> [<sslPassphrase>]
```

where:

- *java-home* is the absolute path to the Java SDK.
- *host* is the name of the machine on which WebLogic Server is running ("localhost" can be used).
- *port* is the port on which WebLogic Server is running.
- *protocol* is `http` for non-SSL mode or `https` for SSL-mode. Note that both `http` and `https` must be specified in lower case.
- *oracle-home* is the absolute path of the Oracle Middleware directory.
- *endeca-home* is the absolute path of the Endeca Server root directory.
- *endeca-domain-home* is the absolute path of the Endeca Server domain directory.
- *sslPassphrase* is the pass phrase for the SSL certificates. This argument is required only if the *protocol* argument is `https`.

The arguments must be provided in the order listed above.

To register the Data Enrichment plugins:

1. Start the Admin Server for the Endeca Server domain.
2. From a command prompt, navigate to the `$ENDECA_HOME/endeca-data-enrichment/install` directory.
3. Run the registration script for your operating system, as in this Windows example on an SSL deployment:

   ```
   enrichment-metadata.bat C:\Java\jdk1.6.0_43 localhost 7001 http C:\Oracle\Middleware
   C:\Oracle\Middleware\EndecaServer7.6.1
   C:\Oracle\Middleware\user_projects\domains\endeca_server_domain
   ```

The output of the above command looks similar to this example:

```
INFO: Registered auditor for componentType=WebServices
auditor=oracle.security.jps.internal.audit.DelegateAuditor$XmlAuditor@45ed957d
ECHO is off.
Registering plug-in BlacklistPlugin...
DONE!
Registering plug-in ExpressionTaggerPlugin...
DONE!
Registering plug-in LanguageDetectionPlugin...
DONE!
Registering plug-in LexicalConceptExtractorPlugin...
DONE!
Registering plug-in SalientTermExtractorPlugin...
DONE!
Registering plug-in SentimentAnalysisPlugin...
DONE!
Registering plug-in StringUtilityPlugin...
DONE!
Registering plug-in TermExtractorPlugin...
DONE!
Registering plug-in TextCleanupPlugin...
DONE!
Registering resource DefaultStoplist.yml...
DONE!
Registering resource DefaultLexicon.yml...
DONE!
```

The script creates a `$DOMAIN_HOME/EndecaServer/DataEnrichment` directory that contains resources for the plugins.

After this procedure, you can use enrichments in your Studio application.

Verifying the Endeca Server deployment

After installing the Oracle WebLogic Server and Endeca Server products, you should verify that the Endeca Server application was correctly deployed.

To verify the Endeca Server application deployment:

1. Start the Admin Server for the Endeca Server domain.

   The start-up procedure should ask you for the administrator user name and password that you specified when you created the WebLogic domain.

2. From your browser, access the Administration Server console with this syntax:

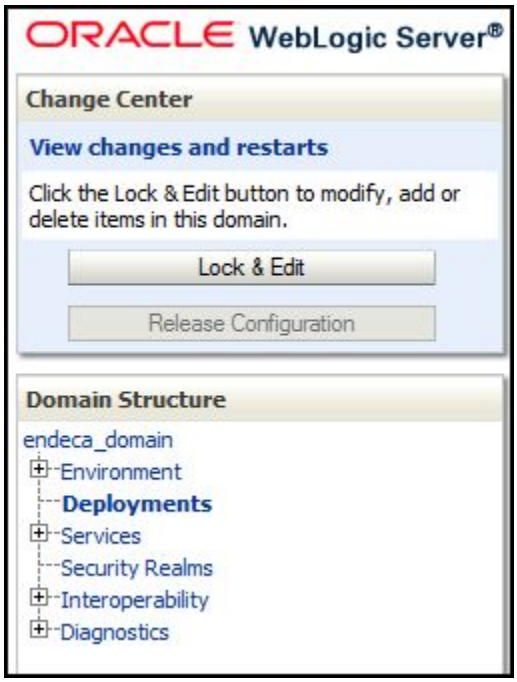
   ```
   http://admin_server_host:admin_server_port/console
   ```

   For example:

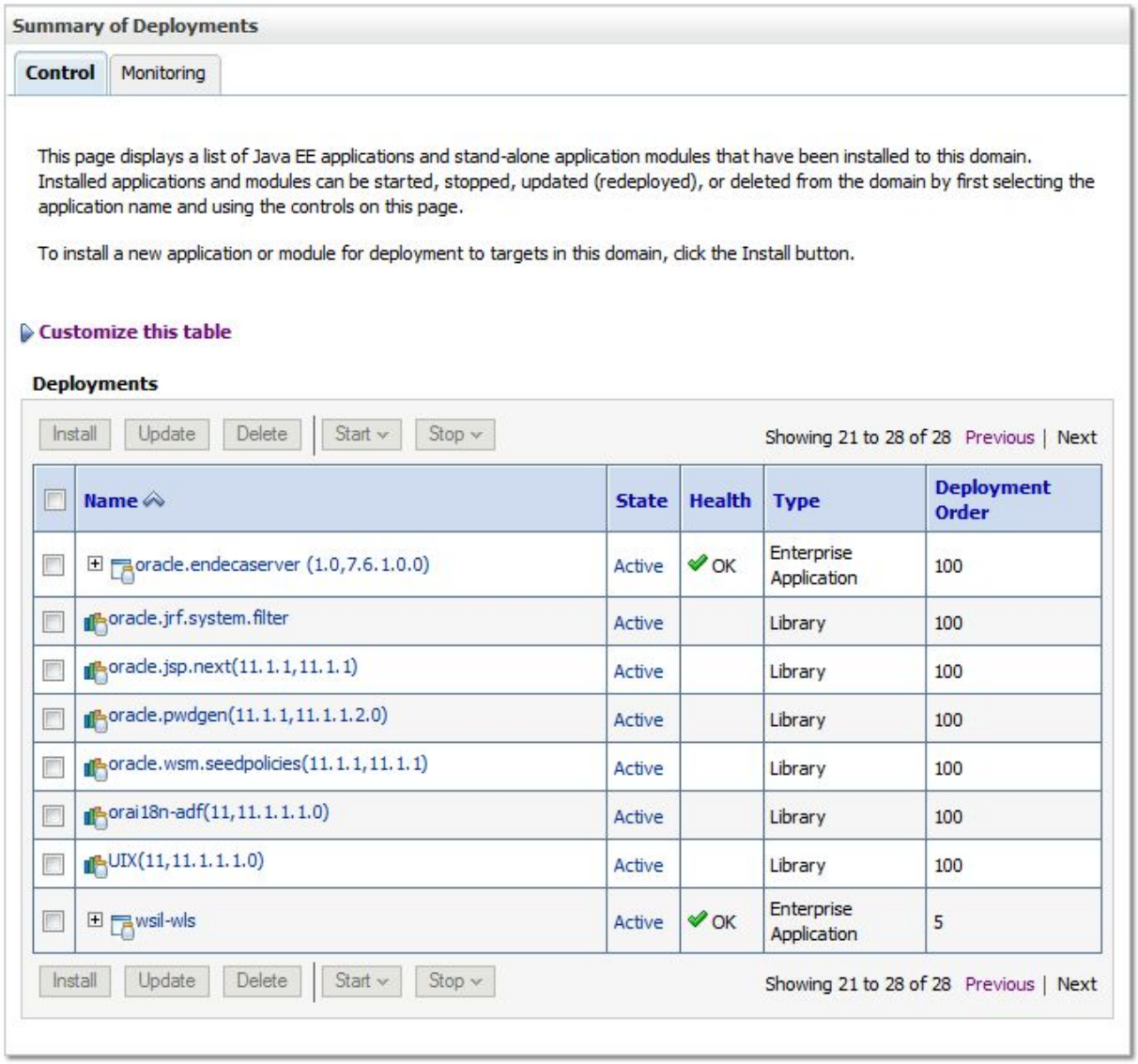
   ```
   http://localhost:7001/console
   ```

3. At the **Administration Console** login screen, log in with the administrator user name and password.

4. In the **Domain Structure** pane, click **Deployments** (in the `endeca_server_domain` tree).



5. In the **Deployments** table, check the status of the **oracle.endecaserver** Web application. Its State should be `Active` and its Health should be `OK`, as in this abbreviated example:



The next step is to verify the Endeca Server application installation by creating an Endeca data domain.

Silent installation on Windows and Linux

The Endeca Server installer's silent mode is useful if you want to add the installation of the Endeca Server to your own install script, or push out the installation on multiple machines.

Silent-mode installation is a way of setting installation configurations only once and then using those configurations to duplicate the installation on many machines. During installation in silent mode, the installation program reads the settings for your configuration from a file that you create before beginning the installation. The installation program does not display any configuration options during the installation process. Silent-mode installation works on both Windows and Linux systems.

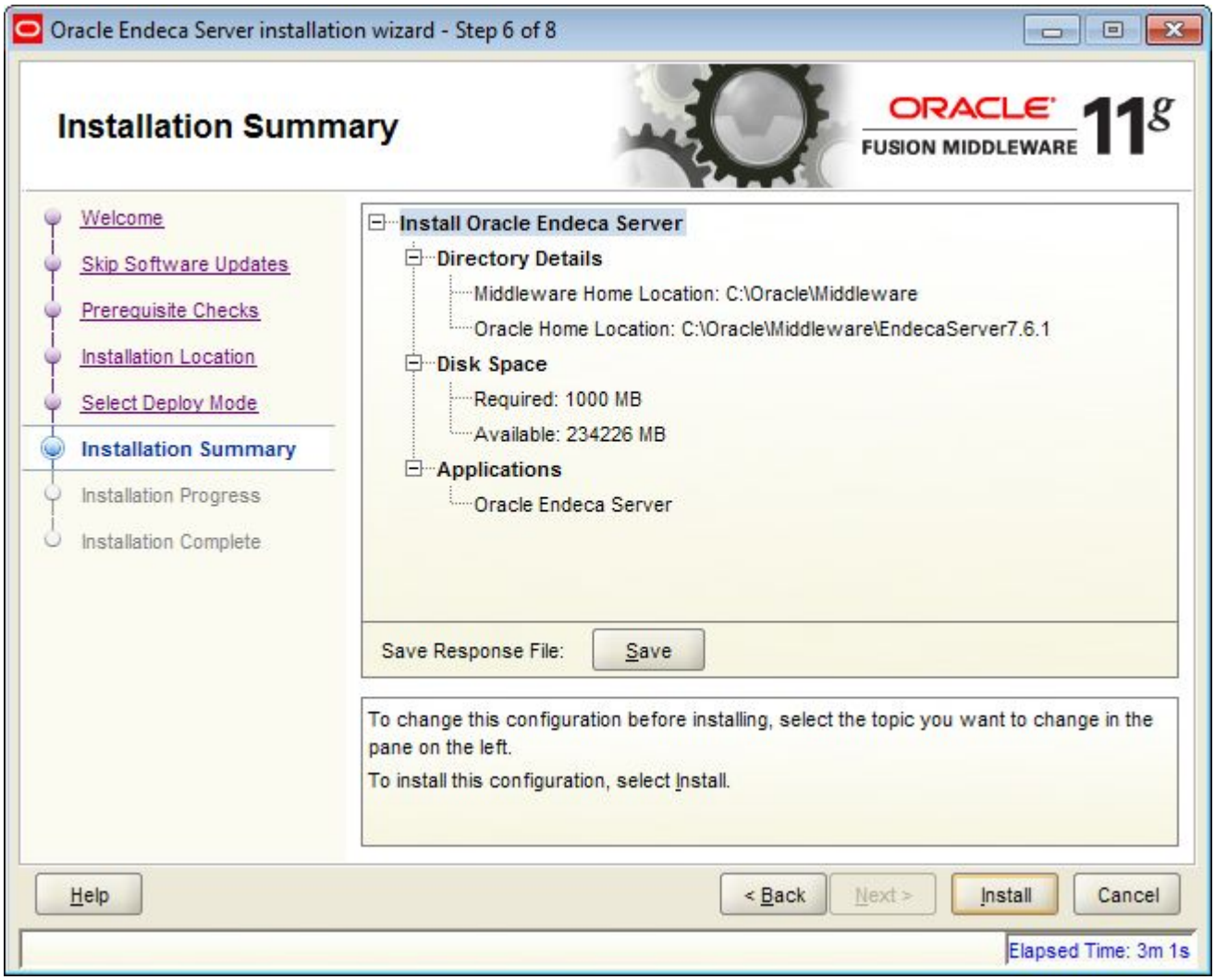
When you are running the installation program in silent mode, keep in mind the following considerations:

- Silent-mode installation requires the same amount of temporary disk space and uses the same temporary storage directories as a standard installation. The installation program does not alert you if there is not enough space in the temporary directory.
- A silent-mode installation takes the same amount of time as a standard installation.
- At the beginning of a silent-mode installation, an initial installation program window or message is displayed briefly, indicating that the installation has started. Brief messages are displayed to indicate that the installation is in progress.

A prerequisite is that you have created a response file via the installer GUI or via a template.

Creating the response file from the GUI

You can created a response file by first running the Endeca Server install GUI, then clicking **Save** on the **Installation Summary** screen:



You will be prompted for a name and location where you want to create this response file. After it is created, you can use it exactly as-is to replicate the installation on other systems.

Creating the response file from a template

A response file template (named `sampleResponse.rsp`) is available in the Endeca Server installer package. After you unpack the installer ZIP file, the `sampleResponse.rsp` template will be in the `endecaserver/Disk1/stage/Response` directory.

Open the template with a text editor and set these fields:

- `ORACLE_HOME` is the absolute path of the Endeca Server home directory.
- `BEA_HOME` is the absolute path of an existing Middleware home directory.
- `ENDECA_ENABLE_SSL` determines whether Endeca Server is installed in secure (SSL) mode (a setting of `true`) or not (a setting of `false`).
- `SKIP_SOFTWARE_UPDATES` should be set to `true` in order to skip the step of checking for software updates.
- `SPECIFY_DOWNLOAD_LOCATION` should be set to `false` as the check-for-updates step will be skipped.

Sample response file for Linux:

```
[ENGINE]

#DO NOT CHANGE THIS.
Response File Version=1.0.0.0.0

[GENERIC]

#Set this to true if you wish to specify a directory where latest updates are downloaded. This
option would use the
# software updates from the specified directory
SPECIFY_DOWNLOAD_LOCATION=false

#
SKIP_SOFTWARE_UPDATES=true

#If the Software updates are already downloaded and available on your local system, then specify the
path to
# the directory where these patches are available and set SPECIFY_DOWNLOAD_LOCATION to true
SOFTWARE_UPDATES_DOWNLOAD_LOCATION=

#Write the name of the Oracle Home directory. The Oracle Home directory name may only contain
alphanumeric ,
# hyphen (-) , dot (.) and underscore (_) characters, and it must begin with an alphanumeric
character.
ORACLE_HOME=/home/middleware/EndecaServer7.6.1

#Write the complete path to a valid Middleware Home.
BEA_HOME=/home/middleware

#Provide true to enable SSL for deploy Endeca Server.
ENDECA_ENABLE_SSL=true

[SYSTEM]
[APPLICATIONS]
[RELATIONSHIPS]
```

Sample response file for Windows:

```
[ENGINE]
```

```
#DO NOT CHANGE THIS.
Response File Version=1.0.0.0.0

[GENERIC]

#Set this to true if you wish to specify a directory where latest updates are downloaded. This
option would use the
# software updates from the specified directory
SPECIFY_DOWNLOAD_LOCATION=false

#
SKIP_SOFTWARE_UPDATES=true

#If the Software updates are already downloaded and available on your local system, then specify the
path to
# the directory where these patches are available and set SPECIFY_DOWNLOAD_LOCATION to true
SOFTWARE_UPDATES_DOWNLOAD_LOCATION=

#Write the name of the Oracle Home directory. The Oracle Home directory name may only contain
alphanumeric ,
# hyphen (-) , dot (.) and underscore (_) characters, and it must begin with an alphanumeric
character.
ORACLE_HOME=ORACLE_HOME=C:\Oracle\Middleware\EndecaServer7.6.1

#Write the complete path to a valid Middleware Home.
BEA_HOME=C:\Oracle\Middleware

#Provide true to enable SSL for deploy Endeca Server.
ENDECA_ENABLE_SSL=true

[SYSTEM]
[APPLICATIONS]
[RELATIONSHIPS]
```

Running the silent installer

Running the silent installer

This topic describes how to run the Endeca Server silent installer from a command prompt.

The prerequisites to this task are:

1. Both Oracle WebLogic Server and the Application Developer Framework Runtime must be installed on the machine.
2. You must have created the response file.

This procedure assumes that you are running the silent installer from a command line. However, you can run it from a batch file or script.

To install silently on either Windows or Linux:

1. From a command prompt, navigate to the directory where you downloaded the Endeca Server installer.
2. Run the installer (either `setup.exe` for Windows or `runInstaller` for Linux) in silent mode with these flags:
   - `-silent` — Specifies a silent-mode operation.
   - `-response` <`path-to-response file`> — Specifies the response file and path to use.

- `-jreLoc <path-to-JRE>` — Specifies the path where the Java Runtime Environment is installed.

Note that the paths should not contain spaces. The following is an example on a Windows machine:

```
setup -silent -response c:\ES_install\ResponseFile -jreLoc c:\java\jdk1.6.0_43
```

A successful installation will end with this message:

```
The installation of Oracle Endeca Server Top Level completed successfully.
```

The silent installer creates a log of the installation process under the name *yyyy-mm-dd_hh-mm-ssXM*.log (where *XM* is either AM or PM). For example:

```
2013-02-14_03-29-39PM.log
```

The logs directory (named `logs` on Windows and `log` on Linux) is stored in the Oracle Inventory directory. On Linux systems, if you do not know the location of your Oracle Inventory directory, you can find it in the `etc/oraInst.loc` file. On Windows, the default location for the inventory directory is `C:\Program Files\Oracle\Inventory\logs`.

Part IV

Cluster Installation and Deployment

Chapter 6

Installing and Deploying an Endeca Server Cluster

This section discusses how to install and deploy an Endeca Server cluster that consists of multiple Endeca Server instances hosted by multiple Managed Servers in a WebLogic domain.

Before you install and deploy a cluster

This section outlines the WebLogic Server requirements, as well as file system and load balancer requirements for deploying data domains in an Endeca Server cluster.

An Endeca Server cluster hosting one or more data domains can be deployed on either Windows or Linux. You cannot create an Endeca Server cluster in which some Endeca Server instances are running on Windows while other instances are running on Linux.

For a full listing of specific supported platforms, see *Supported operating systems on page 16*.

WebLogic domain requirements

The Endeca Server application runs in a WebLogic domain.

The following requirements exist for the Endeca Server cluster to be deployed in the WebLogic domain:

- **Which servers in the WebLogic domain should host the Endeca Server application**. In a development environment, a single-machine deployment of Endeca Server can run on an Admin Server in the WebLogic domain. In production settings, however, the Endeca Server cluster with more than one Endeca Server instance must be deployed on WebLogic Server Managed Servers only.

  The Admin Server in this case does not host the Endeca Server instance (although the Endeca Server should be installed on the Admin Server to facilitate the Endeca Server cluster deployment and to generate SSL certificates for it). If the Admin Server itself is hosted on the same machine as one of the Managed Servers, the Endeca Server instance can run on that Managed Server. See *Cluster deployment diagram on page 84*.

- **How the WebLogic domain is used**. Although it is possible to share the WebLogic container with other applications, for performance and troubleshooting purposes it is recommended to dedicate the WebLogic domain to the Endeca Server application.

In addition, for information on how the Endeca Server software utilizes WebLogic Server, see *Integration of Endeca Server with WebLogic on page 11*.

Data Enrichment requirements

Data Enrichment is a Java application that is installed as part of the Endeca Server installation. Data Enrichment plugins are used in the context of Studio, and are known in Studio as Enrichments.

In the Endeca Server cluster, each machine on which the Endeca Server software is installed also contains the Data Enrichment plugins. This means that when you configure the WebLogic domain for Endeca Server, it hosts the Endeca Server Java application, and also the Data Enrichment Java application, **oracle.endeca.enrichment_framework**.

For Enrichments to be used in Studio, the Data Enrichment Java application has to be properly configured in WebLogic Server on all machines hosting the Endeca Server, in the Endeca Server cluster. The following requirements exist:

- **Data Enrichment Framework Java application must be hosted on each Managed Server in the WebLogic domain**. In the Endeca Server cluster, both the Endeca Server Java application and the Data Enrichment Framework Java application are hosted on each of the Managed Servers in the WebLogic domain for the Endeca Server.
- **EndecaServer.properties file should specify a shared storage location for two Data Enrichment directories**.The two directories, `endeca-data-enrichment-pluginsDir` and `endeca-data-enrichment-resourcesDir`, should point to their directories on the shared file system. You specify these settings as a step in the overall procedure for installing and deploying an Endeca Server cluster. For information on this step, see *Changing settings in EndecaServer.properties on page 95*.
- **Data Enrichment plugins rely on JMS configuration in WebLogic**. For Data Enrichment plugins to work in the Endeca Server cluster (so that they can be used in Studio), each machine hosting the Data Enrichment Framework application must be configured to use JMS (Java Messaging Service). You configure JMS queues for Data Enrichment as a step in the overall procedure for installing and deploying an Endeca Server cluster. For information on this specific step, see *Step 9: Configuring JMS settings on page 102*.
- **Data Enrichment plugins (used via Studio as Enrichments), require adding memory on each machine hosting Endeca Server**. If you are planning to use data enrichment plugins (such as term extraction) in Studio, consider adding additional memory of about 10GB per each instance of Data Enrichment plugin that is expected to run concurrently in the data domain. In other words, if users in the data domain plan to run term extraction, for each such process, additional memory should be provisioned on all Endeca Server machines hosting this data domain.

Cluster Coordinator requirements

The Cluster Coordinator service of the Endeca Server cluster must be running on an odd number of machines (with a minimum of three) on which the Endeca Server cluster is running.

The Cluster Coordinator service is installed as part of the Endeca Server. However, in an Endeca Server cluster, its service is required to run on at least three (or any other odd number greater than three) machines, to ensure increased availability of the Endeca Server cluster services, including services for its data domains.

As a result of this requirement, the instructions in this section imply that you will be initially installing and deploying an Endeca Server cluster on three machines, and that on each of these machines, both the Endeca Server and the Cluster Coordinator services will be running.

Note: While it is possible to run a cluster of one on a single machine, or a cluster of two, these Endeca Server clusters do not provide increased availability features, such as automatic leader election for the Endeca data domains.

If after initially deploying a three-machine cluster you would like to extend it, you can add another machine to the WebLogic domain. For the fourth machine, the Cluster Coordinator services should not be running. However, if you add a fifth machine, you can then run the Cluster Coordinator on either three of the five machines, or on all five machines. Both of these configurations will satisfy the Cluster Coordinator requirements for the Endeca Server cluster.

For full information on the Cluster Coordinator, its functions and requirements, see the *Oracle Endeca Server Cluster Guide*.

Load balancer requirements

In most production deployments, it is desirable to configure an external load balancer in front of the Endeca Server cluster hosting one or more data domain clusters. This topic discusses the considerations for this load balancer.

For the load balancer, the following considerations apply:

- Include host names and ports of all Oracle Endeca Server nodes in the load balancer configuration.

  If you add Endeca Server nodes to the cluster, you must update the configuration of the load balancer with the host names and ports of the added nodes.
- You may optionally configure the load balancer to use session affinity. In this case, all queries from a given session are sent to the same Endeca Server node. This allows the Oracle Endeca Server to use its cache to avoid redundant processing of related queries.

  Configuring session affinity also helps minimize consistency problems as updates propagate from the leader to the follower nodes in the data domain cluster (if you are not using outer transactions to run updates).

  In addition, the Endeca Server cluster utilizes its own routing service, which also utilizes session affinity. The routing service recognizes requests sent from the same client and sends them to the same Endeca Server node that processed previous requests from the same client. (This assumes that the Endeca Server node is still hosting the Dgraph node for that data domain that can process the current request; otherwise, the request is sent to a different Endeca Server node.)

Shared file system requirements

This topic describes the requirements for the shared file system in an Endeca Server cluster.

- **Access to a shared file system**. Provision a shared file system on which the index for the data domains and Data Enrichment directories for the data domains will be stored. When you install and deploy the Endeca Server cluster and start the data domain, all machines hosting the Endeca Server nodes must have full (read/write) access to this shared file system.

On Windows, it is recommended to utilize a file system that uses the CIFS (also known as SMB) protocol. On Linux, it is recommended to use NFS.

- **File system size**. You can start a data domain cluster with a single Dgraph node that serves both as the leader and a follower node. As you add additional follower nodes, file system size requirements (as measured by the high-water mark parameters for shared storage) increase modestly and do not increase proportionally to the number of follower nodes in any data domain.
- **File system performance**. For each data domain cluster hosted in an Endeca Server cluster, the index files are stored on remote shared disks. The index files are accessed at the startup of a data domain cluster, during data and configuration updates, and for answering queries. For regular query processing, the Endeca Server takes advantage of its cache. For updates, in a multi-node data domain cluster, all nodes are accessing the index on remote storage at the same time (the leader node writes updates to the index, but all follower nodes need to acquire read-only access to this updated index). This coordinated access may affect performance for the network or shared file system, especially when large updates are accessed for the first time.

  File system options. Typically, the Endeca Server cluster performs write operations from the Endeca Server instance hosting the leader node for a given data domain. It performs read operations from the Endeca Server instances hosting follower nodes in the data domain.

  To tune the file system performance, you may choose the file system configuration options to suit this pattern. In particular, mounting with `noatime` configuration on Linux will eliminate the cost of frequent access-time file system updates from the follower data domain nodes, and thus improve file system performance. Particular file system types may have further options suited to this pattern of usage.
- **Recommendations on using logical partitions on Storage Area Networks for storing index files**. The data most frequently accessed at run time by the Endeca Server represents data domain files, including its index. Consider storing the data domain indexes separately from any files that may be accessed at the same time by other processes (such as the operating system files).

  Placing the Endeca Server program files on the same LUN as the operating system files is acceptable in many instances. However, storing the Endeca Server indexes on the same LUN used by the operating system increases the chance of access contention and possibly degrades performance of the Endeca Server. For example, on some file systems, sharing the same file system partition can adversely affect performance, since some operating system operations may block access for extended periods. (Note that on modern and high performance SANs, no significant degradation is expected.) Therefore, it may be beneficial to use separate file system partitions to minimize that risk.

  Additionally, in some deployments, you may consider creating two separate file partitions in the SAN for the committed subdirectory of the index files, and the rest of the index file directories. This way, index commit and other index I/O operations on the data domain are performed in separate partitions.

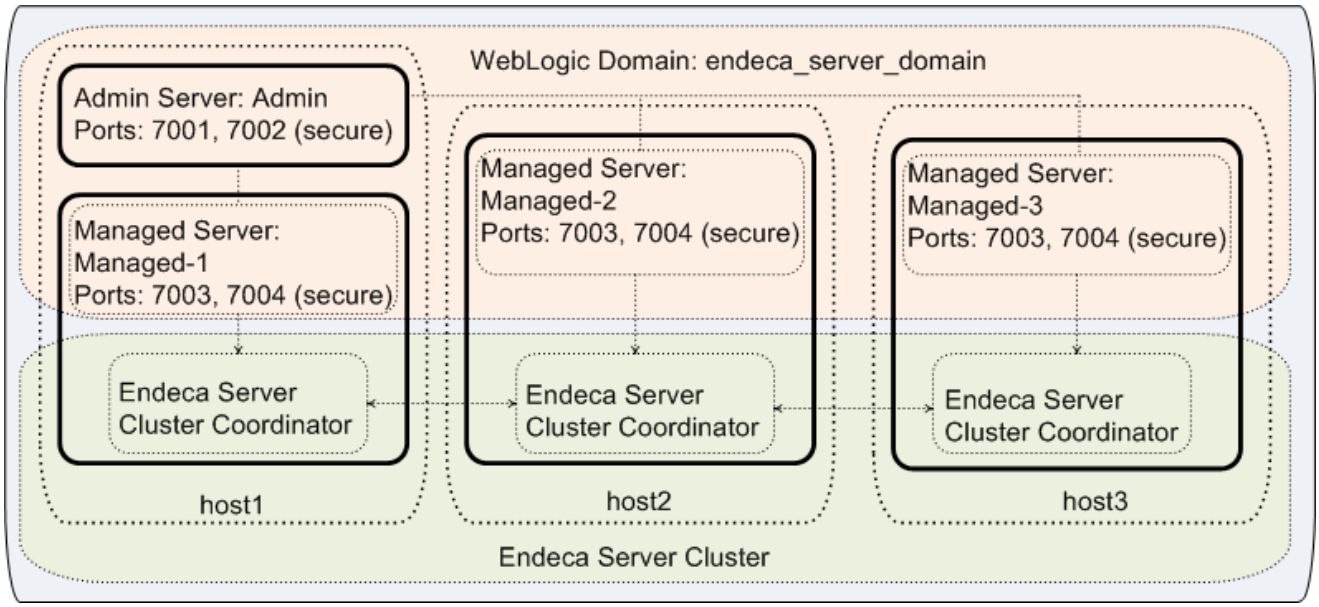
Cluster installation and deployment tasks

This section includes a diagram of the cluster deployment, outlines a high-level cluster installation and deployment procedure, and provides detailed tasks for the installation and deployment of an Endeca Server cluster.

Cluster deployment diagram

The following diagram illustrates a WebLogic domain with one Admin server and three Managed Servers, in which an Endeca Server cluster is deployed on its Managed Servers.

Important: Starting from this topic, all tasks describing the installation and deployment of the Endeca Server cluster use the sample names and ports from this diagram.



In this diagram:

- Three machines with the names `host1`, `host2`, and `host3` are used for the Endeca Server cluster deployment.

  Note: Even though, in the development environment, you can deploy an Endeca Server application in a single Admin Server, the Endeca Server cluster should be deployed on Managed Servers in the WebLogic domain. This means that the Admin Server manages the WebLogic domain, but does not run an instance of the Endeca Server Java application.

- On each of the host machines, the WebLogic Server, the Application Developer Runtime, and the Endeca Server software is installed.
- Additionally, on each of the host machines, the Data Enrichment Framework is installed. (The Data Enrichment application is installed as part of the Endeca Server installation, and is used in the context of Studio, where Data Enrichment plugins are known as Enrichments).

  Note: On this diagram, Data Enrichment is not listed separately, as it is part of the Endeca Server installation package.

- On `host1`, the WebLogic domain is created for the Endeca Server deployment. This WebLogic domain will eventually include one Admin Server and three Managed Servers:
  - The WebLogic Admin Server is configured on `host1`. The listen port for the Admin Server is configured in this example as either 7001 (for a non-secure Endeca Server installation), or 7002 (for a secure Endeca Server installation with SSL).
  - Three WebLogic Managed Servers are configured: `Managed-1` on `host1`, `Managed-2` on `host2`, and `Managed-3` on `host3`. The listen port for the Managed Servers is configured to be the same on all three host machines; in this example, it is shown to be either 7003, (for the Endeca Server installation that is not secure), or 7004, (for the secure Endeca Server installation with SSL). Note that in this example, `Managed-1` runs on the same host as the Admin Server for the WebLogic domain.

    Important: For the Endeca Server cluster to run, all listen ports for the Managed Servers must be the same on each host machine running a Managed Server. This also means that if any of the Managed Servers is sharing a machine with the Admin Server, the Admin Server ports must differ from the Managed Server ports.

- The Endeca Server Java application and the Data Enrichment Java application are deployed on the Managed Servers (and not on the Admin Server).
- The Cluster Coordinator service of the Endeca Server is also configured to run on all three Managed Servers running the Endeca Server. (This is a requirement of the Endeca Server cluster. For a full description of this requirement, see the *Oracle Endeca Server Cluster Guide*.)

High-level installation and deployment procedure

This topic lists high-level tasks required for the installation and deployment of the Endeca Server cluster.

Note: This procedure provides a high-level overview of all tasks. The topics that follow this procedure include detailed steps for each task. Read this procedure first to understand the entire deployment process, and use the subsequent topics to perform the required steps.

This procedure (and the subsequent topics that discuss each task in detail) are based on the following assumptions:

- The commands and path names are described for Linux. For Windows, path names should use backward slashes and scripts should end with `.cmd`.
- The `$DOMAIN_HOME` variable indicates the location of the WebLogic domain created for the Endeca Server. For example, if `endeca_server_domain` is the name of your WebLogic domain for the Endeca Server, then the default path to it on Linux is:

```
$MW_HOME/user_projects/domains/endeca_server_domain
```

- The port numbers, host names, and server names are the ones that are displayed in the cluster deployment diagram. See *Cluster deployment diagram on page 84*. You can use your own port numbers and host and server names, as long as port numbers satisfy the deployment requirements for the Endeca Server cluster. These requirements are included in the tasks in this section.
- A secure installation (with SSL) of the Oracle Endeca Server is assumed. Options for the unsecured installation are included in parenthesis.
- The orchestration script in non-configuration mode is used for installing the required software packages. You can choose to not use the orchestration script and install all packages manually.
- The procedures assume that, along with the Endeca Server application, you plan to use Data Enrichment plugins in Studio. If you are not planning to use data enrichment plugins, you can skip all steps related to the Data Enrichment plugins in this section.
- If you are performing a manul installation on Linux, you must use the same user ID when installing on each node to ensure that it will be able to access directories located on other nodes.
- Finally, it is assumed that, as a result of installing and deploying the Endeca Server cluster, you will be running WebLogic in production mode.

To install and deploy an Endeca Server cluster, perform the following high-level tasks:

1. On the first of the three machines, (`host1` in the diagram), use the orchestration script in the non-configuration mode to install WebLogic Server, ADF Runtime, and Endeca Server. On this node, you also manually configure the WebLogic domain and generate SSL certificates.

   For instructions, see *Step 1: Installing on the Admin Server on page 87*.
2. On the two remaining machines (`host2` and `host3` in the diagram), also use the orchestration script in the non-configuration mode, to install WebLogic Server, ADF Runtime, and Endeca Server. If you installed securely on the Admin Server, be sure to use `DEPLOY_ENDECA_SERVER_IN_SECURE_MODE` set to `TRUE` on these machines.

   For instructions, see *Step 2: Installing on Managed Servers on page 89*.

   After this step, you are ready to create Managed Servers in the WebLogic domain.
3. On the Admin Server running on `host1`, create three Managed Servers.

   For instructions, see *Step 3: Cloning Managed Servers on page 91*.
4. On `host1`, modify `EndecaServer.properties` and `EndecaCmd.properties`.

   For instructions, see *Step 4: Adjusting the cluster configuration on page 95*.
5. On `host1`, stop the Admin Server and pack the WebLogic domain, using the `pack.*` script.

   This creates the WebLogic domain template. For instructions, see *Step 5: Packing the WebLogic domain on page 97*.
6. On the Managed Server machines, `host2` and `host3`, unpack the WebLogic domain using the template you have created.

   For instructions, see *Step 6: Unpacking WebLogic domain on Managed Servers on page 97*.
7. On `host1`, restart the Admin Server and change the targets for the Endeca Server application's deployment and for the Data Enrichment Framework Java application's deployment from the Admin Server to the three Managed Servers. On the Managed Server machines `host1`, `host2` and `host3`, start the Managed Server.

   For instructions, see *Step 7: Changing deployment targets and starting servers on page 98*.

8. On `host1`, register the Data Enrichment plugins. For instructions, see *Step 8: Registering the Data Enrichment plugins in the Endeca Server cluster on page 100*.
9. On each of the Managed Servers, configure JMS settings. For instructions, see *Step 9: Configuring JMS settings on page 102*.
10. Verify the deployment. For instructions, see *Verifying a cluster installation and deployment on page 110*.

Step 1: Installing on the Admin Server

As a first step in the cluster deployment, install WebLogic Server, ADF Runtime, and Endeca Server on the first of the three machines on which you will be initially deploying an Endeca Server Cluster.

Before you start the installation, ensure that you:

- Install the Java 6 SDK (you will need to point to its location). For a full list of software requirements, see *Required Oracle products on page 13*.
- Provide write access to the shared file system on which the indexes for the data domains (and resources needed by the Data Enrichment plugins) will be stored.
- Create an installation source directory, place the three installation files into it, and unpack the orchestration script ZIP file (for Windows) or TAR file (for Linux). For information, see *Orchestration Script Installation on page 20*.

This procedure describes how to use the orchestration script in non-configuration mode. If, for any reason, you prefer not to use the script and to install all the components manually, you can do so. See *Installing WebLogic Server and Application Developer Framework on page 31* and *Manually Installing Endeca Server on a Single Machine on page 52*. In this case, you will also need to manually configure the WebLogic domain, generate the SSL certificates, and register the Data Enrichment plugins.

To install the required software on the Admin Server using the orchestration script in non-configuration mode:

1. On `host1`, which is the first machine in your cluster deployment, open a command prompt and navigate to the directory that contains the orchestration script.

   Note that you must edit and then run the script with administrator rights.
2. Edit the configuration script as follows and save it:

Configuration parameter	What to specify for the installation on the Admin Server, in the Endeca Server cluster
`INSTALL_MODE`	Select `INSTALL_ALL` to set the non-configuration installation mode. In this mode, the script installs WebLogic, ADF, and Endeca Server, but does not perform configuration tasks (that is, does not create a WebLogic domain, does not create SSL certificates, and does not register the Data Enrichment plugins).
`START_MODE`	Select `PROD` to start WebLogic Server in production mode. This is the default.

Configuration parameter	What to specify for the installation on the Admin Server, in the Endeca Server cluster
JAVA_HOME	Specify the absolute path to the installed Java SDK. Although default Linux and Windows locations are provided, you should set the location for your specific use.
ORACLE_HOME	Specify the absolute path of the Oracle Middleware directory in which the components will be installed (for example, `C:\Oracle\Middleware` on Windows). Note that the Middleware directory must not exist because the script will create it. Although default Linux and Windows locations are provided, you should set the location for your specific use.
ORACLE_INV_PTR	Linux only. Provide the Oracle Installer Inventory Pointer file location. Default is the `/etc/oraInst.loc` location.
INSTALLER_LOCATION	Specify the absolute path of the directory that contains the installation files. Although default Linux and Windows locations are provided, you should set the location for your specific use.
ENDECA_SERVER_DOMAIN_NAME	Specify the name of the WebLogic domain for Endeca Server. `endeca_server_domain` is the default domain name.
ENDECA_SERVER_PORT	Select `7001`, which is the default HTTP port. This is the HTTP port on which Endeca Server listens for requests (if Endeca Server is installed in non-secure mode).
DEPLOY_ENDECA_SERVER_IN_SECURE_MODE	Select `TRUE` (the default). This specifies that Endeca Server should be installed in secure mode (Endeca Server will use the HTTPS port).
ENDECA_SERVER_SECURE_PORT	Select `7002`. This is the default HTTPS port on which Endeca Server listens for requests (if Endeca Server is installed in secure mode).

3. On `host1`, run the orchestration script in non-configuration mode, using the options you specified in the configuration file. For information, see *Installing in non-configuration mode on page 27*.

   The script installs the required components on this machine.

   The non-configuration mode installation does not perform the tasks of creating a WebLogic domain, generating SSL certificates, and registering the Data Enrichment plugins. Therefore, you must manually configure the WebLogic domain for Endeca Server, and then generate SSL certificates. (Data Enrichment plugins should be registered too, but this is done after you create Managed Servers.)

4. Create a WebLogic domain for Endeca Server. See *Creating the WebLogic domain for Endeca Server on page 61*.
5. Generate SSL keys. See *Creating SSL certificates on page 70*.

As a result of this task, you should have the first machine in your cluster on which the required software is installed, the WebLogic domain for hosting the Endeca Server cluster configured, and SSL certificates generated. Note that the Data Enrichment plugins are not yet registered. The Admin Server of the WebLogic domain should also be started.

Step 2: Installing on Managed Servers

As a second step in the cluster deployment, install WebLogic Server, ADF Runtime, and Endeca Server on the remaining two machines on which you are deploying an Endeca Server Cluster (these machines will become Managed Servers), but do not create the WebLogic domain.

Before you start the installation, ensure that you:

- Install the Java 6 SDK (you will need to point to its location).
- Provide write access to the shared file system on which the indexes for the data domains will be stored.

For a full list of software requirements, see *Required Oracle products on page 13*.

This procedure describes how to use the orchestration script in non-configuration mode. It assumes that you have already installed the required packages on the first server in your cluster deployment, and that the WebLogic domain for the Endeca Server has been created, with the Admin Server started.

If, for any reason, you prefer not to use the script and to install all the components manually on these two nodes, you can do so. See *Installing WebLogic Server and Application Developer Framework on page 31* and *Manually Installing Endeca Server on a Single Machine on page 52*. (You do not need to create and start the WebLogic domain for the Endeca Server, as it has already been created.)

Important: On `host2` and `host3`, the installation of the WebLogic Server, ADF Runtime, and Endeca Server should follow the same directory structure (the same path), as on `host1`.

To install the required software on the Managed Servers, using the orchestration script in the non-configuration mode:

1. Edit the configuration script as follows and save it:

Configuration parameter	What to specify for the installation on the Managed Servers, in the Endeca Server cluster
`INSTALL_MODE`	Select `INSTALL_ALL`. This installs the required packages, but does not do any other tasks (this is the non-configuration mode).
`START_MODE`	Select `PROD` to start WebLogic Server in production mode. This is the default.
`JAVA_HOME`	Specify the absolute path to the installed Java SDK. Although default Linux and Windows locations are provided, you should set the location for your specific use.

Configuration parameter	What to specify for the installation on the Managed Servers, in the Endeca Server cluster
ORACLE_HOME	Specify the absolute path of the Oracle Middleware directory in which the components will be installed (for example, C:\Oracle\Middleware on Windows). Note that the Middleware directory must not exist because the script will create it. Although default Linux and Windows locations are provided, you should set the location for your specific use.
ORACLE_INV_PTR	Linux only. Provide the Oracle Installer Inventory Pointer file location. Default is the /etc/oraInst.loc location.
INSTALLER_LOCATION	Specify the absolute path of the directory that contains the installation files. Although default Linux and Windows locations are provided, you should set the location for your specific use.
ENDECA_SERVER_DOMAIN_NAME	Specify the name of the WebLogic domain for Endeca Server. endeca_server_domain is the default domain name. Note that the script in the non-configuration mode will not use this information.
ENDECA_SERVER_PORT	Select 7001, which is the default HTTP port. This is the HTTP port on which Endeca Server listens for requests (if Endeca Server is installed in non-secure mode). Note that the script in the non-configuration mode will not use this information.
DEPLOY_ENDECA_SERVER_IN_SECURE_MODE	Select TRUE (the default). This specifies that Endeca Server should be installed in secure mode (Endeca Server will use the HTTPS port).
ENDECA_SERVER_SECURE_PORT	Select 7002. This is the default HTTPS port on which Endeca Server listens for requests (if Endeca Server is installed in secure mode). Note that the script in the non-configuration mode will not use this information.

2. On the two machines in your cluster deployment that are going to serve as Managed Servers, run the orchestration script in non-configuration mode, using the options you specified in the configuration file. For information, see *Installing in non-configuration mode on page 27*.

   The script in the non-configuration mode installs the required software, but does not perform other tasks.

As a result of this task, you should have the required software installed on these machines. The next step is to configure these machines as Managed Servers in the WebLogic domain for the Endeca Server.

Step 3: Cloning Managed Servers

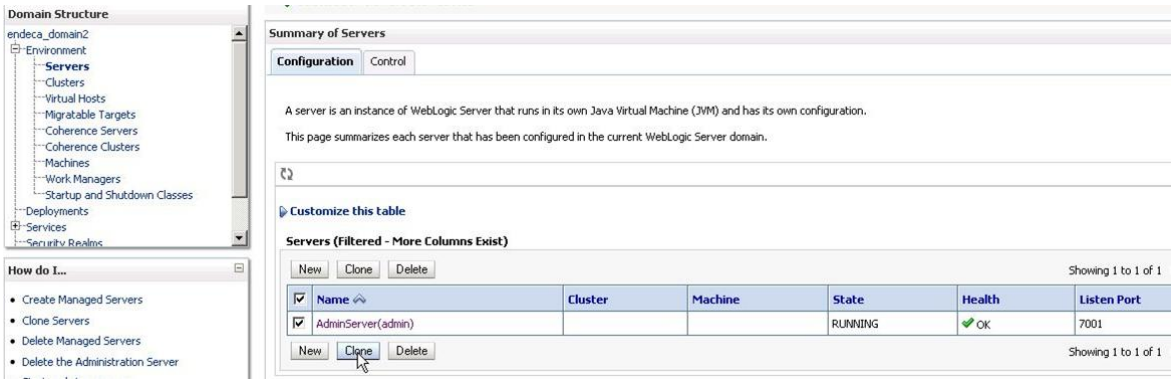
In this step, on the machine known in the diagram as `host1`, you create three Managed Servers.

It is assumed that on all three machines, the required software is already installed, and that on the first machine, the WebLogic Server has been started, and the WebLogic domain for the Endeca Server has been created.

Note: if you previously installed the Endeca Server software on a single machine, the Endeca Server Java application may have been deployed on the Admin Server. This is a valid configuration for single-machine deployments. However, in the Endeca Server cluster deployment, even though you initially start it on the Admin Server, the Endeca Server should be eventually started on Managed Servers only—this will be evident in the final steps of the entire deployment procedure for the Endeca Server cluster.

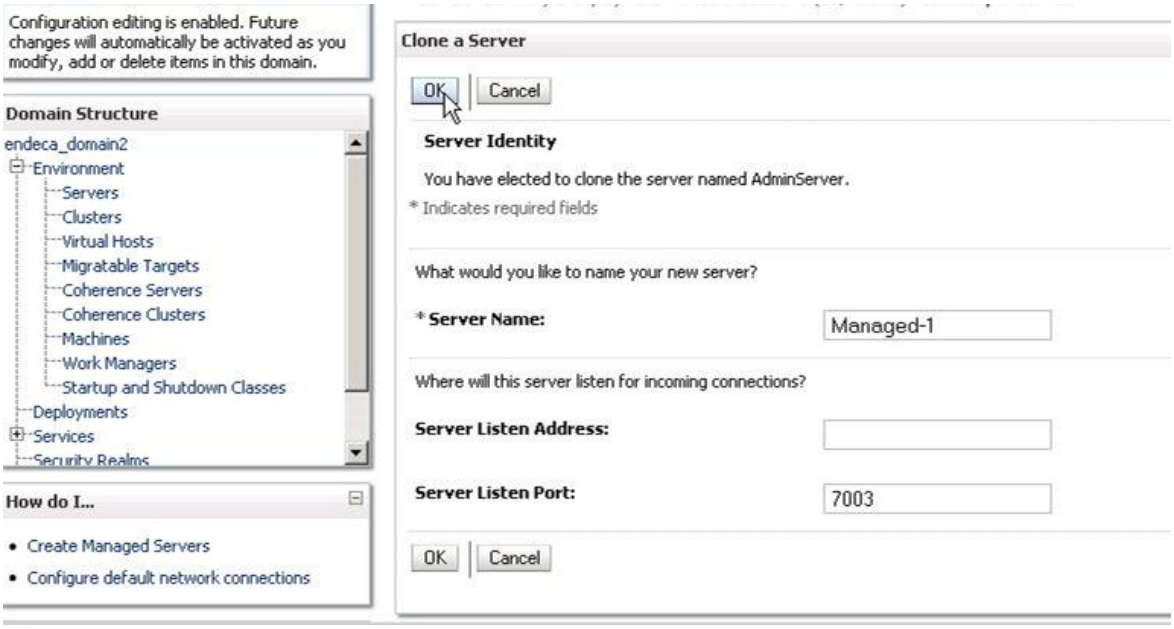
To create Managed Servers, do the following:

1. Create the first Managed Server:
   (a) Access the Administration Console: `http://host1:7001/console`.
   (b) Select **Lock & Edit**.
   (c) Go to **Environment>Servers** and select the Admin Server.
   The **Clone** option is activated.



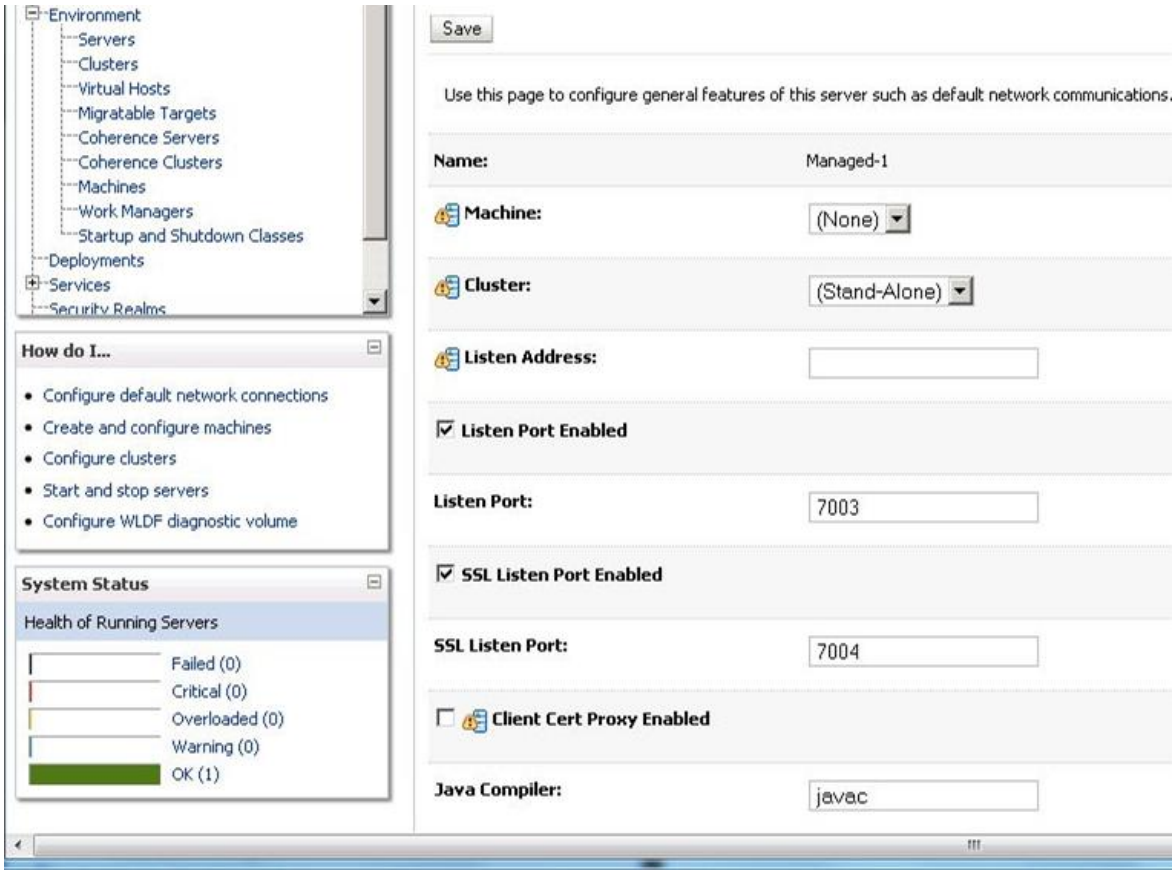
   (d) Click **Clone**.
   The next window opens.
   (e) Change the **Server Name** (this is the Managed Server name) to `Managed-1`.

(f) Change the **Server Listen Port** to be 7003, leave the other fields unchanged, and click **OK**.



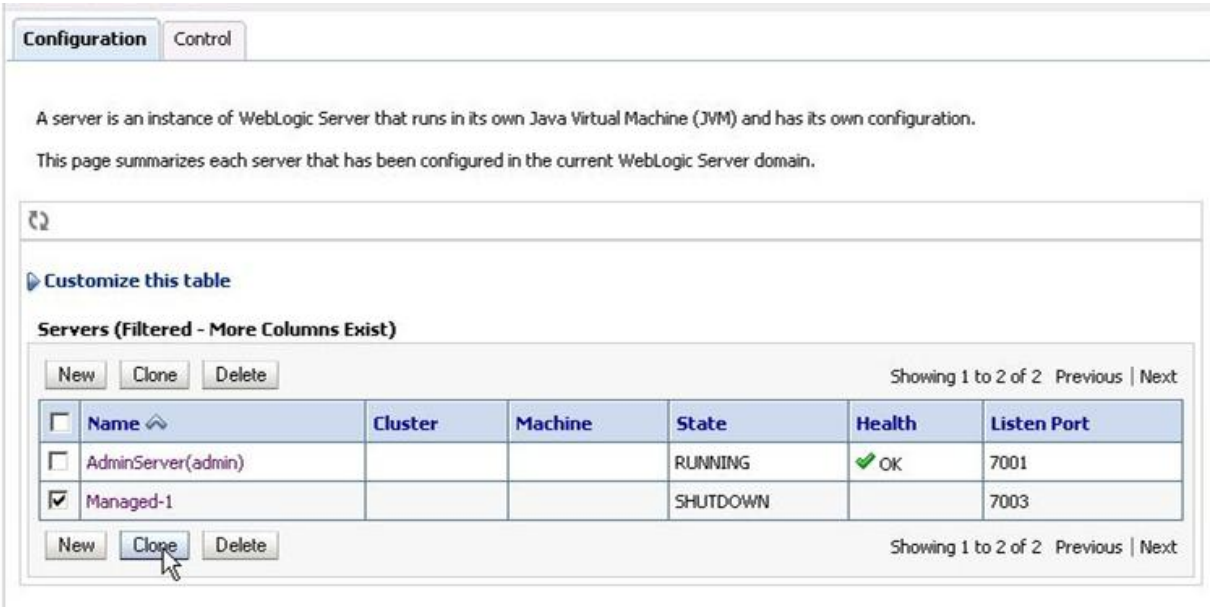
The server named `Managed-1` is created, but its **SSL Listen Port** must be enabled and specified.

(g) Click `Managed-1` to edit it, and in the edit screen, check **SSL Listen Port Enabled**, change **SSL Listen Port** to 7004, leave other options unchanged, and click **Save**.



Proceed to create two more Managed Servers.

2. Create `Managed-2`. Go to **Environment>Servers**, click `Managed-1`, and select **Clone**.



3. Change the server name to be `Managed-2`, and its **Listen Port** to be 7003.
4. In the edit screen for this server, verify that the **SSL Listen Port** for it is already enabled and listed as 7004.
5. Save the changes and click **Activate Changes**.
6. Create `Managed-3` by repeating steps 2 - 5 for it, changing the name to `Managed-3`, and keeping the ports the same as for `Managed-1` and `Managed-2`.

Important: For the Endeca Server cluster to work, the ports on all three Managed Servers should be the same. Additionally, if one of the Managed Servers shares the machine with an Admin Server (as in the example diagram used in this procedure), then the ports for the Admin Server (7001, 7002) should be different from the ports for the Managed Servers (7003, 7004).

As a result, on `host1`, you should have created a WebLogic domain for the securely installed Endeca Server, in which four servers are configured: one Admin Server and three Managed Servers. One of the Managed Servers, `Managed-1`, is configured to run on the same machine as the Admin Server (`host1`). Note also that while the Admin Server is running on `host1`, the Managed Servers are created but not running yet.

The next steps involve the following tasks: modifying the cluster configuration in `EndecaServer.properties` and `EndecaCmd.properties`, using `pack.*` and `unpack.*` scripts to create a WebLogic Server template based on this configuration, and deploying it on two of the three Managed Servers, on `host2` and `host3`. (There is no need to unpack the domain template on `host1` because it already contains the configuration for this WebLogic domain.)

Step 4: Adjusting the cluster configuration

In order for the Endeca Server cluster to run, two of its configuration files should be configured to list the Managed Servers, the location of the shared file system, and the listen ports for the Managed Servers on which the Endeca Server instances will be running.

The files that you need to modify are:

- `EndecaServer.properties`. See *Changing settings in EndecaServer.properties on page 95*.
- `EndecaCmd.properties`. See *Changing settings in EndecaCmd.properties on page 96*.

To locate these files, on `host1`, go to the `$DOMAIN_HOME/config` directory.

Changing settings in EndecaServer.properties

Change the configuration of this file to include the listen port of all three Managed Servers, their host names (for the Cluster Coordinator), and the location of the shared file system.

To modify `EndecaServer.properties`:

1. Go to `$DOMAIN_HOME/config`, and open the `EndecaServer.properties` file in a text editor.
2. Modify the file as follows:
   - `endeca-cluster-coordinator-hosts` must contain comma-separated host names of all three Managed Servers: `host1`, `host2`, and `host3`, in this example. (Always use the top-level portion of the domain names, for this field. Do not use the Fully Qualified Domain Names).

     Note: If you will later expand the Endeca Server cluster, by adding machines to the WebLogic domain, you should include their host names in this list based on the following requirement—the total number of these machines should be an odd number that is equal to or greater than three. For example, if you will be adding a fourth machine, its host name should not be added to this list. If you will be adding a fifth machine, you can optionally leave the list to contain three host names, or include all five host names — both configurations will satisfy the Cluster Coordinator requirement for the Endeca Server cluster.

   - `endeca-data-dir` and `endeca-offline-dir` should point to the directories on a shared file system to which all three hosts have write access. The file paths should use forward slashes (even if you are installing on Windows).
   - `endeca-cluster-coordinator-dataDir` should point to the directory on the shared file system. The file path should use forward slashes (even if you are installing on Windows).
   - `endeca-data-enrichment-pluginsDir` and `endeca-data-enrichment-resourcesDir` should point to their directories on the shared file system. The file paths should use forward slashes (even if you are installing on Windows).
   - `endeca-webserver-port` should be 7004 (this assumes that you installed the Endeca Server in a secure mode). For a non-secure installation, this port should be 7003. (You can use another port number, as long as the port is either the same as an SSL-enabled port configured for the Managed Servers, or their Listen Port, and as long as the port number is not in the `endeca-ds-port` range as shown in the example in this topic.)
3. Leave the other settings unchanged and save the file.

As a result of this task, you have configured the Cluster Coordinator of the Endeca Server cluster to run on at least three machines hosting the Endeca Server instances. This is a requirement that ensures increased availability of the Endeca Server cluster and its data domain services. You have also configured the Endeca Server cluster to host all indexes for its data domains, and the Data Enrichment files on a shared file system (without this requirement, the Endeca Server cluster or the Data Enrichments will not run).

Example

The following example illustrates the required settings in `EndecaServer.properties`:

```
endeca-require-https=true
endeca-runtime-basedir=C:/Oracle/Middleware/EndecaServer<version>/endeca-server
endeca-data-dir=Q:/data_dir
endeca-offline-dir=Q:/offline_data_dir
endeca-logs-dir=C:/Oracle/Middleware/user_projects/domains/endeca_server_domain/EndecaServer/logs
endeca-dgraph-install=C:/Oracle/Middleware/EndecaServer<version>/endeca-server/dgraph
endeca-webserver-port=7004
endeca-ds-port-min=7011
endeca-ds-port-max=8011
...
endeca-ds-cert-file=C:/Oracle/Middleware/user_projects/domains/endeca_server_domain/config/ssl
/dgraphCert.pem
endeca-ds-ca-file=C:/Oracle/Middleware/user_projects/domains/endeca_server_domain/config/ssl
/dgraphCA.pem
endeca-secure-mode=true
endeca-cluster-coordinator-dir=C:/Oracle/Middleware/EndecaServer<version>/endeca-server
/cluster-coordinator
endeca-cluster-coordinator-hosts=host1,host2,host3
endeca-cluster-coordinator-clientPort=2181
...
endeca-cluster-coordinator-dataDir=Q:/cc_data_dir
endeca-cluster-coordinator-dataLogDir=C:/Oracle/Middleware/user_projects/domains/endeca_server_domain
/EndecaServer/data
endeca-cluster-coordinator-serverPort=3181
endeca-cluster-coordinator-leaderPort=4181
endeca-cluster-coordinator-maxClientCnxns=0
endeca-cluster-coordinator-minSessionTimeout=4000
endeca-cluster-coordinator-maxSessionTimeout=180000
...
endeca-data-enrichment-pluginsDir=Q:/DataEnrichment/plugins
endeca-data-enrichment-resourcesDir=Q:/DataEnrichment/resources
```

In this example, the `Q` drive indicates the location of the shared file system.

Important: This drive, under the same letter, should exist on all three of the Managed Server machines that will be running the Endeca Server application. The contents of `EndecaServer.properties` must be identical on all Endeca Server nodes in the cluster.

Changing settings in EndecaCmd.properties

This topic describes how to change the WebLogic Managed Server port in `EndecaCmd.properties`.

This task assumes that you have installed Endeca Server in a secure mode and have run the script to generate SSL certificates.

To modify `EndecaCmd.properties`:

1. Go to `$DOMAIN_HOME/config`, and open the `EndecaCmd.properties` file in a text editor.
2. Change the port to be the port of your Managed Server pool. For the secure Endeca Server installation, the port should be 7004. (For an unsecured installation, the port is 7003.)

3. Leave the other settings unchanged and save the file.

Example

The following example illustrates the required settings in `EndecaCmd.properties`:

```
host=host1
port=7004
root=/endeca-server
keystore=C:/Oracle/Middleware/user_projects/domains/endeca_server_domain/config/ssl
/endecaServerClientCert.ks
truststore=C:/Oracle/Middleware/user_projects/domains/endeca_server_domain/config/ssl
/endecaServerTrustStore.ks
ssl=true
```

In this example, the Endeca Server is installed in a secure mode and the port 7004 is used for communication with Managed Servers on which Endeca Server application will be running as a cluster. This port should be the same port as the one you configured as the SSL-enabled Listen Port for your Managed Servers.

In the next steps, you can pack and unpack the WebLogic domain that includes these settings.

Step 5: Packing the WebLogic domain

To pack the WebLogic domain, use the `pack.*` and `unpack.*` scripts of the WebLogic Server.

For information on these scripts, see *http://docs.oracle.com/cd/E23943_01/web.1111/e14144/tasks.htm*.

To create the WebLogic domain template:

1. Stop the WebLogic Server on the Admin Server. Use the Admin Console, or, on `host1`, go to `$DOMAIN_HOME/bin`, and run:

   ```
   stopWebLogic.sh
   ```

2. On `host1`, run the `pack.*` script:

   ```
   $ORACLE_HOME/Middleware/wlserver_10.3/common/bin/pack.sh
   -managed=true
   -domain=$DOMAIN_HOME
   -template=/tmp/endeca_server_template.jar
   -template_name="Endeca Server"
   ```

   The script creates the WebLogic domain template.

You will use this template to unpack the WebLogic domain on `host2` and `host3`.

Step 6: Unpacking WebLogic domain on Managed Servers

Before you can start the Managed Servers, unpack the WebLogic domain template on the machines that do not yet contain the WebLogic domain's configuration.

As a prerequisite to this task, make sure that the template you created previously with the `pack.*` script is copied to `host2` and `host3`. In this procedure, it is assumed that the file is copied to the `C:/tmp` directory on each of these machines.

You will unpack the WebLogic domain on `host2` and `host3` only (two of the three machines hosting Managed Servers), because the third Managed Server resides on `host1`, together with the Admin Server, and can access the WebLogic domain configuration on this machine.

Important: The paths and the domain names on the Managed Servers should be the same as the ones used on the Admin Server. For example, if you packed the domain that was located in the C: drive, you should unpack it also into the C: drive, replicating the entire path you used on the Admin Server.

To unpack the WebLogic domain:

1. On `host2` and `host3`, run the following command:

   ```
   $ORACLE_HOME/Middleware/wlserver_10.3/common/bin/unpack.sh
   -domain=$DOMAIN_HOME
   -template=/tmp/endeca_server_template.jar
   ```

   where `$DOMAIN_HOME` is the path to the WebLogic domain you initially created on the Admin Server. (In this documentation, the `$DOMAIN_HOME` is assumed to be `$MW_HOME/user_projects/domains/endeca_server_domain`, if the domain's name is `endeca_server_domain`).

   Note: When the script runs, it may notify you that duplicate Server listen ports exist in your WebLogic domain configuration. You can ignore this warning.

   When the script runs successfully, the WebLogic domain's configuration is transferred to the machines on which you will start the Managed Servers.

2. On each machine, go to `$DOMAIN_HOME/config`, and verify the contents of `EndecaServer.properties` and `EndecaCmd.properties`.

   It should be the same as you configured on the Admin Server.

   Note: You may notice that on all machines, including on `host2`, and on `host3`, the host name listed in `EndecaCmd.properties` is `host1`. This is expected — it indicates that you can later run `endeca-cmd` from `$DOMAIN_HOME/EndecaServer/bin` on the Admin Server (`host1`) .

Now you are ready to start the Admin Server and all three Managed Servers.

Step 7: Changing deployment targets and starting servers

In this step, you change the deployment targets from the Admin Server to Managed Servers and start all servers in the WebLogic domain for the Endeca Server.

Starting the WebLogic Server on which the Endeca Server application is deployed automatically starts the Endeca Server. You can first start the Admin Server, change the deployment targets for the Endeca Server application and the Data Enrichment Framework Java application, and then start the Managed Servers.

To change the deployment targets and start the servers:

1. Start the Admin Server. On `host1`, go to `$DOMAIN_HOME/bin`, and run:

   ```
   startWebLogic.sh
   ```

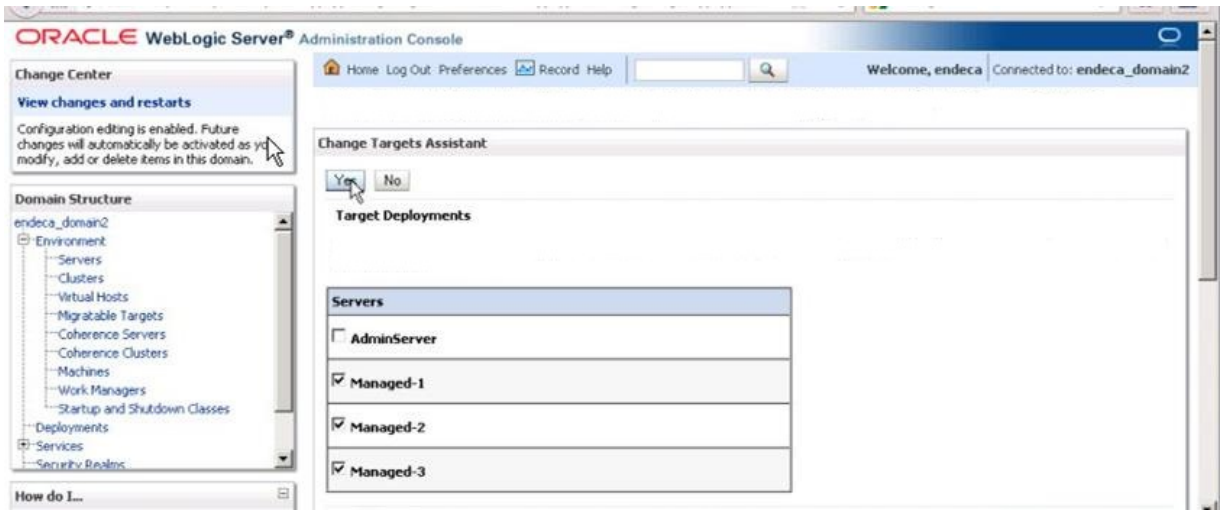
   Note: You may notice messages about the Cluster Coordinator failing to establish a connection to other machines running its service. These messages are expected and can be ignored. They indicate that the Cluster Coordinator is attempting to establish its quorum, but only one out of three configured Cluster Coordinator services are running at the moment. The

messages will stop after you deploy two more Managed Servers that are running the Cluster Coordinator services.

2. Change the deployment targets for the Endeca Server Java application in WebLogic domain. In the Administration Console, select **Lock & Edit**, go to **Deployments**, click the application `oracle.endecaserver`, click the **Targets** tab, select **Component** (this selects both Endeca Server items under it), then select **Change Targets**:

Note: The version of the **oracle.endecaserver** application in this diagram may differ from the version of the Endeca Server you are actually installing.

3. In the **Change Targets Assistant** screen, change targets from the Admin Server to Managed Servers and select **Yes**.



4. Save the changes and click **Activate Changes**.
5. Change the deployment targets for the Data Enrichment Framework Java application, **oracle.endeca.enrichment_framework**, in WebLogic domain.

   To do this, repeat the steps 2- 4, but instead of selecting **oracle.endecaserver**, and **/endeca-server**, select **oracle.endeca.enrichment_framework** as a component for which you are changing targets.

6. Start the Managed Servers.

   On `host2` and `host3`, the `unpack.*` script created scripts to start Managed Servers with the names you specified. You can run:

   ```
   $DOMAIN_HOME/bin start<Managed_Server_name>.sh
   ```

   For example, once in this directory, you can run:

   ```
   start Managed-2.sh
   ```

   Note: If you use this method, the correlation of the Managed Server name and the machine host name on which it should be started is not enforced by the WebLogic Server scripts. Therefore, be careful to start `Managed-2` on `host2`, and `Managed-3` on `host3`.

   On `host1`, which was not deployed with the `unpack.*` command, the `start <Managed_Server_name>.*` is not created. Therefore, use the following command to start the Managed Server in this case:

   ```
   $DOMAIN_HOME/bin startManagedWeblogic.sh <managed_server_name> <admin_server_url>
   ```

   Note that you can also use this command on each machine hosting a Managed Server, instead of the `start <Managed_Server_name>.*`.

   Once the commands run successfully, you should see the state of the Managed Servers change to `RUNNING`.

7. Verify the deployment of the WebLogic domain. Go to the **Servers** section of the Administration Console and check the state of the Managed Servers.

After you have changed the deployment targets and started the Managed Servers, your Endeca Server cluster deployment may be complete, in which case you may go to the task *Verifying a cluster installation and deployment on page 110*. Alternatively, if you are planning to use Enrichments in Studio, then, before verifying a cluster installation, you also need to register the Data Enrichment plugins and configure JMS settings on all Managed Servers. For information, see *Step 8: Registering the Data Enrichment plugins in the Endeca Server cluster on page 100*, and *Step 9: Configuring JMS settings on page 102*

Step 8: Registering the Data Enrichment plugins in the Endeca Server cluster

This topic describes how to run a command-line script that registers the Endeca Server Data Enrichment plugins, if you are installing in the cluster.

If you intend to use enrichments in your Studio application, you must register the Data Enrichment plugins in the Endeca Server cluster.

This procedure assumes that Endeca Server has been installed and that a WebLogic domain has been created for Endeca Server. It also assumes that the SSL certificates have been generated if Endeca Server was installed in secure mode.

Important: This procedure also assumes that you have already adjusted `EndecaServer.properties` file to point to the shared location for the `/plugins` and `/resources` directories of the Data Enrichment plugins. If you have not adjusted these locations, see *Changing settings in EndecaServer.properties on page 95*.

The registration script is named `enrichment-metadata.bat` (for Windows) or `enrichment-metadata.sh` (for Linux) and resides in the `$ENDECA_HOME/endeca-data-enrichment/install` directory.

The syntax of the script is:

```
enrichment-metadata.bat|sh
<java-home>
<host>
<port>
<protocol>
<oracle-home>
<endeca-home>
<endeca-domain-home>
[<sslPassphrase>]
```

where:

- *java-home* is the absolute path to the Java SDK.
- *host* is the first portion of the Fully Qualified Domain Name for the Endeca Server machine. According to the cluster installation diagram, it is `host1`.

  Important: In the Endeca Server cluster, you register the Data Enrichment plugins only on `host1` and not on other machines.

- *port* is the port of the Managed Servers in the Endeca Server cluster installation. According to the cluster installation diagram, it is 7003 in the non-secure installation, and 7004 in the secure installation.
- *protocol* is `http` for non-SSL mode or *https* for SSL-mode.
- *oracle-home* is the absolute path of the Oracle Middleware directory.
- *endeca-home* is the absolute path of the Endeca Server root directory.
- *endeca-domain-home* is the absolute path of the Endeca Server domain directory.
- *sslPassphrase* is the pass phrase for the SSL certificates. This argument is required only if the *protocol* argument is `https`.

The arguments must be provided in the order listed above.

To register the Data Enrichment plugins in the Endeca Server cluster deployment:

1. On `host1`, verify that you have modified the `EndecaServer.properties` file and that it points to the shared location for the `/plugins` and `/resources` directories:

   ```
   ...
   endeca-data-enrichment-pluginsDir=Q:/DataEnrichment/plugins
   endeca-data-enrichment-resourcesDir=Q:/DataEnrichment/resources
   ```

   For information on how to adjust these settings, see *Changing settings in EndecaServer.properties on page 95*.

2. On `host1`, start the Admin Server for the Endeca Server domain.
3. From a command prompt, navigate to the `$ENDECA_HOME/endeca-data-enrichment/install` directory.
4. Run the registration script for your operating system, as in this Windows example:

   ```
   enrichment-metadata.bat C:\Java\jdk1.6.0_43 host1 7004 https C:\Oracle\Middleware
   C:\Oracle\Middleware\EndecaServer7.6.1
   C:\Oracle\Middleware\user_projects\domains\endeca_server_domain
   ```

The output of the above command looks similar to this example:

```
INFO: Registered auditor for componentType=WebServices
auditor=oracle.security.jps.internal.audit.DelegateAuditor$XmlAuditor@45ed957d
ECHO is off.
Registering plug-in BlacklistPlugin...
DONE!
Registering plug-in ExpressionTaggerPlugin...
DONE!
Registering plug-in LanguageDetectionPlugin...
DONE!
Registering plug-in LexicalConceptExtractorPlugin...
DONE!
Registering plug-in SalientTermExtractorPlugin...
DONE!
Registering plug-in SentimentAnalysisPlugin...
DONE!
Registering plug-in StringUtilityPlugin...
DONE!
Registering plug-in TermExtractorPlugin...
DONE!
Registering plug-in TextCleanupPlugin...
DONE!
Registering resource DefaultStoplist.yml...
DONE!
Registering resource DefaultLexicon.yml...
DONE!
```

The script creates a `$DOMAIN_HOME/EndecaServer/DataEnrichment` directory that contains resources for the plugins.

After completing this procedure and configuring JMS settings, you can use Enrichments in your Studio application. For information, see *Step 9: Configuring JMS settings on page 102*.

Step 9: Configuring JMS settings

In this step, on each of the managed servers, you configure JMS (Java Messaging Service) settings. JMS in WebLogic is used by the Data Enrichment plugins and must be configured in the Endeca Server cluster if you will use Data Enrichment plugins (known as Enrichments in Studio).

For general information on JMS, see *http://docs.oracle.com/cd/E15051_01/wls/docs103/messaging.html*.

In the Endeca Server cluster, for each Managed node in the WebLogic domain, JMS queues must be configured on each of the Managed Servers, so that the Data Enrichment plugins can use them for their internal communication within the Data Enrichment Framework Java application running in WebLogic domain (the Data Enrichment Framework application is installed once you install Endeca Server).

This procedure describes the steps for one of the Managed Servers, Managed-1. Repeat the steps for each Managed Server. The instructions for each step indicate the names you should use on each Managed Server.

To configure JMS settings in the WebLogic domain for Endeca Server:

1. Go to WebLogic console, and click **Lock and Edit**, to switch to edit mode.
2. For each Managed Server, create a new JMS Server:
   (a) Select **Services>Messaging>JMS Servers>New**
   (b) Specify **Name** as `oracle.endeca.enrichments.JMSServer-1`, for Managed-1. For Managed-2 and Managed-3, the names should be `*.JMSServer-2` and `*.JMSServer-3`, respectively.

(c) Specify **Target** as **Managed-1**, **Managed-2**, or **Managed-3**, respectively.

3. For each Managed Server machine, create a new JMS module:
   (a) Select **Services>Messaging>JMS Modules>New**
   (b) Specify **Name** as `oracle.endeca.enrichments.Module-1`, for Managed-1. For Managed-2 and Managed-3, the names should be `*.Module-2` and `*.Module-3`, respectively.
   (c) Specify **Target** as `Managed-1`, `Managed-2`, or `Managed-3`, respectively.
4. Within each module, create a new subdeployment:
   (a) Select **Subdeployments** tab, and then select **New**.
   (b) Specify **Name** as `oracle.endeca.enrichments.Subdeployment-1`, for Managed-1. For Managed-2 and Managed-3, specify their corresponding names respectively, such as `oracle.endeca.enrichments.Subdeployment-2` for Managed-2, and `oracle.endeca.enrichments.Subdeployment-3`, for Managed-3.
   (c) Specify **Target** as `oracle.endeca.enrichments.JMSServer-1`, on Managed-1. On Managed-2 and Managed-3, specify targets respectively.
5. Create JMS resources (which will include a connection factory and three queues). To create a connection factory:
   (a) Select **Configuration** tab, and then select **New**.
   (b) Select **Connection Factory**.
   (c) Specify **Name** as `ConnectionFactory`, **JNDI Name** as `jms/ConnectionFactory`
   (d) Select **Next>Advanced Targeting** and specify **Subdeployments** as `oracle.endeca.enrichments.SubDeployment-1`, for Managed-1. For Managed-2 and Managed-2, specify subdeployments respectively.
   (e) Specify **Target** as `oracle.endeca.enrichments.JMSServer-1`, for Managed-1. For Managed-2 and Managed-3, specify targets respectively.
6. Create three queues, with names `TaskQueue`, `ProcessedRecordQueue`, and `UnprocessedRecordQueue`, on each of the Managed Servers.
   (a) Select **Configuration** tab, and then select **New**.
   (b) Select **Queue** and specify, for Managed-1, **Name** as `TaskQueue`, **JNDI Name** as `jms/TaskQueue`, **Subdeployments** as `oracle.endeca.enrichments.SubDeployment-1`, **Target** as `oracle.endeca.enrichments.JMSServer-1`. For Managed-2 and Managed-3, specify the same values for all fields, except choose their respective subdeployments and targets.
   (c) Select **Configuration** tab, and then select **New**.
   (d) Select **Queue** and specify, for Managed-1, **Name** as `ProcessedRecordQueue`, **JNDI Name** as `jms/ProcessedQueue`, and the same subdeployments and targets that you specified for the `TaskQueue`. For Managed-2 and Managed-3, select their respective subdeployments and targets.
   (e) Select **Configuration** tab, and then select **New**.
   (f) Select **Queue** and specify, for Managed-1, Name as `UnprocessedRecordQueue`, **JNDI Name** as `jms/UnprocessedRecordQueue`, and the same subdeployments and targets that you specified for the `TaskQueue`. For Managed-2 and Managed-3, select their respective subdeployments and targets.

7. Click **Activate Changes** to save your changes, and then click **Release Configuration** to unlock the console.

After you have successfully installed and deployed an Endeca Server cluster, you can verify its status. You can also optionally add additional machines to its WebLogic domain (so that you can start additional Endeca Server instances), and, if you have previously created an Endeca Server data domain in the Endeca Server installed on a single machine, you can migrate this data domain to the Endeca Server cluster.

For information on all these tasks, see *Verifying a cluster installation and deployment on page 110*.

Part V

After You Install

Chapter 7

After You Install

This section contains post-installation tasks, including how to uninstall Oracle Endeca Server.

Package contents and directory structure

The Oracle Endeca Server installation creates the following directory structure.

Endeca Server root directory

The default name of the root directory for the Oracle Endeca Server is the directory name that you entered at the **Oracle Home Directory** field (in the **Specify Installation Location** screen of the installer). This root directory is typically referred to as `$ENDECA_HOME` in the documentation set for the Endeca Server. The root directory is typically installed in the Oracle `Middleware` directory.

The Endeca Server root directory contains files and software modules when initially installed:

Directory	Contents
root directory	The release notes (`README.txt`) and the `version.txt` file.

Directory	Contents
apis	Includes these directories: • Endeca Server API Reference (/doc/endeca-server directory) • Endeca Server Data Enrichment API Reference (/doc/data-enrichment directory) • Java client examples for using the Oracle Endeca Server interfaces (/examples directory) • WSDL and XSD documents for each Web service packaged with Oracle Endeca Server (/web-services directory) • JAR file representing the packaged Bulk Ingest interface (endeca_bulk_load.jar)
endeca-cmd	JAR for the endeca-cmd command-line interface, as well as the non-SSL version of the command script that calls the Oracle Endeca Server commands. Also, the lib directory contains utilities used for the various commands.
endeca-server	EAR (Enterprise ARchive) file for the Endeca Server application (endeca-server.ear)
endeca-server/cluster-coordinator	Software directory for the Cluster Coordinator.
endeca-server/conf	Configuration files used by the generate_ssl_keys script.
endeca-server/dgraph	Software directory for the Dgraph process.
endeca-data-enrichment, endeca-console	Software directories for Endeca Server Data Enrichment modules. Data Enrichment modules are used in Studio.
cfgtoollogs, common, diagnostics, install, inventory, OPatch, oui	Directories for Oracle-related software.

Endeca Server domain directories

These directories and files are added when you create a WebLogic domain for Endeca Server. They reside in either the $DOMAIN_HOME/EndecaServer directory, or the $DOMAIN_HOME/config directory. The variable $DOMAIN_HOME refers to the root of your Endeca domain; for example, if endeca_server_domain is the name of your domain, then the default path on Windows is:

```
C:\Oracle\Middleware\user_projects\domains\endeca_server_domain
```

Note: The paths for these directories in this table represent the defaults that may be overridden for a particular installation. For example, $DOMAIN_HOME/EndecaServer/offline is the default offline directory you should be using if you have installed an Endeca Server on a single machine. However, it

may be overridden by your own location (which is required if you are installing and deploying an Endeca Server cluster).

Endeca Server Domain Directory	Contents
`$DOMAIN_HOME/EndecaServer/bin`	SSL version of the `endeca-cmd` utility for Endeca commands; Linux and Windows versions of the `generate_ssl_keys` script; `setup_cgroups.sh` script for using control groups on Linux.
`$DOMAIN_HOME/EndecaServer/data`	The default directory for storing the data files for an Endeca data domain. This directory is not intended to be used by the data domain administrators.
`$DOMAIN_HOME/EndecaServer/lib`	SSL-certificate creation script that is called by the `generate_ssl_keys` script.
`$DOMAIN_HOME/EndecaServer/logs`	The logs directory for the Endeca data domains.
`$DOMAIN_HOME/EndecaServer/offline`	Default location into which the `export-dd` Endeca Server command exports the index of a specified Endeca data domain and from which the `import-dd` command gets the indexes.
`$DOMAIN_HOME/EndecaServer/DataEnrichment`	Data Enrichment plugins and associated resources.
`$DOMAIN_HOME/config`	Two configuration files are added to the root of the `config` directory: `EndecaServer.properties` configuration file for Endeca Server and `EndecaCmd.properties` configuration file for the SSL version of the `endeca-cmd` utility. Both files are described in the *Oracle Endeca Server Administrator's Guide*.
`$DOMAIN_HOME/config/ssl`	Location into which the `generate_ssl_keys` script stores the SSL key files it generates. Note that the `ssl` directory is not created until you run this script.

List of Web services and their versions

Once you install the Oracle Endeca Server and create a data domain in it, you can use the packaged Web services with the specified versions for each of them, to send requests.

The WSDL and XSD documents for the following Web services are installed in the `$ENDECA_HOME/apis/web-services` directory of your installation:

- Data Ingest Web Service 3.0, `ingest` (documented in the *Oracle Endeca Server Data Loading Guide*)
- Configuration Web Service 3.0, `config` (documented in the *Oracle Endeca Server Developer's Guide*)

- Conversation Web Service 3.0 , `conversation` (documented in the *Oracle Endeca Server Developer's Guide*)
- Transaction Web Service 1.0, `transaction` (documented in the *Oracle Endeca Server Developer's Guide*)

In addition to these Web services, additional Web services are available with the Oracle Endeca Server:

- Entity and Collection Configuration Web Service 3.0, `sconfig` (documented in the *Oracle Endeca Server Developer's Guide*)
- Manage Web Service 2.0, `manage` (documented in the *Oracle Endeca Server Cluster Guide*)
- Cluster Web Service 2.0, `cluster` (documented in the *Oracle Endeca Server Cluster Guide*)
- EQLParser Web Service 4.0, `eql_parser`, used by the Conversation Web Service to parse Endeca Query Language queries and filters.

Note: Each Web service is versioned with the major and minor version numbers listed in its WSDL document. If you are planning to use Web service calls directly or use client-side code created with stubs generated from a Web service, ensure that you use a supported version of the Web service. For detailed information on Web service versions, see a section in the *Oracle Endeca Server Developer's Guide*.

The Bulk Load Interface is also installed in the `$ENDECA_HOME/apis` directory of your installation. Together with the Data Ingest Web Service, the Bulk Load Interface loads the records into the Oracle Endeca Server. For more information on this interface, see the *Oracle Endeca Server Data Loading Guide*.

Verifying a single-machine installation

To verify the single-machine Endeca Server installation, you can create an Endeca data domain.

It is assumed that in a single-machine Endeca Server installation, you can deploy the Endeca Server application in an Admin Server of the WebLogic domain.

Note: The instructions in this topic are based on Windows. If you installed on Linux, the steps will be similar, though you will need to substitute paths.

To test that the installation succeeded, perform the following steps:

1. Log into the WebLogic Administration Console and verify that the **oracle.endecaserver** Web application has a State of "Active" in the Administration Console.

   You can also verify that the Endeca Server is running by using this URL in your browser to bring up the WSDL for the Manage Web service: `http://localhost:7001/endeca-server/ws/manage?wsdl`

   If Endeca Server is running in SSL mode, use this URL: `https://localhost:7002/endeca-server/ws/manage?wsdl`
2. Open a command prompt.
3. Navigate to one of these directories, depending on whether Endeca Server is running in SSL mode:
   - Non-SSL mode: `C:\Oracle\Middleware\EndecaServer7.6.1\endeca-cmd`

- SSL mode:
  `C:\Oracle\Middleware\user_projects\domains\endeca_server_domain\EndecaServer\bin`

4. Use this command to create and start an empty Endeca data domain named "test" (you can use another name if you wish):

   ```
   endeca-cmd create-dd test
   ```

5. Use this command to verify that the Endeca data domain is running:

   ```
   endeca-cmd get-dd-health test
   ```

   The Endeca data domain is fully running if you see an output similar to this in the command prompt window:

   ```
   Data domain: test
   Leader Node Health:
       Hostname: Web007
       Port: 7001
       Protocol: HTTP
       Is available
   Follower Nodes Health:
   Detail:[]
   ```

   The `Is available` line indicates that the Dgraph is up and running. If you installed in secure (SSL) mode, the Port will be 7002 and the Protocol will be HTTPS.

You can use the `endeca-cmd --help` command to print out the usage for the various commands.

For detailed information on the Oracle Endeca Server and its commands, see the *Oracle Endeca Server Administrator's Guide*.

Verifying a cluster installation and deployment

Use the Administration Console of the WebLogic Server to verify the state of the WebLogic domain running the Endeca Server cluster on three of its Managed Servers.

Before you access the Administration Console, start the Admin Server of the WebLogic domain created for the Endeca Server.

To verify the Endeca Server cluster deployment:

1. Open the Administration Console: `http://<admin_server_host>:<port>/console`
2. In the left-hand pane's section **Domain Structure**, select **Environment**, then select **Servers**.

   The Administration Console displays the state of all servers in your WebLogic domain for the Endeca Server.
3. Select **Domain Structure>Deployments**. From the list, select the Endeca Server application, and then select the **Monitoring** tab.

Additional cluster tasks

After you have verified the cluster deployment, you can create a data domain, extend the Endeca Server cluster, or import a data domain into the cluster.

Creating a data domain in the Endeca Server cluster

This task describes how to create an Endeca data domain after you have deployed an Endeca Server cluster.

Before you start, verify the status of the Endeca Server cluster by going to the Admin Server on `host1`, navigating to `$DOMAIN_HOME/EndecaServer/bin` (if you installed the Endeca Server in a secure mode), and running:

```
endeca-cmd list-nodes --password <sslPassphrase>
```

where *<sslPassphrase>* is the password you specified when running the script to generate SSL certificates for the Endeca Server. The command should return a list of host names for all Managed Servers on which the Endeca Server application is running as an Endeca Server cluster.

Important: The `endeca-cmd` command exists in the `$DOMAIN_HOME/EndecaServer/bin` directory only on `host1` which is the Admin Server, so it is important to access this command in this directory only if you are on the machine that is running the Admin Server for the WebLogic domain for Endeca Server (`host1` according to the cluster deployment diagram in this guide). This is the recommended way of accessing `endeca-cmd` if you are running the Endeca Server cluster in a secure mode. Alternatively, if you want to access `endeca-cmd` on any of the Managed Servers in the Endeca Server cluster, go to the directory `$ORACLE_HOME/Middleware/EndecaServer<version>/endeca-cmd`. If you run this command from that directory and have installed the Endeca Server in a secure mode, be sure to specify all the SSL options on the command line. For full information on running the `endeca-cmd` command, see the *Oracle Endeca Server Administrator's Guide*.

This procedure assumes you have installed the Endeca Server cluster in a secure mode (SSL-enabled).

To create an Endeca data domain in an Endeca Server cluster:

1. On `host1` (this is the machine on which the Admin Server of the WebLogic Server created for Endeca Server is running), go to `$DOMAIN_HOME/EndecaServer/bin`.
2. Create a new data domain profile for the Endeca data domain, which will include a total of two nodes. (Each will be allocated to run on a separate Endeca Server instance.) Run the following command:

   ```
   endeca-cmd put-dd-profile my_two_node_dd_profile --num-followers 1 --password
   <sslPassphrase>
   ```

   where `my_two_node_dd_profile` is the name of the data domain profile, and `sslPassphrase` is the password that you specified with the `--sslPassphrase` flag of the `generate_ssl_keys` utility.

   This command creates the data domain profile in which there is one leader node and one follower node in the data domain.

3. Create a data domain using this profile. Run:

```
endeca-cmd create-dd test --dd-profile-name my_two_node_dd_profile --password
<sslPassphrase>
```

   This command creates an Endeca data domain `test`, based on the previously configured data domain profile. In this data domain, two nodes (Dgraph processes) are running, each on its own Endeca Server instance.

4. Verify the state of the data domain. Run:

```
endeca-cmd get-dd-health test --password <sslPassphrase>
```

   The command returns the following information:

```
Data domain: test
Leader node health:
Hostname: host1
Port: 7004
Protocol: HTTPS
Is available
Follower nodes health:
Hostname: host2
Port: 7004
Protocol: HTTPS
Is available
```

   This output indicates that the data domain `test` runs on two nodes, both of which are available. Note that even though you created this data domain from one machine, it is configured to run two nodes on different Endeca Server instances. You can now access this data domain from any Endeca Server instance machine.

Adding Endeca Server instances to the cluster

To add another Endeca Server instance to an already deployed Endeca Server cluster, provision an additional WebLogic Managed Server and deploy the Endeca Server domain to this server.

The instructions in this topic assume that you have already deployed an Endeca Server cluster with three Endeca Server instances running on three Managed Servers in the WebLogic domain created for the Endeca Server.

To add another Endeca Server instance to the Endeca Server cluster:

1. Install the required software on an additional machine. For instructions, see *Installing in non-configuration mode on page 27*. If your cluster is deployed in a secure mode, ensure that you run the script with `DEPLOY_ENDECA_SERVER_IN_SECURE_MODE` setting set to `TRUE`.
2. Ensure that this machine has write access to the same shared file system to which existing Endeca Server machines have access.
3. In the WebLogic domain for the Endeca Server, create another Managed Server. For instructions, see *Step 3: Cloning Managed Servers on page 91*.
4. Create a WebLogic domain template and deploy it on the machine that will host the additional Managed Server.

   For instructions, see *Step 5: Packing the WebLogic domain on page 97* and *Step 6: Unpacking WebLogic domain on Managed Servers on page 97*.

5. (Optional.) Add the host name of this node to the list of host names on which the Cluster Coordinator service must be running, in the `EndecaServer.properties` file.

   If you are adding the fourth Endeca Server node, skip this step. If you are adding the fifth Endeca Server node, you can optionally perform this step. This step is needed to ensure that an odd number (that is equal to or greater than three) of the Endeca Server nodes are also running the Cluster Coordinator service. For instructions, see *Changing settings in EndecaServer.properties on page 95*.

6. Specify the directories on the shared file system in the `EndecaServer.properties`. For instructions, see *Changing settings in EndecaServer.properties on page 95*.

7. Start the Managed Server and change the WebLogic domain's deployment targets to include this Managed Server. See *Step 7: Changing deployment targets and starting servers on page 98*.

Once the additional Managed Server is deployed, the Endeca Server application is started in it. Now you can create data domain profiles that require a greater number of Endeca Server instances; the Endeca data domains that you create using these profiles will be allocated to this additional Endeca Server instance.

Note: Existing data domains will not be dynamically adjusted to take advantage of the additional Endeca Server cluster capacity. In other words, to take advantage of the increased capacity, create new data domain profiles, and use them to create new data domains.

Importing a data domain into a cluster

If you have created an Endeca data domain in a development environment on a single Endeca Server instance, you can export it and import it into an Endeca Server cluster.

This procedure assumes that you have previously created the data domain `MyDD` on an Endeca Server instance running on a single machine that is hosting an Admin Server of the WebLogic domain. This procedure also assumes that you have used the same version of the Endeca Server for the single-machine data domain deployment as you are using for the data domain's deployment in the cluster.

This procedure does not assume a secure installation of the Endeca Server. To run `endeca-cmd` in a secure mode, use its global options to also specify `sslPassphrase` on the command line. For information on `endeca-cmd`, see the *Oracle Endeca Server Administrator's Guide*.

To import a data domain into a cluster:

1. Export the data domain. On the host machine of your single-machine deployment of the Endeca Server, go to `$ORACLE_HOME/Middleware/EndecaServer<version>/endeca-cmd` and run:

   ```
   endeca-cmd export-dd MyDD --offline-name MyDD_offline
   ```

   This command exports the index of the data domain `MyDD` to the directory `MyDD_offline_indexes`, located in the `offline` directory for the data domain.

2. Copy the `MyDD_offline` file to a location of the data domain's offline directory on a shared file system for the Endeca Server cluster.

   To check this location, see the file `EndecaServer.properties` in the `$DOMAIN_HOME/config` directory. The location is specified in this file similar to the following example:

   ```
   endeca-offline-dir=Q:/offline_data_dir
   ```

3. Import the data domain. On the host machine running the Admin Server of the WebLogic Server created for Endeca Server, go to the directory `$DOMAIN_HOME/EndecaServer/bin` and run:

```
endeca-cmd import-dd MyDD --offline-name MyDD_offline --dd-profile-name MyDDProfile
```

where `MyDDProfile` is the name of the data domain profile you want to use for creating this data domain in an Endeca Server cluster.

4. To verify the data domain is running, run:

```
endeca-cmd get-dd-health MyDD
```

Applying the ADF patch

You should install an ADF patch to correct a problem with releasing memory.

The Interim Patch for Bug 17509664 solves a problem where memory is not being released when an Endeca data domain is deleted.

To download and install the ADF patch:

1. Access the **Patches and Updates** section of My Oracle Support with this URL:

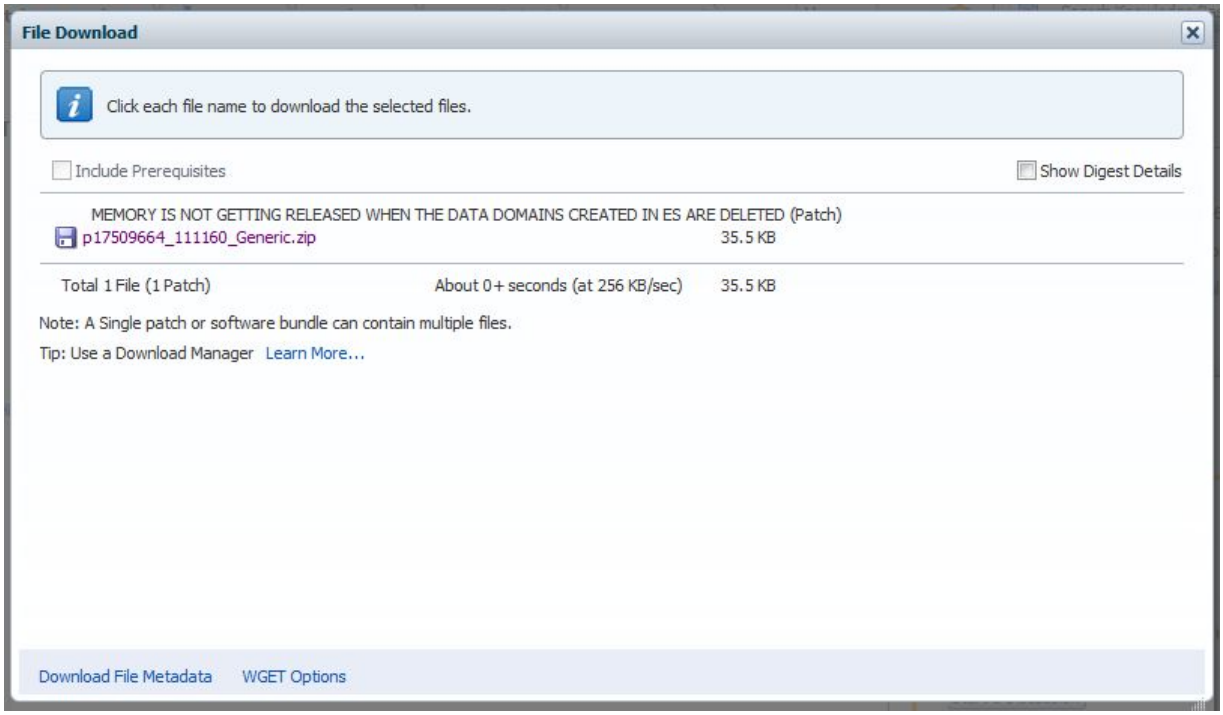
   https://support.oracle.com/epmos/faces/PatchDetail?patchId=17509664&languageId=en

2. Click on the patch link in the **`Patch Related Activity`** panel.

   The Patch Details page is displayed, with the Download panel on the right side of the page:

3. In the Download panel, click **Download**.

   The File Download dialog is displayed:



4. Click the **p17509664_111160_Generic.zip** link.
5. Save the file in a local directory.

   The name of the downloaded file is `p17509664_111160_Generic.zip`.
6. Close the File Download dialog by clicking the **x** in the corner.
7. Unpack the `p17509664_111160_Generic.zip` file into a local directory.

   A directory named `17509664` will result.
8. In the `17509664` directory, open the `README.txt` file with a text editor and install the patch by following the directions in the `README.txt` file.

The following steps are a quick version of step 8 on how to use the OPatch script to install the patch on a Windows machine:

1. Shut down WebLogic Server.
2. Open a command prompt in administrator mode. On Windows, you must run in administrator mode because OPatch will need admin rights to several directories to lock and create files.
3. To make it easier to use OPatch, add its path to your PATH variable while in the command prompt:

   ```
   set PATH=%PATH%;C:\Oracle\Middleware\oracle_common\OPatch
   ```
4. Change to the `17509664` directory where the patch was unpacked. For example:

   ```
   cd c:\PATCH_TOP\17509664
   ```
5. Run OPatch with the `apply` parameter and the `-oh` flag pointing to the ADF home directory:

```
opatch apply -oh c:\oracle\middleware\oracle_common
```

6. OPatch runs the prerequisite checks and tells you what it will do. If it prompts you for confirmation ("Do you want to proceed?" and "Is the local system ready for patching?"), answer `y` to the prompts.
7. When OPatch finishes, restart WebLogic Server.

The steps on a Linux machine are similar.

Note that if you receive a Java error at step 5, use the `-jdk` flag to specify the location of your Java SDK.

Increasing Linux file descriptors

You should increase the number of file descriptors from the 1024 default.

Having a higher number of file descriptors ensures that the WebLogic Server can open sockets under high load and not abort requests coming in from clients.

To increase the number of file descriptors on Linux:

1. Edit the `/etc/security/limits.conf` file.
2. Modify the **nofile** limit so that **soft** is 4096 and **hard** is 8192. Either edit existing lines or add these two lines to the file:

   ```
   *      soft      nofile      4096
   *      hard      nofile      8192
   ```

   The "*" character is a wildcard that identifies all users.

Customizing the WebLogic JVM heap size

You can change the default JVM heap size to fit the needs of your deployment.

The default JVM heap size for WebLogic is 3GB. The size is set in the `setDomainEnv.sh` file for Linux or `setDomainEnv.cmd` for Windows, which is in the `$DOMAIN_HOME/bin` directory. The heap size is set with the `-Xmx` option.

To change the WebLogic JVM heap size:

1. Open the `setDomainEnv` file in a text editor.
2. Search for this comment line:

   For Linux:

   ```
   # IF USER_MEM_ARGS the environment variable is set, use it to override ALL MEM_ARGS values
   ```

   For Windows:

   ```
   @REM IF USER_MEM_ARGS the environment variable is set, use it to override ALL MEM_ARGS
   values
   ```

3. Immediately after the comment line, add one of these lines:

   For Linux:

   ```
   export USER_MEM_ARGS="-Xms128m -Xmx3072m ${MEM_DEV_ARGS} ${MEM_MAX_PERM_SIZE}"
   ```

   For Windows:

```
set USER_MEM_ARGS=-Xms128m -Xmx3072m %MEM_DEV_ARGS% %MEM_MAX_PERM_SIZE%
```

4. Save the file.
5. Re-start WebLogic Server.

Adding the time-taken field to the WebLogic HTTP log

The `time-taken` field provides useful information when debugging Dgraph query-related issues.

By default, the `time-taken` field is not enabled in the WebLogic HTTP access log. Adding this field to the log would record the time taken to execute individual queries.

Because of its usefulness for debugging purposes, it is recommended that you enable this field. For details on customizing the WebLogic HTTP access log, see the Endeca Server logging chapter in the *Oracle Endeca Server Administrator's Guide*.

Using the Sales History sample data

A Sales History data set is supplied as a sample data set for an Endeca data domain.

The Sales History data set is used by a sample company that does a high volume of business. It therefore runs business statistics reports to aid in decision making. Many of these reports are time-based and nonvolatile (that is, they analyze past data trends). The statistics in the SH data set include annual, quarterly, monthly, and weekly sales figures by product. The company also runs reports on distribution channels through which its sales are delivered. When the company runs special promotions on its products, it analyzes the impact of the promotions on sales. It also analyzes sales by geographical area.

The Sales History data set is ready for use out of the box because the files have already been indexed by the Endeca Server. This eliminates the need to load source records into the Endeca Server. Note that the Sales History data set has one collection named Base.

Before you can use the Endeca data domain configured for the Sales History data set, place the Sales History indexed files into the offline directory of the Endeca Server and import them into a newly-created Endeca data domain.

To unpack and use the sample data files:

1. Unpack the sample data ZIP file to a directory of your choice.

   A directory named `sh_indexes` is created.
2. Make sure that both WebLogic Server and the Endeca Server application are up and running.
3. Copy the `sh_indexes` directory to the Endeca Server's offline directory.

   The location of the offline directory is set by the `endeca-offline-dir` parameter in the Endeca Server configuration file (named `EndecaServer.properties`, and located by default in the `$DOMAIN_HOME/config` directory).
4. Use the endeca-cmd `import-dd` command to create and enable an Endeca data domain, using the sh data files.

   You must specify a data domain that is not already in use. For example:

   ```
   endeca-cmd import-dd sh_sample --offline-name sh
   ```

The Endeca data domain named "sh_sample" is ready for use.

The Sales History data set has the following attributes:

Attribute name and data type	Attribute name and data type	Attribute name and data type
AFFINITY_CARD [boolean]	CUST_MAIN_PHONE_NUMBER [string]	PROD_EFF_FROM [dateTime]
AMOUNT_SOLD [double]	CUST_MARITAL_STATUS [string]	PROD_EFF_TO [dateTime]
CALENDAR_MONTH_DESC [string]	CUST_POSTAL_CODE [string]	PROD_FK [long]
CALENDAR_MONTH_ID [long]	CUST_SRC_ID [long]	PROD_ID [long]
CALENDAR_MONTH_NAME [string]	CUST_STATE_PROVINCE [string]	PROD_LIST_PRICE [double]
CALENDAR_MONTH_NUMBER [long]	CUST_STATE_PROVINCE_ID [long]	PROD_MIN_PRICE [double]
CALENDAR_QUARTER_DESC [string]	CUST_STREET_ADDRESS [string]	PROD_NAME [string]
CALENDAR_QUARTER_ID [long]	CUST_TOTAL [string]	PROD_PACK_SIZE [string]
CALENDAR_QUARTER_NUMBER [long]	CUST_TOTAL_ID [long]	PROD_SRC_ID [long]
CALENDAR_WEEK_NUMBER [long]	CUST_VALID [string]	PROD_STATUS [string]
CALENDAR_YEAR [long]	CUST_YEAR_OF_BIRTH [long]	PROD_SUBCATEGORY [string]
CALENDAR_YEAR_ID [long]	DAY_NAME [string]	PROD_SUBCATEGORY_DESC [string]
CalendarDate [string]	DAY_NUMBER_IN_MONTH [long]	PROD_SUBCATEGORY_ID [long]
Channel [string]	DAY_NUMBER_IN_WEEK [long]	PROD_TOTAL [string]
CHANNEL_CLASS [string]	DAYS_IN_CAL_MONTH [long]	PROD_TOTAL_ID [long]
CHANNEL_CLASS_ID [long]	DAYS_IN_CAL_QUARTER [long]	PROD_UNIT_OF_MEASURE [string]
CHANNEL_DESC [string]	DAYS_IN_CAL_YEAR [long]	PROD_VALID [string]
CHANNEL_FK [long]	DAYS_IN_FIS_MONTH [long]	PROD_WEIGHT_CLASS [long]
CHANNEL_ID [long]	DAYS_IN_FIS_QUARTER [long]	ProductCategory [string]
CHANNEL_TOTAL [string]	DAYS_IN_FIS_YEAR [long]	PROMO_BEGIN_DATE [dateTime]
CHANNEL_TOTAL_ID	EDUCATION [string]	PROMO_CATEGORY [string]

Attribute name and data type	Attribute name and data type	Attribute name and data type
COMMENTS [string]	END_OF_CAL_MONTH [dateTime]	PROMO_CATEGORY_ID [long]
COUNTRY_FK [long]	END_OF_CAL_QUARTER [dateTime]	PROMO_COST [double]
COUNTRY_ID [long]	END_OF_CAL_YEAR [dateTime]	PROMO_END_DATE [dateTime]
COUNTRY_ISO_CODE [string]	END_OF_FIS_MONTH [dateTime]	PROMO_FK [long]
COUNTRY_NAME [string]	END_OF_FIS_QUARTER [dateTime]	PROMO_ID [long]
COUNTRY_NAME_HIST [string]	END_OF_FIS_YEAR [dateTime]	PROMO_NAME [string]
COUNTRY_REGION [string]	FISCAL_MONTH_DESC [string]	PROMO_SUBCATEGORY [string]
COUNTRY_REGION_ID [long]	FISCAL_MONTH_ID [long]	PROMO_SUBCATEGORY_ID [long]
COUNTRY_SUBREGION [string]	FISCAL_MONTH_NAME [string]	PROMO_TOTAL [string]
COUNTRY_SUBREGION_ID [long]	FISCAL_MONTH_NUMBER [long]	PROMO_TOTAL_ID [long]
COUNTRY_TOTAL [string]	FISCAL_QUARTER_DESC [string]	Promotion [string]
COUNTRY_TOTAL_ID [long]	FISCAL_QUARTER_ID [long]	PurchaseHistory [string]
CUST_CITY [string]	FISCAL_QUARTER_NUMBER [long]	QUANTITY_SOLD [long]
CUST_CITY_ID [long]	FISCAL_WEEK_NUMBER [long]	SUPPLIER_FK [long]
CUST_CREDIT_LIMIT [long]	FISCAL_YEAR [long]	TIME_FK [dateTime]
CUST_EFF_FROM [dateTime]	FISCAL_YEAR_ID [long]	TIME_ID [dateTime]
CUST_EFF_TO [dateTime]	FiscalDate [string]	TRANSACTION_ID [long]
CUST_EMAIL [string]	Geography [string]	UNIT_COST [double]
CUST_FIRST_NAME [string]	HOUSEHOLD_SIZE [string]	UNIT_PRICE [double]
CUST_FK [long]	OCCUPATION [string]	WEEK_ENDING_DAY [dateTime]
CUST_GENDER [string]	PROD_CATEGORY [string]	WEEK_ENDING_DAY_ID [long]
CUST_ID [long]	PROD_CATEGORY_DESC [string]	YRS_RESIDENCE [long]
CUST_INCOME_LEVEL [string]	PROD_CATEGORY_ID [long]	
CUST_LAST_NAME [string]	PROD_DESC [string]	

Of these attributes, the following are managed attributes:

- `CalendarDate`
- `FiscalDate`
- `Geography`
- `ProductCategory`
- `Promotion`

Chapter 8

Uninstalling Oracle Endeca Server

This section contains the procedures for uninstalling the Oracle Endeca Server.

Uninstalling Oracle Endeca Server

Follow these steps to uninstall the Oracle Endeca Server from your Linux or Windows machine.

Before you begin the uninstallation process, back up files that you want to retain from the Oracle Endeca Server directory. On Windows, make sure that there no open files in the Oracle Endeca Server directory.

The deinstaller used in this task is located in the `$ENDECA_HOME/oui/bin` directory. For example, the default absolute path on Windows is:

```
C:\Oracle\Middleware\EndecaServer7.6.1\oui\bin
```

The deinstaller file is named:

- For Linux: `runInstaller`
- For Windows: `setup.exe`

Important: Do not confuse this deinstaller with the installer with which you installed Endeca Server (that is, the installer in the `endecaserver/Disk1` directory that you unzipped). The file names for both the deinstaller and the installer are the same (`runInstaller` for Linux and `setup.exe` for Windows). However, the deinstaller supports the `-deinstall` option, but not the `-install` option, while the installer is the opposite (it supports the `-install` option, but not the `-deinstall` option).

Also note that this procedure does not delete the Endeca Server domain on the WebLogic Server. Instructions to remove the Endeca Server domain are in the following topic.

To uninstall the Oracle Endeca Server software:

1. Stop WebLogic Server (this also stops the Endeca Server application).
2. Open a command prompt and change to the `$ENDECA_HOME/oui/bin` directory.
3. Run the deinstaller with this command:
   - For Linux: `./runInstaller -deinstall -jreLoc <jre_location>`
   - For Windows: `setup.exe -deinstall -jreLoc <jre_location>`

   jre_location is the full path to the location of a Java 6 JRE (Java Runtime Environment) on your system. Note that the path cannot contain spaces. For example, on Windows:

```
setup.exe -deinstall -jreLoc c:\java\jdk1.6.0_43
```

When the deinstaller runs, it displays the deinstallation wizard's Welcome screen.

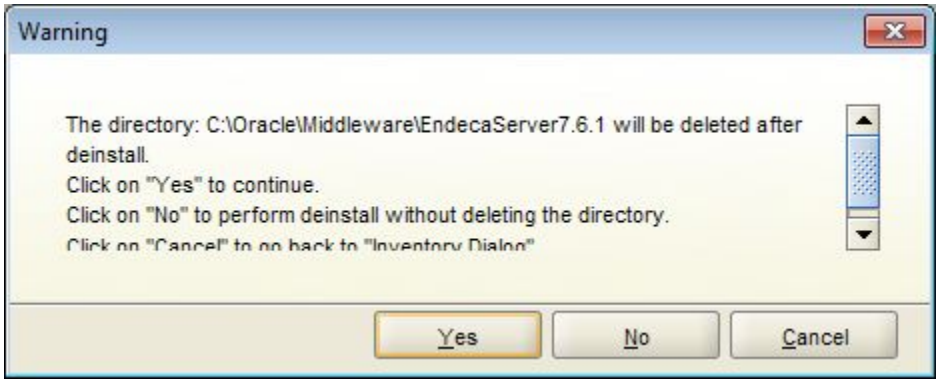
4. Before continuing to the **Welcome** screen, either close the command prompt or change to a directory outside the Endeca Server root directory.

   On Windows, for example, the directory (in which the prompt is open) cannot be completely deleted because of the open command window.

5. At the **Welcome** screen, read the information and click **Next**.

6. At the **Deinstall Oracle Home** screen, verify the deinstallation details and click **Deinstall**.

7. At the confirmation warning message, either click **Yes** (to delete the entire Endeca Server home directory) or No (to deinstall but retain the directory).



8. At the **Deinstallation Complete** screen, click **Finish** to exit the wizard.

This procedure does not remove the Endeca Server domain files from WebLogic Server. Therefore, the next step is to remove the Endeca Server domain from WebLogic Server.

Removing the Endeca Server domain

This topic describes how to manually remove the Endeca Server domain from the WebLogic Server.

The Endeca Server un-installer does not remove the Endeca Server domain files from WebLogic Server. Therefore, you must manually remove the Endeca Server domain from WebLogic Server, as described in this procedure. The procedure will assume that `endeca_server_domain` is the name of the Endeca Server domain.

To remove the Endeca Server domain from WebLogic Server:

1. Make sure WebLogic Server is stopped.
2. Using a text editor, open the `$MW_HOME/domain-registry.xml` file and remove the `endeca_server_domain` entry from the file.

```
<?xml version="1.0" encoding="UTF-8"?>
```

```
<domain-registry xmlns="http://xmlns.oracle.com/weblogic/domain-registry">
  <domain location="C:\Oracle\Middleware\user_projects\domains\endeca_server_domain"/>
</domain-registry>
```

3. Delete the `$MW_HOME/user_projects/domains/endeca_server_domain` directory.

Uninstalling an Endeca Server cluster

To uninstall an Endeca Server cluster, follow the steps for uninstalling the Endeca Server instances on each machine, and then remove the Endeca Server domain.

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