

## **Oracle® Fusion Middleware**

Planning an Installation of Oracle Fusion Middleware

12c (12.2.1)

**E58100-01**

October 2015

Documentation for installers and system administrators that describes how to plan and prepare your system for installing and configuring an Oracle Fusion Middleware product.

Oracle Fusion Middleware Planning an Installation of Oracle Fusion Middleware, 12c (12.2.1)

E58100-01

Copyright © 2015, Oracle and/or its affiliates. All rights reserved.

Primary Author: Phil Stubbs

Contributing Authors: Peter LaQuerre

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

If this is software or related documentation that is delivered to the U.S. Government or anyone licensing it on behalf of the U.S. Government, then the following notice is applicable:

U.S. GOVERNMENT END USERS: Oracle programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, delivered to U.S. Government end users are "commercial computer software" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, use, duplication, disclosure, modification, and adaptation of the programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, shall be subject to license terms and license restrictions applicable to the programs. No other rights are granted to the U.S. Government.

This software or hardware is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications that may create a risk of personal injury. If you use this software or hardware in dangerous applications, then you shall be responsible to take all appropriate fail-safe, backup, redundancy, and other measures to ensure its safe use. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software or hardware in dangerous applications.

Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Xeon are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Opteron, the AMD logo, and the AMD Opteron logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group.

This software or hardware and documentation may provide access to or information about content, products, and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third-party content, products, and services unless otherwise set forth in an applicable agreement between you and Oracle. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third-party content, products, or services, except as set forth in an applicable agreement between you and Oracle.

---

---

# Contents

<b>Preface</b> .....	v
Intended Audience .....	v
Documentation Accessibility .....	v
Related Documents.....	v
Conventions.....	vi
<b>What's New In This Guide</b> .....	vii
New and Changed Features for Release 12c (12.2.1).....	vii
New and Changed Features for Release 12c (12.1.3).....	vii
<b>1 Understanding Your Installation Starting Point</b>	
1.1 Starting as a New Oracle Fusion Middleware User .....	1-1
1.2 Starting as an Oracle Fusion Middleware 11g User .....	1-2
1.3 Starting as an Oracle Application Server 10g User.....	1-2
<b>2 Selecting a Development, Test, or Production Environment</b>	
2.1 Planning for a Development Environment.....	2-1
2.1.1 Definition of an Oracle Fusion Middleware Development Environment .....	2-1
2.1.2 Understanding the Types of Oracle Fusion Middleware Development Environments .....	2-2
2.2 Planning for a Production Environment .....	2-4
2.2.1 Overview of Planning for a Production Environment.....	2-4
2.2.2 Starting with a Standard Installation Topology and Scaling Out .....	2-5
2.2.3 Planning an Enterprise Deployment Right Away .....	2-8
2.3 Planning for a Test Environment.....	2-8
<b>3 Preparing for an Oracle Fusion Middleware Installation</b>	
3.1 Understanding and Obtaining Product Distributions .....	3-1
3.1.1 Understanding Product Distributions.....	3-1
3.1.2 Download Sites for Obtaining Product Distributions.....	3-3
3.2 Verifying Certification, System Requirements, and Interoperability .....	3-3

3.3	Understanding the Software Required for an Oracle Fusion Middleware Product	
	Installation.....	3-4
3.3.1	Understanding Database Requirements for an Oracle Fusion Middleware Installation .....	3-4
3.3.2	Understanding JDK Requirements for an Oracle Fusion Middleware Installation ...	3-5
3.4	Understanding the Standard Installation Topology.....	3-5
3.5	Selecting an Installation User.....	3-5
3.5.1	Understanding User Permissions .....	3-6
3.5.2	Understanding Non-Default User Permissions on UNIX Operating Systems .....	3-8
3.5.3	Verifying the Installation User has Administrator Privileges on Windows Operating Systems.....	3-8
3.6	Understanding Directories for Installation and Configuration .....	3-9
3.6.1	Understanding the Recommended Directory Structure.....	3-9
3.6.2	About the Oracle Home Directory.....	3-10
3.6.3	About the Domain Home Directory .....	3-11
3.6.4	About the Application Home Directory .....	3-11
3.6.5	Methods for Installing Multiple Products in the Same Domain .....	3-11
3.6.6	Preparing for Shared Storage.....	3-12
3.7	About Oracle Configuration Manager.....	3-12

---

# Preface

This document covers common tasks and topics to consider prior to beginning your actual software installation.

## Intended Audience

This guide is intended for developers and system administrators who are installing Oracle Fusion Middleware products for the first time and are comfortable running some system administration operations, such as creating users and groups, adding users to groups, and installing operating system patches on the computer where the products are going to be installed.

Users on UNIX systems who are installing Oracle Fusion Middleware need root access to run some scripts.

## Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc>.

### Access to Oracle Support

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

## Related Documents

For additional information, see the following manuals:

- *Oracle Fusion Middleware Understanding Oracle Fusion Middleware*. This book introduces the common terms and concepts in an Oracle Fusion Middleware environment.
- *Oracle Fusion Middleware Administering Oracle Fusion Middleware*. This book contains information for managing your Oracle Fusion Middleware environment after installation and configuration is complete.
- *Oracle Fusion Middleware High Availability Guide*. This book contains information for installing Oracle Fusion Middleware in high availability environments.

## Conventions

The following text conventions are used in this document:

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

---

# What's New In This Guide

This preface introduces the new features and changes regarding the installation and configuration tools and processes for Oracle Fusion Middleware 12c.

Follow the pointers for additional information about the features and how to use them.

## New and Changed Features for Release 12c (12.2.1)

The following topics introduce the new and changed installation and configuration tools and processes features for 12c (12.2.1).

- Oracle Fusion Middleware 12c (12.2.1) introduces updated releases for the distributions provided in 12c (12.1.3) and provides the following additional distributions:
  - Oracle Fusion Middleware 12c (12.2.1.0.0) WebCenter Sites
  - Oracle Fusion Middleware 12c (12.2.1.0.0) WebCenter Content
  - Oracle Fusion Middleware 12c (12.2.1.0.0) WebCenter Portal
  - Oracle Fusion Middleware 12c (12.2.1.0.0) Traffic Director
  - Oracle Fusion Middleware 12c (12.2.1.0.0) Business Intelligence

For more information about the new and changed features for specific Oracle Fusion Middleware products, see the appropriate product documentation.

For example, for new and changed features in Oracle SOA Suite 12c (12.2.1), see "What's New in This Guide" in *Administering Oracle SOA Suite and Oracle Business Process Management Suite*.

## New and Changed Features for Release 12c (12.1.3)

The following topics introduce the new and changed installation and configuration tools and processes features for 12c (12.1.3).

- Oracle Fusion Middleware 12c (12.1.3) introduces updated releases for the distributions provided in 12c (12.1.2) and provides the following additional distributions:
  - Oracle Fusion Middleware 12c (12.1.3.0.0) SOA Suite and Business Process Management
  - Oracle Fusion Middleware 12c (12.1.3.0.0) B2B and Healthcare

- Oracle Fusion Middleware 12c (12.1.3.0.0) Business Process Management Quick Start for Developers
- Oracle Fusion Middleware 12c (12.1.3.0.0) SOA Suite Quick Start for Developers
- Oracle Fusion Middleware 12c (12.1.3.0.0) Service Bus
- Oracle Fusion Middleware 12c (12.1.3.0.0) Event Processing
- Oracle Fusion Middleware 12c (12.1.3.0.0) Managed File Transfer
- Oracle Fusion Middleware 12c (12.1.3.0.0) Data Integrator
- Oracle Fusion Middleware 12c (12.1.3.0.0) Enterprise Data Quality
- Oracle Fusion Middleware 12c (12.1.3.0.0) Data Service Integrator
- Oracle Fusion Middleware 12c (12.1.3.0.0) GoldenGate Monitor and Veridata
- Oracle Fusion Middleware 12c (12.1.3.0.0) MapViewer



---

# Understanding Your Installation Starting Point

Oracle Fusion Middleware is a collection of standards-based software products that spans a range of tools and services from J2EE and developer tools to integration services.

This guide provides important information about the initial planning for an Oracle Fusion Middleware 12c installation. It also provides key information about preparing your system and for obtaining the latest version of Oracle Fusion Middleware.

Find the starting point that best describes your current environment and go to that section for more information:

- [Starting as a New Oracle Fusion Middleware User](#)
- [Starting as an Oracle Fusion Middleware 11g User](#)
- [Starting as an Oracle Application Server 10g User](#)

## 1.1 Starting as a New Oracle Fusion Middleware User

If you are a new Oracle Fusion Middleware user, consider the following roadmap for reviewing the Oracle Fusion Middleware documentation:

1. Review *Understanding Oracle Fusion Middleware* before proceeding with an installation or upgrade.

*Understanding Oracle Fusion Middleware* contains important information about key Fusion Middleware features, such as Oracle WebLogic Server, the Oracle Application Server Infrastructure, and other Oracle Fusion Middleware products.

It also includes key introductory information, such as a summary of the directory structure of Oracle Fusion Middleware installations, that you should be familiar with before you install any product.

2. Review the remaining chapters in this guide:
  - [Selecting a Development, Test, or Production Environment](#) introduces you to some key considerations when planning for a development, test, or production installation.
  - [Preparing for an Oracle Fusion Middleware Installation](#) provides key procedures for preparing your system for an Oracle Fusion Middleware installation.
3. Review the Install, Patch, and Upgrade page in the Oracle Fusion Middleware 12c documentation library.

This Install, Patch, and Upgrade page contains a list of common installation, patching, and upgrading tasks, as well a list of the installation guides (on the **Books** tab) for all the Oracle Fusion Middleware products.

## 1.2 Starting as an Oracle Fusion Middleware 11g User

If you are an existing Oracle Fusion Middleware 11g user, refer to the Oracle Fusion Middleware 12c upgrade documentation.

See Planning an Upgrade to Oracle Fusion Middleware 12c in *Planning an Upgrade of Oracle Fusion Middleware* for information about the new Oracle Fusion Middleware 12c concepts and terminology.

Refer to the instructions in the following component-specific upgrade documentation to upgrade your 11g components to 12c (12.2.1):

- *Oracle Fusion Middleware Planning an Upgrade of Oracle Fusion Middleware*
- *Oracle Fusion Middleware Upgrading Oracle WebLogic Server*
- *Oracle Fusion Middleware Upgrading to the Oracle Fusion Middleware Infrastructure*
- *Oracle Fusion Middleware Upgrading Oracle HTTP Server*
- *Oracle Fusion Middleware Upgrading Oracle SOA Suite and Business Process Management*
- *Oracle Fusion Middleware Upgrading Oracle Data Integrator*
- *Oracle Fusion Middleware Upgrading Oracle WebCenter*
- *Oracle Fusion Middleware Migration Guide for Oracle Business Intelligence*
- *Oracle Fusion Middleware Upgrading with the Upgrade Assistant*

These documents are available from the Install, Patch, and Upgrade page in the Oracle Fusion Middleware 12c documentation library.

## 1.3 Starting as an Oracle Application Server 10g User

You cannot upgrade directly from Oracle Application Server 10g to Oracle Fusion Middleware 12c . Instead, you must first upgrade to Oracle Fusion Middleware 11g, and then upgrade to Oracle Fusion Middleware 12c .

For information about upgrading from Oracle Application Server 10g to Oracle Fusion Middleware 11g Release 1 (11.1.1.9.0), refer to the [Oracle Fusion Middleware Upgrade Planning Guide](#), as well as the other upgrade guides in the Oracle Fusion Middleware 11g documentation library.

---

# Selecting a Development, Test, or Production Environment

This chapter provides information to help you select, install, and configure an Oracle Fusion Middleware environment.

The following sections are included:

- [Planning for a Development Environment](#)
- [Planning for a Production Environment](#)
- [Planning for a Test Environment](#)

## 2.1 Planning for a Development Environment

This section provides information to help you install and maintain an Oracle Fusion Middleware environment for application developers.

This section contains the following topics:

- [Definition of an Oracle Fusion Middleware Development Environment](#)
- [Understanding the Types of Oracle Fusion Middleware Development Environments](#)

### 2.1.1 Definition of an Oracle Fusion Middleware Development Environment

An Oracle Fusion Middleware **development environment** is typically an installation on a single host computer (such as a Microsoft Windows desktop or laptop computer or a Linux computer). A development environment is typically for a single software engineer, who is developing applications to be later deployed on Oracle WebLogic Server or another Oracle Fusion Middleware product, such as Oracle SOA Suite.

The requirements for a development environment are very different from the requirements for a production environment, which is discussed in [Planning for a Production Environment](#).

There is no need for high availability in a development environment, and the number of components and products that can be installed is typically limited to those required by the software engineer or the application that the software engineer is developing.

A development environment is usually centered around an Integrated Development Environment (or IDE), such as Eclipse or Oracle JDeveloper.

## 2.1.2 Understanding the Types of Oracle Fusion Middleware Development Environments

The following sections summarize the types of Oracle Fusion Middleware development environments you can install and configure for your application developers:

- [About Oracle JDeveloper and the Integrated Oracle WebLogic Server](#)
- [About the Oracle SOA Suite and Oracle Business Process Management Quick Start Distributions](#)
- [Additional Development Environment Options](#)

### 2.1.2.1 About Oracle JDeveloper and the Integrated Oracle WebLogic Server

One of the most efficient ways to set up a development environment for Oracle Fusion Middleware software developers is to simply install Oracle JDeveloper.

Specifically, Oracle JDeveloper Studio provides a common Integrated Development Environment (IDE) that can be used to develop a wide range of Oracle Fusion Middleware applications, including Java applications and Oracle Application Development Framework (Oracle ADF) applications.

Oracle JDeveloper also provides Integrated Oracle WebLogic Server, which can be run from within Oracle JDeveloper to quickly and easily test and validate your Java and Oracle ADF applications you are developing. No additional installation or configuration is required.

For more information, see "About JDeveloper" in *Developing Applications with Oracle JDeveloper*.

For more information about developing Oracle ADF applications, see "Overview of Oracle ADF" in *Understanding Oracle Application Development Framework*.

### 2.1.2.2 About the Oracle SOA Suite and Oracle Business Process Management Quick Start Distributions

Oracle offers a set of quick start distributions that provide Oracle JDeveloper and the required Oracle JDeveloper IDE extensions for developing Oracle SOA Suite and Oracle Business Process Management applications:

- Oracle SOA Suite Quick Start for Developers
- Oracle Business Process Management Quick Start for Developers

When you install these distributions, you not only get Oracle JDeveloper, but all the required software for developing Oracle SOA Suite and Oracle Business Process Management applications. The built-in Integrated Oracle WebLogic Server also includes many of the required libraries and Oracle SOA Suite infrastructure for testing and validating the applications as you develop within Oracle JDeveloper.

For more information, see "Introducing the Quick Start Distributions" in *Oracle Fusion Middleware Installing SOA Suite and Business Process Management Suite Quick Start for Developers*.

### 2.1.2.3 Additional Development Environment Options

In addition to using the Integrated Oracle WebLogic Server software available with Oracle JDeveloper, you can also consider additional options for an Oracle Fusion Middleware development environment.

For more information, see the following sections:

- [About Oracle Fusion Middleware Compact Domains](#)
- [About Using a Remote Oracle Fusion Middleware Domain for Testing and Deploying Applications](#)

#### 2.1.2.3.1 About Oracle Fusion Middleware Compact Domains

A **compact domain** is an Oracle WebLogic Server domain where all the software libraries, supporting technologies, and applications are deployed to the Administration Server.

Compact domains are not supported for production environments, but they can be useful in specific development environments where the Integrated Oracle WebLogic Server within Oracle JDeveloper does not provide the required Fusion Middleware extensions for JDeveloper for testing your specific custom applications.

For example, the integrated WebLogic Server in the Oracle SOA Suite Quick Start distribution does not include required Managed File Transfer runtime software for testing your applications.

In these specific situations, you can install the required software and then use the Oracle Fusion Middleware Configuration Wizard in the Quick Start Oracle home to configure a compact domain for development purposes only. The result is a compact domain that includes the required runtime software to test the applications you are developing in JDeveloper.

Note that for most Oracle Fusion Middleware products, a separate database is required, which is where the required schemas must be created.

Application developers can then use Oracle JDeveloper to connect to the database, connect to the compact domain, and deploy your applications from Oracle JDeveloper.

For more information, see "Configuring a Compact Domain" in *Oracle Fusion Middleware Installing SOA Suite and Business Process Management Suite Quick Start for Developers*.

For more information about connecting Oracle JDeveloper to a remote database and Oracle WebLogic Server domain, see "Connecting and Working with Databases" and "How to Create a Connection to the Target Application Server" in *Developing Applications with Oracle JDeveloper*.

#### 2.1.2.3.2 About Using a Remote Oracle Fusion Middleware Domain for Testing and Deploying Applications

Another option for developers is to deploy applications to remote Oracle WebLogic Server or Oracle Fusion Middleware domain.

In this scenario, you can use the Oracle Fusion Middleware product distributions and the product installation guides to install a standard installation topology on a single host. You can then add additional Oracle Fusion Middleware products as needed.

Note that for most Oracle Fusion Middleware products, a separate database is required, which is where the required schemas must be installed.

Application developers can then use Oracle JDeveloper to connect to the database, connect to the compact domain, and deploy your applications from Oracle JDeveloper.

For more information about installing Oracle Fusion Middleware products, see the "Install, Patch, and Upgrade" page in the Oracle Fusion Middleware 12c (12.2.1) Documentation Library on the Oracle Technology Network (OTN).

For more information about connecting Oracle JDeveloper to a remote database and Oracle WebLogic Server domain, see "Connecting and Working with Databases" and "How to Create a Connection to the Target Application Server" in *Developing Applications with Oracle JDeveloper*.

## 2.2 Planning for a Production Environment

This section describes the roadmap of related documents from pre-installation to configuring high availability.

The following sections are included:

- [Overview of Planning for a Production Environment](#)
- [Starting with a Standard Installation Topology and Scaling Out](#)
- [Planning an Enterprise Deployment Right Away](#)

### 2.2.1 Overview of Planning for a Production Environment

An Oracle Fusion Middleware production environment is an installation where the Oracle Fusion Middleware products have been configured to deploy production-ready applications and features to your application users.

Unlike a development environment, a production system typically takes advantage of more advanced Oracle Fusion Middleware features, such as Oracle WebLogic Server clusters and is deployed to multiple host computers.

For more information, see [Approaches to Installing a Production Environment](#).

#### 2.2.1.1 Approaches to Installing a Production Environment

A production environment can range in size and purpose, but the way you go about setting up a production environment can vary:

- For example, you can start with a **standard installation topology**, for deploying applications to a relatively small organization.

This topology has no high availability or advanced security features, but it typically can serve as a starting point for adding additional products, functionality, and for scaling out to a larger enterprise deployment.

- In contrast, an **enterprise deployment** is typically a larger, more complex, secure, highly available production environment that has been configured to handle a large number of requests, a large number of users, and mission-critical applications.

Starting with an enterprise deployment requires additional planning and the availability of hardware and software resources.

## 2.2.2 Starting with a Standard Installation Topology and Scaling Out

The following sections describe how you can get started quickly with a standard installation topology and then consider adding additional components and scaling out to a highly available environment later:

- [Advantages of Starting Small and Scaling Out](#)
- [About the Product Installation Guides and the Standard Installation Topologies](#)
- [An Example of Starting Small and Scaling Out](#)

### 2.2.2.1 Advantages of Starting Small and Scaling Out

When you start with a standard installation topology, you can install one of the Oracle Fusion Middleware products in a clustered environment on a single host. You can then start developing and deploying applications.

As the capabilities of your applications grow, you can extend the domain to add additional Oracle Fusion Middleware products, or you can scale out your domain to handle an increased load by adding additional hardware or virtual machines.

This gradual expansion of Oracle Fusion Middleware products and capabilities allows you to make intelligent decisions about how and when to add additional features, capabilities, and resources to your environment, based on real-world experiences.

---

---

**Note:**

A successful scale out or scale up plan requires a valid starting point, such as one of the standard installation topologies described in the Oracle Fusion Middleware product installation guides.

You cannot use a compact domain as a starting point for scaling out to a production environment. Compact domains are for development only. For more information, see "Understanding Domain Configurations" in *Oracle Fusion Middleware Installing SOA Suite and Business Process Management Suite Quick Start for Developers*.

---

---

### 2.2.2.2 About the Product Installation Guides and the Standard Installation Topologies

To install a standard installation topology, you use the Oracle Fusion Middleware product installation guides.

In general, each Oracle Fusion Middleware distribution has a corresponding installation guide.

For example, to install the Oracle Application Server Infrastructure, you use *Oracle Fusion Middleware Installing and Configuring the Oracle Fusion Middleware Infrastructure*. To install Oracle SOA Suite and Oracle Business Process Management, you use *Oracle Fusion Middleware Installing and Configuring Oracle SOA Suite and Business Process Management*.

Each installation guide identifies at least one **standard installation topology**, which is used as an example of how you might configure the corresponding software in an Oracle WebLogic Server cluster of Managed Servers on a single host computer. The

installation guide provides step-by-step instructions for installing and configuring the standard installation topology.

Along the way, tips provide links to more information about alternative options, as well as links to key concepts that are described elsewhere in the Oracle Fusion Middleware documentation.

The installation guides also provide a set of "Next Steps," which you can review after you complete the installation. The Next Steps include links to information ranging from adding an Oracle HTTP Server front-end to scaling out the domain to additional computers for high availability.

And finally, many of the installation guides provide secondary topologies, which demonstrate how you might configure an alternative topology with select products to meet the needs of your organization.

### 2.2.2.3 An Example of Starting Small and Scaling Out

The standard installation topology for Oracle Fusion Middleware Infrastructure can be used as a starting point for your production environment.

The documentation is designed to take this standard installation topology and, by adding additional products and capabilities, arrive at the standard topology for high availability.

---

---

**Note:**

The topologies represented are the defined standard installation topologies (see [Understanding the Standard Installation Topology](#)). As needed, links to additional tasks and documentation are provided if your environment requires additional features or components.

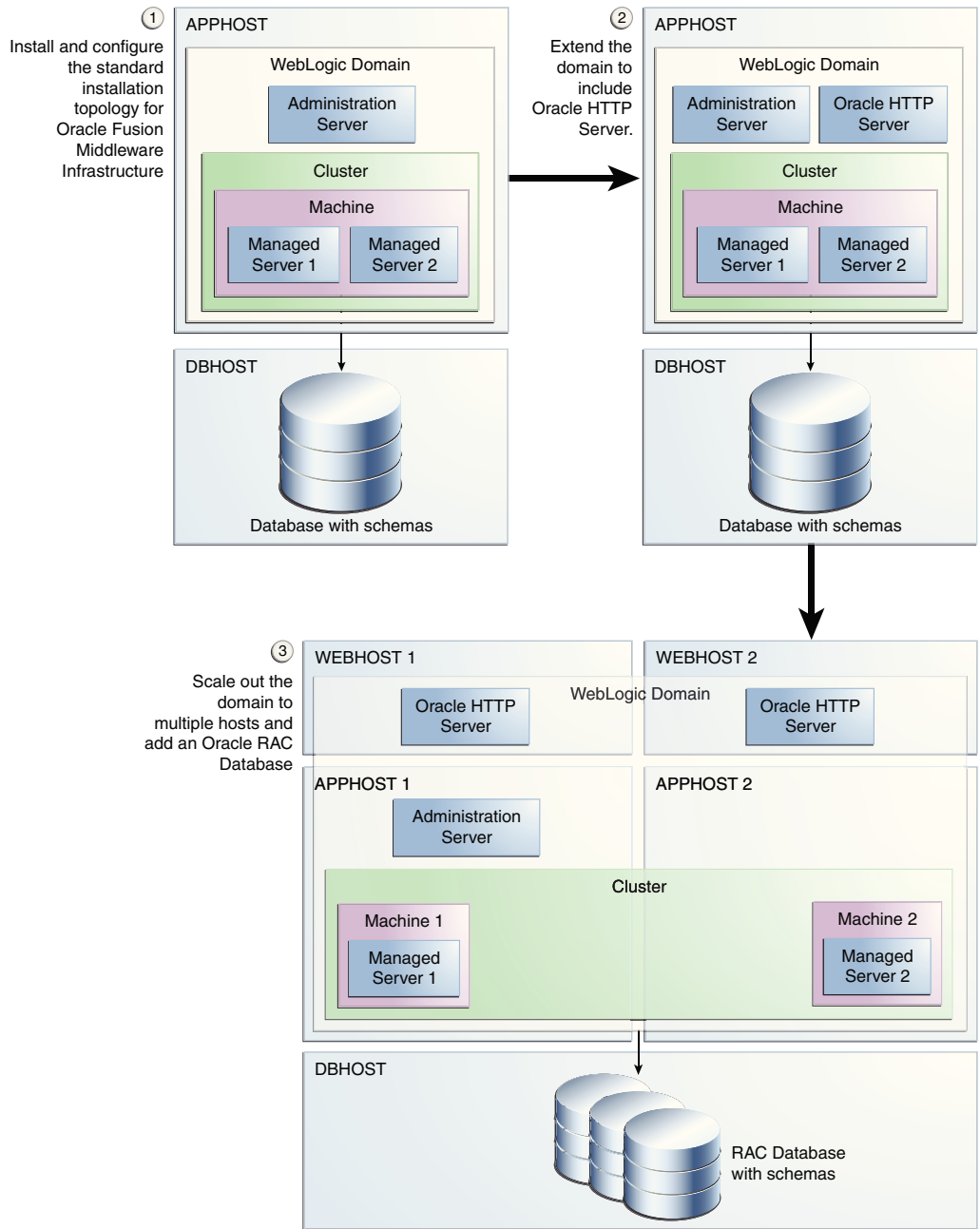
This diagram also reflects a new feature of Fusion Middleware 12c, where the Oracle HTTP Server instances can be added to an existing Fusion Middleware Infrastructure domain using the Configuration Wizard. For more information, see *Oracle Fusion Middleware Installing and Configuring Oracle HTTP Server*.

---

---



**Figure 2-1 Starting Small and Scaling Out**



**Table 2-1 Documentation Roadmap for Staring Small and Scaling Out**

Task	More Information
Install and configure the standard installation topology for Oracle Fusion Middleware Infrastructure.	<i>Installing and Configuring the Oracle Fusion Middleware Infrastructure</i>
Extend the domain to include Oracle HTTP Server.	"Planning Your Oracle HTTP Server Installation" in <i>Installing and Configuring Oracle HTTP Server</i>

Task	More Information
Scale out the domain to multiple hosts and add an Oracle RAC Database.	"Scaling Out a Topology (Machine Scale Out)" in the <i>Oracle Fusion Middleware High Availability Guide</i>

## 2.2.3 Planning an Enterprise Deployment Right Away

If you already know the requirements for your enterprise software solution, and if you know what Oracle Fusion Middleware software to deploy, then you can start planning a complete enterprise deployment right away.

The following sections provide more information:

- [Advantages of an Enterprise Deployment](#)
- [About the Enterprise Deployment Guide and High Availability Guide](#)

### 2.2.3.1 Advantages of an Enterprise Deployment

In contrast to starting small and scaling out, a full enterprise deployment is a good choice if you already have a good idea about the capabilities and resources required for your Oracle Fusion Middleware deployment through appropriate load testing.

Planning for an enterprise deployment involves understanding the topology you want to create and then identifying the required hardware, network, storage, and database resources before you begin. This allows you to invest in the required resources all at once and speeds up the process of arriving at an environment where you can meet all the needs of your customers and all your enterprise users.

### 2.2.3.2 About the Enterprise Deployment Guide and High Availability Guide

To implement an Oracle Fusion Middleware enterprise deployment topology, Oracle provides the following enterprise deployment guides:

- *Enterprise Deployment Guide for Oracle SOA Suite.*
- *Enterprise Deployment Guide for Oracle Business Intelligence*
- *Enterprise Deployment Guide for Oracle WebCenter Content*
- *Enterprise Deployment Guide for Oracle WebCenter Portal*

The Enterprise Deployment Guide provides a comprehensive example for installing, configuring, and maintaining a secure, highly available, production-quality deployment of selected Oracle Fusion Middleware products. This resulting environment is known as an enterprise deployment topology.

For more information, see "About the Enterprise Deployment Guide" in the *Enterprise Deployment Guide for Oracle SOA Suite*.

## 2.3 Planning for a Test Environment

Oracle provides different software distributions for development and production environments. As a result, it is important to understand the characteristics of these environments before you begin downloading, installing, and configuring Oracle Fusion Middleware.

Test environments vary from organization to organization, and can be based on either a development environment or a production environment, based on the specific needs of the software development team.

For example, consider the following types of test environments:

- Functional test environments, which use lightweight servers to test the use cases of your applications and to find any functional issues (for example, functional acceptance tests performed by quality assurance teams).
- Integration test environments, which are equipped to test how well application components or external systems interact with your applications.
- Load and Performance test environments, which are scaled to match the processing power or hardware of a production environment in order to predict and derive metrics, such as execution times or CPU utilization, from the load test results.
- High Availability test environments, which are used to test failover and load balancing. These environments are often combined with Load and Performance test environments.

For each of these types of test environments, consider whether it is best to start with a basic development environment, as described in [Planning for a Development Environment](#), if it's best to start with a single-host clustered production environment and scale out as needed, as described in [Starting with a Standard Installation Topology and Scaling Out](#), or whether you need to plan for a full enterprise deployment, modeled after the enterprise deployment model in [Planning an Enterprise Deployment Right Away](#), and which mirrors your actual production department.



---

# Preparing for an Oracle Fusion Middleware Installation

This chapter provides important information about preparing your system and instructions for obtaining, installing, and configuring the latest version of Oracle Fusion Middleware.

Oracle Fusion Middleware is a collection of standards-based software products that spans a range of tools and services from J2EE and developer tools, to integration services, business intelligence, collaboration, and content management. Oracle Fusion Middleware offers complete support for development, deployment, and management.

The procedures you will need to follow will vary depending on the configuration of your existing system and the environment you want to create at the end of the installation and configuration process.

This chapter contains the following topics:

- [Understanding and Obtaining Product Distributions](#)
- [Verifying Certification\\_ System Requirements\\_ and Interoperability](#)
- [Understanding the Software Required for an Oracle Fusion Middleware Product Installation](#)
- [Understanding the Standard Installation Topology](#)
- [Selecting an Installation User](#)
- [Understanding Directories for Installation and Configuration](#)
- [About Oracle Configuration Manager](#)

## 3.1 Understanding and Obtaining Product Distributions

This section contains the following topics:

- [Understanding Product Distributions](#)
- [Download Sites for Obtaining Product Distributions](#)

### 3.1.1 Understanding Product Distributions

Oracle Fusion Middleware 12c software is available as a series of product distributions. A distribution is an archive file containing an installer; when you run the installer, the set of Oracle Fusion Middleware products and feature sets (defined below) that are included with the distribution are installed.

An example of a product distribution is the Oracle WebLogic Server and Coherence Distribution; note that the products and feature sets will differ depending on your Oracle Fusion Middleware product:

**Table 3-1 Understanding Distributions, Products, and Features**

Distribution	Products	Feature Sets
Oracle WebLogic Server and Coherence (fmw_12.2.1.0.0_wls.jar)	Core Server	Core Application Server Coherence Product Files Web 2.0 HTTP Pub-Sub Server WebLogic SCA WebLogic Client JARs
	Administrative Tools	Administration Console Additional Language Help Files CIE WLS Config
	Database Support	Third-Party JDBC Drivers WebLogic Evaluation Database
	Open Source Components	Third-Party Jackson Third-Party Jersey Third-Party Maven Apache
	Examples	Server Examples Coherence examples
	Oracle Installation Infrastructure	OPatch nginst_core

A description of each column in this table follows:

- The **Distribution** column contains the name and actual file name of the distribution that you can download.
- The items in the **Products** column may or may not be installed, depending on the installation type you select when you run the product installer. Most Oracle Fusion Middleware products offer two or three different installation types, and not all products are available with all installation types.

In this particular example, some Oracle WebLogic Server and Coherence install types include the Examples, while others do not.

- The **Feature Sets** column describes what is included with each product.

You do not have the option of selecting or de-selecting feature sets for installation. All feature sets within a product will be installed.

In this particular example, if you choose an install type that includes Examples, both Server Examples and Coherence Examples will be installed; you will not have the option of selecting one or the other.

In situations where the same feature set may exist in multiple products, the existing feature set will not be reinstalled if the same version is already present. If the feature set is a different version and is compatible with the existing feature version, a new version will be installed.

If there are incompatibilities (for example, due to the version numbers not matching) then the installer will issue an error message and will not overwrite the existing feature set.

### 3.1.2 Download Sites for Obtaining Product Distributions

Oracle provides multiple locations for downloading Oracle Fusion Middleware and the software it requires.

**Table 3-2 Oracle Fusion Middleware Product Download Sites**

Oracle Web Site	Purpose and Location
Oracle Technology Network	<p>If you are a developer, go to the Oracle Technology Network (OTN) to download Oracle software under the terms of the OTN Developer License.</p> <p><a href="http://www.oracle.com/technetwork/indexes/downloads/index.html">http://www.oracle.com/technetwork/indexes/downloads/index.html</a></p> <p><b>Note:</b> Oracle Technology Network requires free registration.</p>
My Oracle Support	<p>If you are a customer with a valid support agreement with Oracle and you want to download software patches, updates and fixes, then go to My Oracle Support:</p> <p><a href="http://support.oracle.com">http://support.oracle.com</a></p>
Oracle Software Delivery Cloud	<p>If you have purchased an Oracle software license and you want to download software under the terms of that license, or if you want to download Oracle software under the terms of the Oracle Electronic Delivery Trial License, then go to Oracle Software Delivery Cloud:</p> <p><a href="http://edelivery.oracle.com">http://edelivery.oracle.com</a></p> <p><b>Note:</b> For convenience, most of the links provided in this document are to the OTN download pages, but if you have purchased a license, Oracle recommends that you register with Oracle Software Delivery Cloud and use the Software Delivery Cloud as your primary location for obtaining your purchased software.</p>

For specific information on the distributions you need to download for each product, see the *Oracle Fusion Middleware Download, Installation, and Configuration Readme Files* page.

## 3.2 Verifying Certification, System Requirements, and Interoperability

Oracle recommends that you use the certification matrix and system requirements documents in conjunction with each other to verify that your environment meets the necessary requirements for installation.

### 1. Verifying your environment meets certification requirements

Make sure that you are installing your product on a supported hardware and software configuration. For more information, see the certification document for your release on the *Oracle Fusion Middleware Supported System Configurations* page.

Oracle has tested and verified the performance of your product on all certified systems and environments; whenever new certifications occur, they are added to the proper certification document right away. New certifications can occur at any time, and for this reason the certification documents are kept outside of the documentation libraries and are available on Oracle Technology Network.

### 2. Using the system requirements document to verify certification

Oracle recommends that you use the *Oracle Fusion Middleware System Requirements and Specifications* document to verify that the certification requirements are met. For example, if the certification document indicates that your product is certified for installation on 64-Bit Oracle Linux 6.5, this document should be used to verify that your Oracle Linux 6.5 system has met the required minimum specifications, like disk space, available memory, specific platform packages and patches, and other operating system-specific items. System requirements may change in the future. Therefore, the system requirement documents are kept outside of the documentation libraries and are available on Oracle Technology Network.

### 3. Verifying interoperability among multiple products

The *Oracle Fusion Middleware Understanding Interoperability and Compatibility* document defines interoperability and compatibility, and describes how multiple Fusion Middleware products from the same release or mixed releases may be used with each other. You should read this document if you are planning to install multiple Fusion Middleware products on your system.

## 3.3 Understanding the Software Required for an Oracle Fusion Middleware Product Installation

This section contains information about the software required for an Oracle Fusion Middleware installation.

The following topics are covered:

- [Understanding Database Requirements for an Oracle Fusion Middleware Installation](#)
- [Understanding JDK Requirements for an Oracle Fusion Middleware Installation](#)

### 3.3.1 Understanding Database Requirements for an Oracle Fusion Middleware Installation

Many Oracle Fusion Middleware products require database schemas prior to domain configuration. If you do not already have a database where you can install these schemas, you must install and configure a certified database.

To find a certified database for your operating system, see the certification document for your release on the *Oracle Fusion Middleware Supported System Configurations* page.

To make sure your database is properly configured for schema creation, see "Verifying Requirements for Oracle Repository Creation Utility" in the *Oracle Fusion Middleware System Requirements and Specifications* document.

---

---

**Note:**

For 12c (12.2.1), only a certified Oracle database can be used for the Oracle Fusion Middleware Infrastructure standard installation topology.

---

---

After your database is properly configured, you can create your product schemas:

- The Repository Creation Utility (RCU) is the tool used to create schemas in your database. This tool is available by installing the Oracle Fusion Middleware Infrastructure. For more information, see *Installing and Configuring the Oracle Fusion Middleware Infrastructure*.



- Refer to *Creating Schemas with the Repository Creation Utility* for more information about the Repository Creation Utility.

### 3.3.2 Understanding JDK Requirements for an Oracle Fusion Middleware Installation

Before you can install any Oracle Fusion Middleware product using a generic installer, you must download and install a supported JDK on your system before attempting to run the installer.

Make sure that the JDK is installed outside of the Oracle home. The Oracle Universal Installer validates that the designated Oracle home directory is empty, and the install will not progress until an empty directory is specified. If you install the JDK under the Oracle home, you will experience issues in future operations. So, it is recommended that you use the `/home/oracle/products/jdk` directory for the location of your JDK installation. You can then use the `java -jar` command to run the installer JAR file.

Most Fusion Middleware products are available in .jar file format. These distributions do not include a JDK. To run the installer in a .jar distribution, you must have a certified JDK already installed on your system.

Some products (for example, Oracle HTTP Server and Oracle JDeveloper) are available as **platform-specific distributions**. These platform-specific distributions provide a .bin (for UNIX operating systems) or .exe (for Windows operating systems) installer; in these cases, a platform-specific JDK is included with the distribution and you do not need to install a JDK separately. However, it may be recommended that you upgrade this JDK to a more recent version, depending on the JDK versions that are certified.

You should always verify the required JDK version by reviewing the certification information on the [Oracle Fusion Middleware Supported System Configurations](#) page.

To download the required JDK, use your browser to navigate to the following URL and download the Java SE JDK:

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

## 3.4 Understanding the Standard Installation Topology

Each installation guide in 12c (12.2.1) and later will feature one or more standard installation topologies. A standard installation topology is a sample topology and is not the only topology supported for the product. However, each install guide provides specific instructions for achieving that topology; if your needs differ then links to supporting documentation are provided for your reference.

The standard installation topologies are designed to be easily extended for high availability and security, making them suitable for any production system. The standard installation topologies will also serve as the starting point for all upgrade operations.

If your standard installation topology requires having multiple products in the same domain, refer to the important information in [Methods for Installing Multiple Products in the Same Domain](#).

## 3.5 Selecting an Installation User

This section contains important information about the permissions and privileges of the user who is performing the installation and configuration on your system. The following topics are covered:

- [Understanding User Permissions](#)
- [Understanding Non-Default User Permissions on UNIX Operating Systems](#)
- [Verifying the Installation User has Administrator Privileges on Windows Operating Systems](#)

### 3.5.1 Understanding User Permissions

The user who installs a Fusion Middleware product owns the files and has the following permissions on the files:

- Read and write permissions on all non-executable files (for example, `.jar`, `.properties`, or `.xml`). All other users in the same group as the file owner have read permissions only.
- Read, write, and execute permissions on all executable files (for example, `.exe`, `.sh`, or `.cmd`). All other users in the same group as the file owner have read and execute permissions only.

This means that someone other than the person who installed the software can use the installed binaries in the Oracle home to configure a domain or set of Fusion Middleware products.

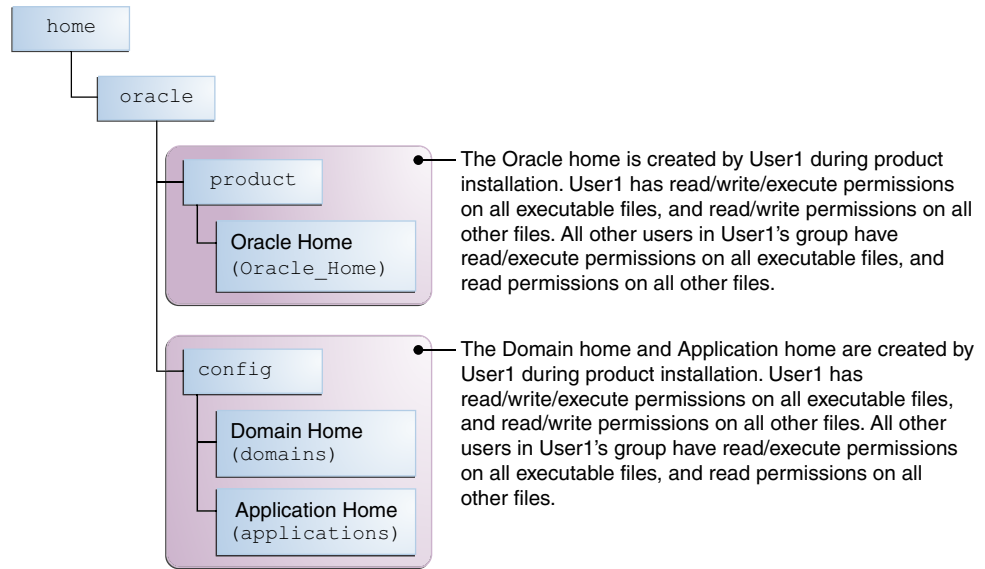
During configuration, the files generated by the configuration process are owned by the user who ran the Configuration Wizard, with the same permissions as described above for the installation user. However, security-sensitive files are not created with group permissions. Only the user that created the domain has read and write permissions and can administer the domain.

Consider the following examples:

- **Example 1: A Single User Installs the Software and Configures the Domain**

This example shows the permissions if the same user installs the software and configures the domain.

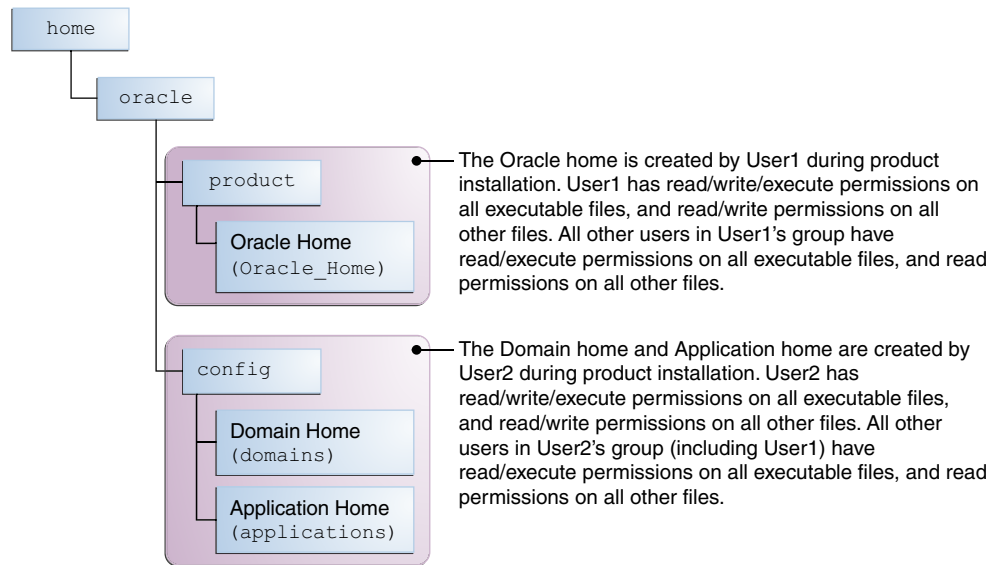
To ensure the proper permissions and privileges for all files, Oracle recommends that the same owner perform both tasks: install the Oracle Fusion Middleware product and configure the WebLogic Server domain using the Configuration Wizard.



If domain creation must be performed by a different user than the one who installed the software, then both users should be from the same group to have the necessary permissions, as shown in the next example.

• **Example 2: The Oracle Home and Domain are Created by Different Users**

This example shows the permissions if the Oracle home is created by one user, but the domain is configured by another user.




---

**Note:** Certain domain files do not have group permissions. For example, `cwallet.sso`.

---

Below are some additional considerations to make prior to running the installer:

- On UNIX operating systems, Oracle recommends that you set the `umask` to `027` on your system prior to installation. This ensures that file permissions will be set properly during installation. Use the following command:

```
umask 027
```

You must enter this command in the same terminal window from which you plan to run the product installer.

- On UNIX operating systems, do not run the installation program as the `root` user. The installer startup validation will fail and you will not be able to continue.
- When managing a product installation (for example, applying patches, or starting Managed Servers), you must use the same user ID as was used to perform the initial product installation.
- On Windows operating systems, the user performing the installation must have Administrator privileges. See [Verifying the Installation User has Administrator Privileges on Windows Operating Systems](#) for more information.

### 3.5.2 Understanding Non-Default User Permissions on UNIX Operating Systems

Changing the default permissions settings will reduce the security of the installation and possibly your system. Therefore, making such a change is not recommended. If access to particular files or executables is required by other users, the UNIX `sudo` command (or other similar command) should be considered in lieu of changing file permissions.

Refer to your UNIX operating system Administrator's Guide or contact your operating system vendor if you need further assistance.

### 3.5.3 Verifying the Installation User has Administrator Privileges on Windows Operating Systems

The user performing the installation on Windows operating systems must have Administrator privileges in order to be able to update the Windows Registry. By default, members of the Administrator's group log in to the system with regular privileges, but may request elevated permissions to perform administrative tasks.

To perform a task with elevated privileges:

1. Find the Command Prompt item, either from the Start menu or the Windows icon in the lower-left hand corner.
2. Right-click Command Prompt and select **Run as administrator**.

This will open a new command prompt window, and all actions performed in this window will be done with administrator privileges.

---

---

**Note:** If you have User Access Control enabled on your system, you may see an additional window asking you to confirm this action. Confirm and continue with this procedure.

---

---

3. Perform the desired task.

For example, to start the product installer:

For a jar file, enter:

```
java -jar distribution_name.jar
```

For an executable (.exe, .bin, or .sh file):

- On UNIX, enter:  
`./distribution_name.bin`
- On Windows, enter:  
`distribution_name.exe`

## 3.6 Understanding Directories for Installation and Configuration

During the installation and domain configuration process, you must plan on providing the locations for the following directories:

- Oracle Home
- Domain Home
- Application Home

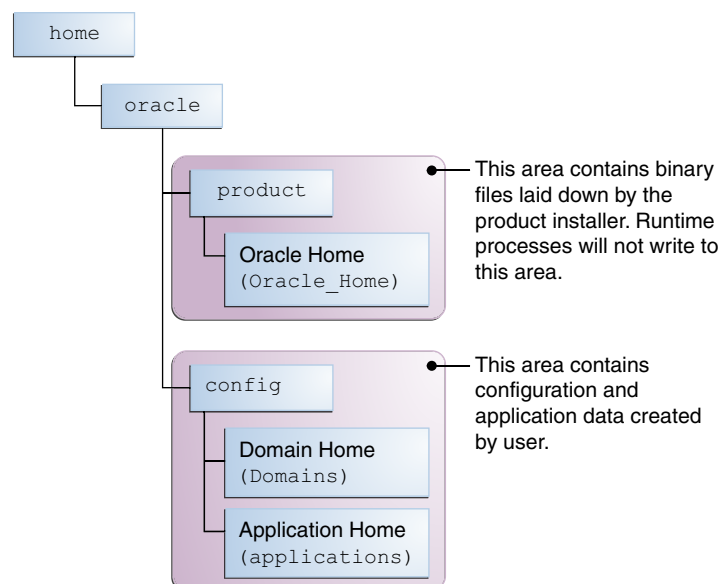
This section contains information that will help you decide where you want to create these directories.

- [Understanding the Recommended Directory Structure](#)
- [About the Oracle Home Directory](#)
- [About the Domain Home Directory](#)
- [About the Application Home Directory](#)
- [Methods for Installing Multiple Products in the Same Domain](#)
- [Preparing for Shared Storage](#)

### 3.6.1 Understanding the Recommended Directory Structure

Oracle recommends a directory structure similar to the one shown in [Figure 3-1](#).

**Figure 3-1 Recommended Oracle Fusion Middleware Directory Structure**



A base location (Oracle base) should be established on your system (for example, `/home/oracle`) and from there, two separate branches should be created. The `product` directory should contain the product binary files and all of the Oracle home directories. The `config` directory should contain your domain and application data.

Oracle recommends that you do not keep your configuration data anywhere underneath the Oracle home; if you upgrade your product to another major release, you will be required to create a new Oracle home for binaries. You must also make sure that your configuration data exist in a location to which the binaries in the Oracle home have access.

The `/home/oracle/product` (for the Oracle home) and `/home/oracle/config` (for the application and configuration data) directories are used in examples throughout the documentation; be sure to replace these directories with the actual directories on your system.

### 3.6.2 About the Oracle Home Directory

When you install any Oracle Fusion Middleware product, you are prompted to specify an Oracle home directory. This directory serves as a repository for common files that are used by multiple Fusion Middleware products installed on the same machine. For this reason, the Oracle home directory can be considered a *central support directory* for all the Oracle Fusion Middleware products installed on your system.

The files in the Oracle home directory are essential to ensuring that Fusion Middleware operates correctly on your system. They facilitate checking of cross-product dependencies during installation.

The Oracle home directory is referenced as `ORACLE_HOME` in Fusion Middleware documentation.

#### Oracle Home Considerations

Consider the following information when creating the Oracle home directory and installing Fusion Middleware products:

- Do not include spaces in the name of your Oracle home directory; the installer will give you an error message if your Oracle home directory path contains spaces.
- You can install only one instance of each Oracle Fusion Middleware product in a single Oracle home directory. If you need to maintain separate versions of a product on the same machine, each version must be in its own Oracle home directory.

Although you can have several different products in a single Oracle home, only one version of each product can be in the Oracle home.

#### Multiple Home Directories

Although in most situations, a single Oracle home directory is sufficient, it is possible to create more than one Oracle home directory. For example, you need to maintain multiple Oracle home directories in the following situations:

- You prefer to maintain separate development and production environments, with a separate product stack for each. With two directories, you can update your development environment without modifying the production environment until you are ready to do so.
- You want to maintain two different versions of a Fusion Middleware product at the same time. For example, you may want to install a new version of a product while

keeping your existing version intact. In this case, you must install each product version in its own Oracle home directory.

- You need to install multiple products that are not compatible with each other. See *Oracle Fusion Middleware Understanding Interoperability and Compatibility* for more information.

---

---

**Note:** If you create more than one Oracle home directory, you must provide non-overlapping port ranges during the configuration phase for each product.

---

---

### 3.6.3 About the Domain Home Directory

The Domain home is the directory where the domains you configure will be created. The default Domain home location is `ORACLE_HOME/user_projects/domains/domain_name`, however Oracle strongly recommends locating your Domain home outside of the Oracle home directory; if you upgrade your product to another major release, you will be required to create a new Oracle home for binaries.

See [Understanding the Recommended Directory Structure](#) for more information about the recommended directory structure and locating your Domain home.

The Domain home directory is referenced as `DOMAIN_HOME` in Fusion Middleware documentation and includes all folders up to and including the domain name. For example, if you named your domain `exampledomain` and you locate your domain data in the `/home/oracle/config/domains` directory, `DOMAIN_HOME` would be used in the documentation to refer to `/home/oracle/config/domains/exampledomain`.

### 3.6.4 About the Application Home Directory

The Application home is the directory where selected applications related to the domains you configure will be created. The default Application home location is `ORACLE_HOME/user_projects/applications/domain_name`. However, Oracle strongly recommends locating your Application home outside of the Oracle home directory; if you upgrade your product to another major release, you must create a new Oracle home for binaries.

See [Understanding the Recommended Directory Structure](#) for more information about the recommended directory structure and locating your Application home.

Fusion Middleware documentation references the Application home directory as `APPLICATION_HOME` and includes all folders up to and including the domain name. For example, if you name your domain `exampledomain` and you locate your application data in the `/home/oracle/config/applications` directory, the documentation would use `APPLICATION_HOME` to refer to `/home/oracle/config/applications/exampledomain`.

### 3.6.5 Methods for Installing Multiple Products in the Same Domain

If you are planning to install and configure multiple products in the same domain, note that there are two methods for accomplishing this:

- Install and configure Product A, including creating the schemas and starting all of the servers in the domain to verify a successful domain configuration.

This is the way all of the product installation guides are organized. This process can be repeated for as many products as necessary. It allows you to validate one product at a time and add more products incrementally.

To install Product B, you stop the Administration Server to prevent any updates to the domain while you are adding the new product, then follow the instructions in the install guide for Product B, including creating the necessary schemas, then extending the Product A domain to include Product B, then starting all of the servers again.

- Install but do not configure all of the necessary products, then create the schemas for all of the products, then configure the domain using all of the necessary product templates, then start all of the servers.

This method of creating a multi-product domain may be slightly faster; however, the documentation does not provide specific instructions for this method of domain creation. It is up to the user to refer to the necessary supporting documentation as appropriate.

### 3.6.6 Preparing for Shared Storage

Oracle Fusion Middleware enables you to configure multiple Oracle WebLogic Server domains from a single Oracle home. This allows you to install the Oracle home in a single location on a shared volume and reuse the Oracle home for multiple hosts installations.

If you are planning to use shared storage in your environment, see "Using Shared Storage" in *Oracle Fusion Middleware High Availability Guide* for more information.

## 3.7 About Oracle Configuration Manager

During installation, you will be asked whether or not you want to configure your system to automatically check for security updates (Specify Security Updates screen). If you choose to do so, Oracle Configuration Manager is installed on your system.

Oracle Configuration Manager continuously tracks key Oracle and system details, providing essential data to help you manage and service your configurations. Collected data is sent via HTTPS to Oracle Support, which maintains a secure view of each configuration. My Oracle Support then provides system health checks, patch advice, and other valuable information about your Oracle products. Configuration manager does NOT collect application data, such as user passwords.

For more information, log into or create a My Oracle Support account at <https://support.oracle.com/>, then click on the **Collector** tab.