Oracle® Fusion Middleware

Planning an Installation of Oracle Fusion Middleware

14*c* (14.1.2.0.0)

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Oracle Fusion Middleware Planning an Installation of Oracle Fusion Middleware, 14*c* (14.1.2.0.0)

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Preface

This preface describes the audience, document accessibility features, diversity and inclusion, related documents, and conventions used in this guide—*Planning an Installation of Oracle Fusion Middleware*.

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.

Diversity and Inclusion

Oracle is fully committed to diversity and inclusion. Oracle respects and values having a diverse workforce that increases thought leadership and innovation. As part of our initiative to build a more inclusive culture that positively impacts our employees, customers, and partners, we are working to remove insensitive terms from our products and documentation. We are also mindful of the necessity to maintain compatibility with our customers' existing technologies and the need to ensure continuity of service as Oracle's offerings and industry standards evolve. Because of these technical constraints, our effort to remove insensitive terms is ongoing and will take time and external cooperation.

Related Documents

For more information, see the following resources:

- See Understanding Key Concepts in *Understanding Oracle Fusion Middleware* for information on the common terms and concepts in an Oracle Fusion Middleware environment.

- See Getting Started Managing Oracle Fusion Middleware in *Administering Oracle Fusion Middleware* for information on managing your Oracle Fusion Middleware environment after installation and configuration is complete.

- See Introduction and Roadmap in the *Oracle Fusion Middleware High Availability Guide* for information on installing Oracle Fusion Middleware in high availability environments.

Conventions

The following text conventions are used in this document:

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

1
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 14c (14.1.2.0.0) installation. It also provides key information about preparing your system and for obtaining the latest versions of Oracle Fusion Middleware distributions.

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

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

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

   - Overview of Oracle Fusion Middleware provides an introduction to Oracle Fusion Middleware.

   - About Key Oracle Fusion Middleware Concepts 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.

   - Overview of Oracle Fusion Middleware Components contains important information about key Fusion Middleware features, such as Oracle WebLogic Server, the Oracle Application Server Infrastructure, and other Oracle Fusion Middleware products.

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 14*c* documentation library.

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

2
Selecting a Development, Test, or Production 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.

See the following topics to help you select, install, and configure an Oracle Fusion Middleware environment:

Planning for a Development Environment

Use this information to help you install and maintain an Oracle Fusion Middleware environment for application developers.

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.

About the Types of Oracle Fusion Middleware Development Environments

Oracle offers different 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

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.

See About Oracle JDeveloper in *Developing Applications with Oracle JDeveloper*.

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

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.

See Introducing the Quick Start Distributions in *Installing SOA Suite and Business Process Management Suite Quick Start for Developers*.

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.

See the following topics:

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 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.

See Using the Configuration Wizard to Configure a Compact Domain in *Installing Oracle SOA Suite and Business Process Management Suite Quick Start for Developers*.

To connect Oracle JDeveloper to a remote database and Oracle WebLogic Server domain, see Connecting to and Working with Databases and How to Create a Connection to the Target Application Server in *Developing Applications with Oracle JDeveloper*.

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 14c (14.1.2.0.0) 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 to and Working with Databases and How to Create a Connection to the Target Application Server in *Developing Applications with Oracle JDeveloper*.

Planning for a Production Environment

You can use this roadmap of related documents to plan for a production environment from pre-installation to configuring high availability.

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.

About Secured Production Mode

To create a WebLogic domain for production use, consider the environment in which the domain will run, such as whether it will interoperate with other WebLogic domains, and how best to secure the accounts of users who have access to the domain.

As of WebLogic Server 14*c* (14.1.2.0.0), when you create a domain in Production mode, it automatically enables the more secure default settings of Secured Production mode. These more secure default settings include the default use of SSL listen ports and administration

ports that require SSL. SSL requires you to obtain and configure certificates on all servers in your domain. It is important that you understand the additional configuration changes you will need to make when using Secured Production mode.

See Creating a WebLogic Domain for Production Use in *Administering Security for Oracle WebLogic Server*.

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.

Starting with a Standard Installation Topology and Scaling Out

You can get started quickly by installing a standard installation topology. You can then consider adding additional components and scaling out to a highly available environment later.

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. See Understanding Domain Configurations in *Installing SOA Suite and Business Process Management Suite Quick Start for Developers.*

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.

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.

For example, to learn about the Oracle Application Server Infrastructure installation topology, see About the Infrastructure Standard Installation Topology in *Installing and Configuring the Oracle Fusion Middleware Infrastructure*. To learn about the Oracle SOA Suite installation topology, see About the Oracle SOA Suite Standard Installation Topology in *Installing and Configuring Oracle SOA Suite and Business Process Management*.

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.

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. 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 12*c* , where the Oracle HTTP Server instances can be added to an existing Fusion Middleware Infrastructure domain using the Configuration Wizard.

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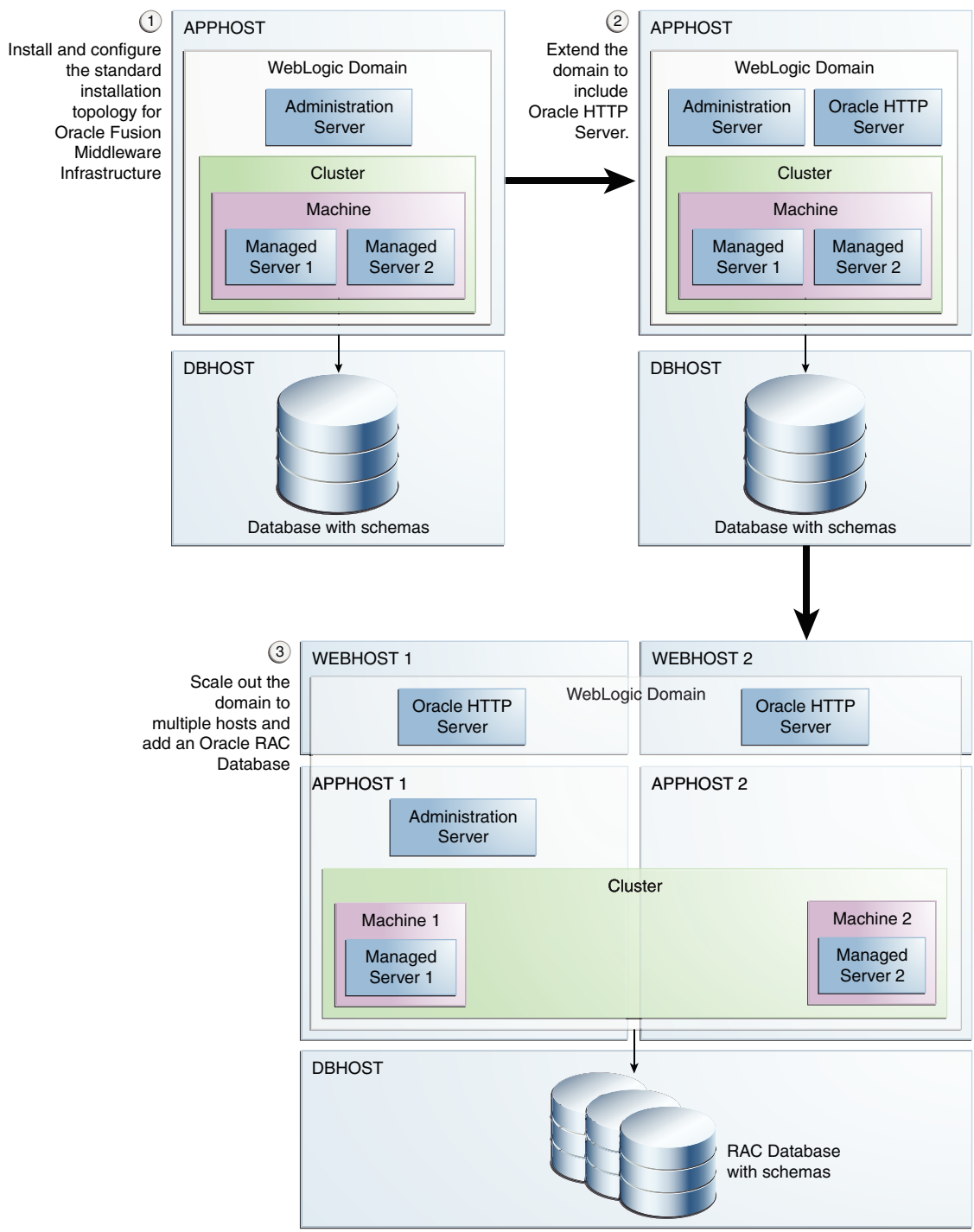
Table 2-1   Documentation Roadmap for Staring Small and Scaling Out

Task	More Information
Install and configure the standard installation topology for Oracle Fusion Middleware Infrastructure.	Planning the Oracle Fusion Middleware Infrastructure Installation in *Installing and Configuring the Oracle Fusion Middleware Infrastructure*
Extend the domain to include Oracle HTTP Server.	Preparing to Install and Configure Oracle HTTP Server in *Installing and Configuring Oracle HTTP Server*
Scale out the domain to multiple hosts and add an Oracle RAC Database.	Scaling Out a Topology (Machine Scale Out) in the *Oracle Fusion Middleware High Availability Guide*

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 topics provide more information:

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.

About the Enterprise Deployment Guide and High Availability Guide

To implement an Oracle Fusion Middleware enterprise deployment topology, Oracle provides the Enterprise Deployment Guide, which 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.

The enterprise deployment guides are available from the Install, Patch, and Upgrade page in the Oracle Fusion Middleware 14c (14.1.2.0.0) documentation library.

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

Planning for a Test Environment

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.

3

Preparing for an Oracle Fusion Middleware Installation

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 following topics provide important information about preparing your system and instructions for obtaining, installing, and configuring the latest version of Oracle Fusion Middleware.

The procedures you must follow 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.

Obtaining Product Distributions

Oracle Fusion Middleware 14c (14.1.2.0.0) software is available as a series of product distributions.

About 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 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_14.1.2.0.0_wls_generic.jar`)	Core Server	Core Application Server
		Coherence Product Files
		Web 2.0 HTTP Pub-Sub Server
		WebLogic SCA
		WebLogic Client JARs
	Administrative Tools	Remote Console
		Additional Language Help Files
		CIE WLS Config
	Database Support	Third-Party JDBC Drivers
		WebLogic Evaluation Database

Table 3-1   (Cont.) Understanding Distributions, Products, and Features

Distribution	Products	Feature Sets
	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.

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	If you are a developer, go to the Oracle Technology Network (OTN) to download Oracle software under the terms of the OTN Developer License. http://www.oracle.com/technetwork/indexes/downloads/index.html **Note**: Oracle Technology Network requires free registration.

Table 3-2   (Cont.) Oracle Fusion Middleware Product Download Sites

Oracle Web Site	Purpose and Location
My Oracle Support	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: http://support.oracle.com
Oracle Software Delivery Cloud	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: http://edelivery.oracle.com **Note**: 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.

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.

Verifying Certification, System, and Interoperability Requirements

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

1. **Verifying that your environment meets certification requirements:**

   Ensure that you install your product on a supported hardware and software configuration.

   Oracle has tested and verified the performance of your product on all certified systems and environments. Whenever new certifications are released, they are added to the certification document right away. New certifications can be released at any time. Therefore, the certification documents are kept outside 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. System requirements can 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:**

   To learn how to install and run multiple Fusion Middleware products from the same release or mixed releases with each other, see Oracle Fusion Middleware Interoperability and Compatibility in *Understanding Interoperability and Compatibility*.

About the Software Required for an Oracle Fusion Middleware Product Installation

Before you install Oracle Fusion Middleware, you should understand and verify the database and JDK requirements.

The following topics contain information about the software required for an Oracle Fusion Middleware installation:

About Database Requirements for an Oracle Fusion Middleware Installation

Many Oracle Fusion Middleware products require database schemas prior to 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 on *Technical Resources from Oracle*.

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

After your database is properly configured, you use the Repository Creation Utility (RCU) to create product schemas in your database. This tool is available in the Oracle home for your Oracle Fusion Middleware product. See About the Repository Creation Utility in *Creating Schemas with the Repository Creation Utility*.

About JDK Requirements for an Oracle Fusion Middleware Installation

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

Make sure that the JDK is installed *outside* of the Oracle home. If you install the JDK under the Oracle home, you may encounter problems when you try to perform tasks in the future. Oracle Universal Installer validates that the Oracle home directory is empty; the install does not progress until you specify an empty directory. Oracle recommends that you locate your JDK installation in the `/home/oracle/products/jdk` directory.

Platform-specific distributions have a `.bin` (for UNIX operating systems) or `.exe` (for Windows operating systems) installer; in these cases, a platform-specific JDK is in the distribution and you do not need to install a JDK separately. However, you may need to upgrade this JDK to a more recent version, depending on the JDK versions that are certified.

Always verify the required JDK version by reviewing the certification information on the *Oracle Fusion Middleware Supported System Configurations* page. For 14c (14.1.2.0.0), the certified JDK is 17.0.12 and later.

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

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

About the Standard Installation Topology

Each installation guide in 14c (14.1.2.0.0) features 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 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.

Selecting an Installation User

The user who installs and configures your system must have the required permissions and privileges.

About User Permissions

The user who installs a Fusion Middleware product owns the files and has certain 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 installs the software can use the installed binaries in the Oracle home directory 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. This user has 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 explains the file permissions where the same user installs the software and configures the domain.

  To ensure 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 by using the Configuration Wizard.

Figure 3-1   Directory Structure when a Single User Installs the Software and Configures the Domain
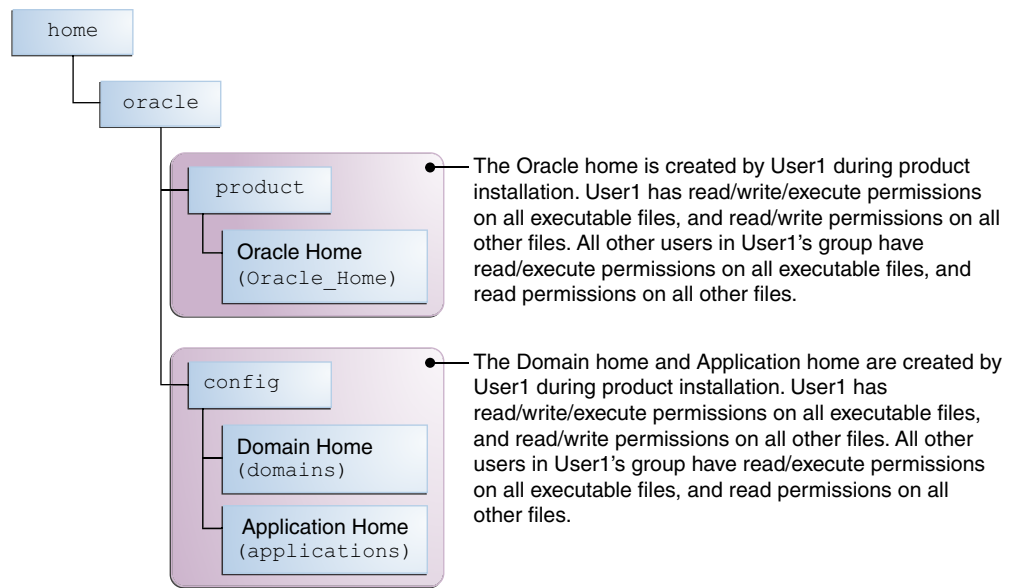
If the user who creates the domain is different than the user who installed the software, then both users must have the same privileges, as shown in the next example.

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

  This example explains the file permissions where one user creates the Oracle home and another user configures the domain.

Figure 3-2   Directory Structure when Different Users Install the Software and Configure the Domain
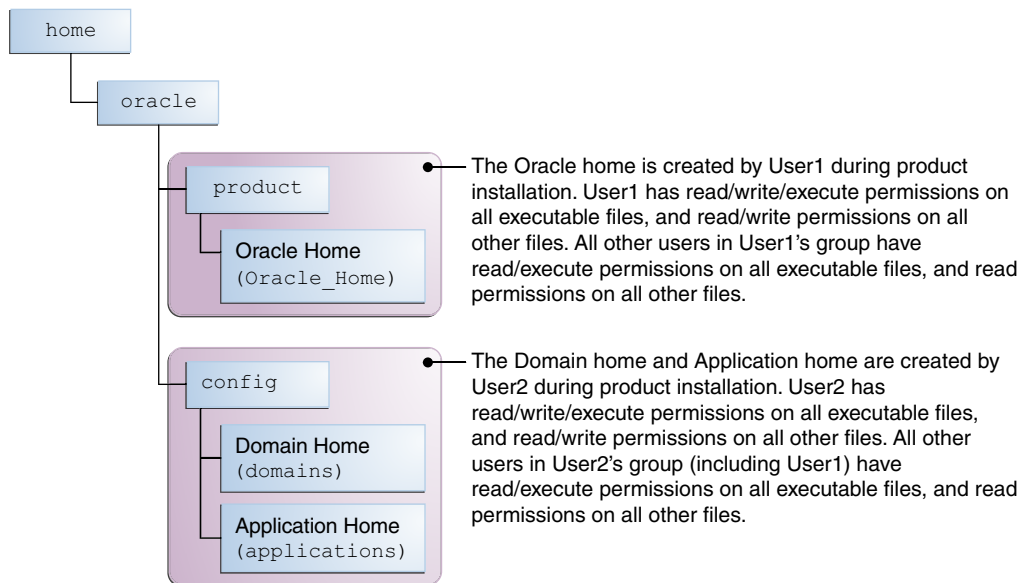
> **Note:**
>
> Certain domain files do not have group permissions. For example, `cwallet.sso`.

Consider the following points before you run the installer:

- On UNIX operating systems, Oracle recommends that you set `umask` to `027` on your system before you install the software. This ensures that the file permissions are 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 a `root` user. If you run the installer as a root user, the startup validation may fail and you cannot continue the installation.

- When you manage a product installation (for example, applying patches or starting managed Servers), use the same user ID that you used to install the product.

- On Windows operating systems, you must have administrative privileges to install the product. See Verifying the Installation User has Administrator Privileges on Windows Operating Systems.

About Non-Default User Permissions on UNIX Operating Systems

Changing the default permission setting reduces the security of the installation and your system. Oracle does not recommend that change the default permission settings.

If other users require access to a particular file or executable, use the UNIX `sudo` command or other similar commands to change the file permissions.

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

Verifying That the Installation User Has Administrator Privileges on Windows Operating Systems

To update the Windows Registry, you must have administrator privileges.

By default, users with the administrator privilege sign in to the system with regular privileges, but can request elevated permissions to perform administrative tasks.

To perform a task with elevated privileges:

1. Find the Command Prompt icon, either from the Start menu or the Windows icon in the lower-left corner.

2. Right-click **Command Prompt** and select **Run as administrator**.

   This opens a new command prompt window, and all actions performed in this window are 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), enter:

   ```
   distribution_name.exe
   ```

About the Directories for Installation and Configuration

During the installation and domain configuration process, you must plan on providing the locations for these directories: Oracle home, Domain home, and the Application home.

About the Recommended Directory Structure

Oracle recommends specific locations for the Oracle Home, Domain Home, and Application Home.

Oracle recommends a directory structure similar to the one shown in Figure 3-3.

Figure 3-3   Recommended Oracle Fusion Middleware Directory Structure
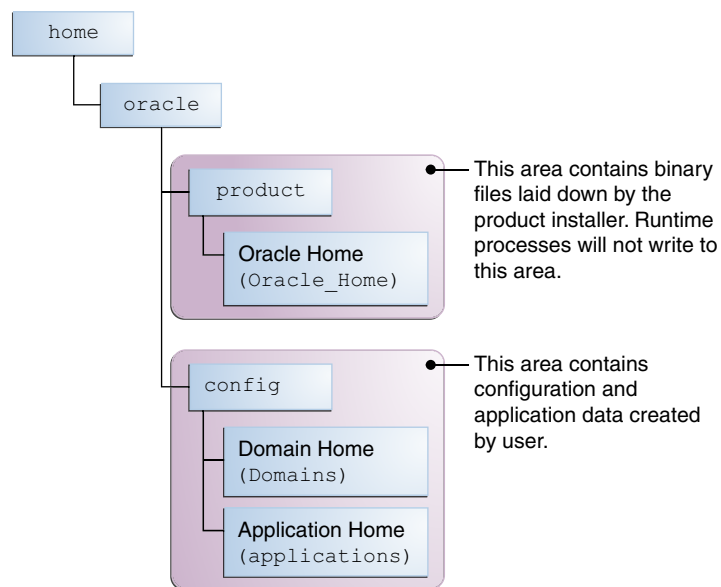
A base location (Oracle base) should be established on your system (for example, `/home/oracle`). From this base location, create two separate branches, namely, the `product` directory and the `config` directory. The `product` directory should contain the product binary files and all

the Oracle home directories. The `config` directory should contain your domain and application data.

Oracle recommends that you do not keep your configuration data in the Oracle home directory; if you upgrade your product to another major release, you are required to create an Oracle home for binary files. You must also make sure that your configuration data exists in a location where the binary files 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 the examples throughout the documentation; be sure to replace these directories with the actual directories on your system.

About the Oracle Home Directory

When you install any Oracle Fusion Middleware product, you must use an Oracle home directory.

This directory is a repository for common files that are used by multiple Fusion Middleware products installed on the same machine. These files ensure that Fusion Middleware operates correctly on your system. They facilitate checking of cross-product dependencies during installation. For this reason, you can consider the Oracle home directory a *central support directory* for all Oracle Fusion Middleware products installed on your system.

Fusion Middleware documentation refers to the Oracle home directory as *ORACLE_HOME*.

Oracle Home Considerations

Keep the following in mind when you create the Oracle home directory and install the Oracle Fusion Middleware products:

*   Do not include spaces in the name of your Oracle home directory; the installer displays 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 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 Interoperability and Compatibility in *Understanding Interoperability and Compatibility* .

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

About the Domain Home Directory

The Domain home is the directory where domains that you configure are created.

The default Domain home location is *ORACLE_HOME*/user_projects/domains/*domain_name*.

> **Note:**
>
> Oracle strongly recommends that you do not use the default location. Put your Domain home *outside* of the Oracle home directory, for example, in /home/oracle/config/domains.

The config directory should contain domain and application data. Oracle recommends a separate domain directory so that new installs, patches, and other operations update the *ORACLE_HOME* only, *not* the domain configuration.

See About the Recommended Directory Structure for more on the recommended directory structure and locating your Domain home.

Fusion Middleware documentation refers to the Domain home directory as *DOMAIN_HOME* and includes all folders up to and including the domain name. For example, if you name your domain exampledomain and locate your domain data in the /home/oracle/config/domains directory, the documentation would use *DOMAIN_HOME* to refer to /home/oracle/config/domains/exampledomain.

About the Application Home Directory

The Application home is the directory where applications for domains you configure are created.

The default Application home location is *ORACLE_HOME*/user_projects/applications/*domain_name*. However, Oracle strongly recommends that you locate your Application home *outside* of the Oracle home directory; if you upgrade your product to another major release, you must create an Oracle home for binary files.

See About the Recommended Directory Structure for more on the recommended directory structure and locating your Application home.

Fusion Middleware documentation refers to 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 uses *APPLICATION_HOME* to refer to /home/oracle/config/applications/exampledomain.

Installing Multiple Products in the Same Domain

There are two methods to install and configure multiple products in one domain. This is also known as *extending* a domain.

- **Method 1.**

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

  This is the method used in all installation guides in the Fusion Middleware library. You can repeat this process 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 in the same domain as Product A:

  1. Stop all servers to prevent any updates to the domain while you add the new product.

     See Starting and Stopping Oracle Fusion Middleware in *Administering Oracle Fusion Middleware*.

  2. Follow the instructions in the installation guide for Product B, including creating the necessary schemas.

  3. Run the Configuration Wizard to configure the domain.

     During configuration, the Configuration Wizard automatically detects the components that have been installed and offers you the option to extend the existing Product A domain to include Product B.

- **Method 2.**

  Install all of the required products, then create the schemas for all of the products. After you create the schemas, configure the domain by using the necessary product templates, then start all the servers.

  This method of creating a multi-product domain may be slightly faster than Method 1; however, the installation guides in the Fusion Middleware library do not provide specific instructions for this method of domain creation.

> **✎ See Also:**
>
> - To update WebLogic domains, see Updating WebLogic Domains in *Creating WebLogic Domains Using the Configuration Wizard*.
>
> - For important information regarding the ability of Oracle Fusion Middleware products to function with previous versions of other Oracle Fusion Middleware, Oracle, or third-party products, see Oracle Fusion Middleware Interoperability and Compatibility in *Understanding Interoperability and Compatibility*.

Preparing for Shared Storage

Oracle Fusion Middleware allows you to configure multiple 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 host installations.

If you plan to use shared storage in your environment, see Using Shared Storage in *High Availability Guide* for more information.

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About Oracle Configuration Manager

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.

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

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.

Log into or create a My Oracle Support account at `https://support.oracle.com/`, then click on the **Collector** tab.