Oracle® Fusion Middleware

Planning an Installation of Oracle Fusion Middleware

12*c* (12.1.2)

E29627-01

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

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Oracle Fusion Middleware Planning an Installation of Oracle Fusion Middleware, 12*c* (12.1.2)

E29627-01

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Preface

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

Intended Audience

This guide is intended for users 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`.

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Related Documents

For additional information, see the following manuals:

- *Understanding Oracle Fusion Middleware*. This book introduces the common terms and concepts in an Oracle Fusion Middleware environment.
- *Administering Oracle Fusion Middleware*. This book contains information for managing your Oracle Fusion Middleware environment after installation and configuration is complete.
- *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:

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

Preparing for Oracle Fusion Middleware Installation

This guide 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:

1.1 Understanding and Obtaining Product Distributions

This section contains the following:

1.1.1 Understanding Product Distributions

Oracle Fusion Middleware 12*c* 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.

Table 1–1 shows the contents of the Oracle WebLogic Server and Coherence Distribution; note that the products and feature sets will differ depending on your Oracle Fusion Middleware product:

Table 1–1 Understanding Distributions, Products, and Features

Distribution	Products	Feature Sets
Oracle WebLogic Server and Coherence (`wls_121200.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 **Product** 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 describe what is included with each product.

  You do not have the option of selecting or de-selecting feature sets. All feature sets within a product will be installed; it is not possible to select or de-select feature sets for installation.

  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 not will overwrite the existing feature set.

1.1.2 Obtaining Product Distributions

Product distributions can be obtained from either the Oracle Software Delivery Cloud or from Oracle Technology Network. For more information on which site you should visit to obtain your distribution, see the *Oracle Fusion Middleware Download, Installation, and Configuration Readme Files* page.

All Oracle Fusion Middleware distributions are available as `.jar` files. You will need a certified JDK on your system in order to be able to run the installer from the `.jar` file. For more information, see Section 1.7.

1.2 Understanding the Standard Installation Topology

Each installation guide in 12*c* (12.1.2) 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 Section 1.5.5.

1.3 Verifying Certification and System Requirements

The certification matrix and system requirements documents should be used in conjunction with each other to verify that your environment meets the necessary requirements for installation.

Step 1 Verify Your Environment Meets Certification Requirements

Make sure that you are installing your product on a supported hardware or 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.

Step 2 Using the System Requirements Document to Verify Certification

The *Oracle Fusion Middleware System Requirements and Specifications* document should be used to verify that the requirements of the certification are met. For example, if the certification document indicates that your product is certified for installation on 64-Bit Oracle Linux 5, this document should be used to verify that your Oracle Linux 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 can be updated at any time, and for this reason the system

requirement documents are kept outside of the documentation libraries and are available on Oracle Technology Network.

1.4 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:

- Section 1.4.1, "Understanding User Permissions"
- Section 1.4.2, "Granting Permissions to a Non-Default User on UNIX Operating Systems"
- Section 1.4.3, "Verifying the Installation User has Administrator Privileges on Windows Operating Systems"

1.4.1 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 permissons 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.

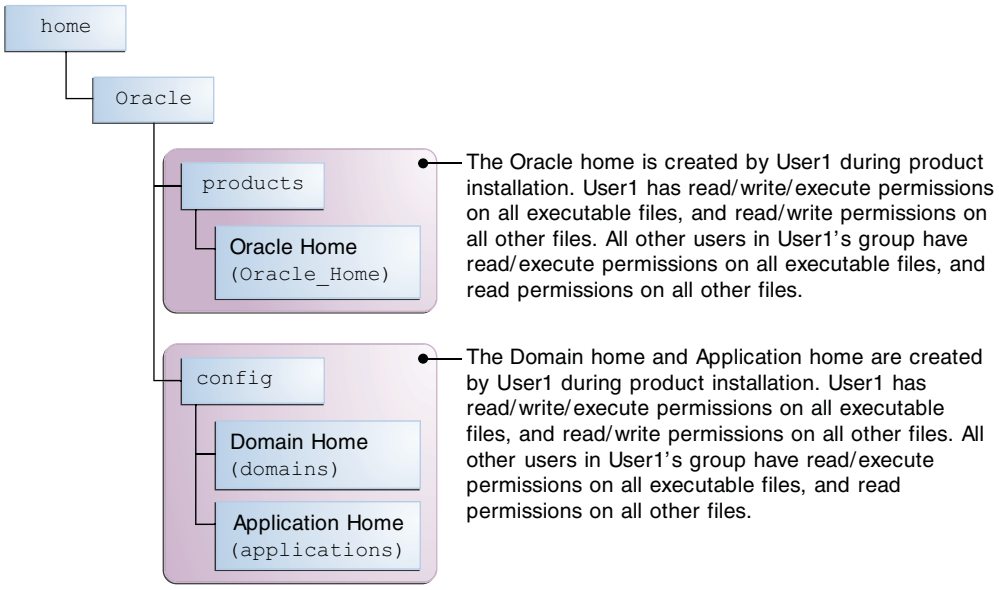
During configuration, the files generated by the configuration process are owned by the user who ran the Configuration Wizard, with the same permissions as described above for the installation user.

Consider the examples below.

Example 1 A Single User Installs the Software and Configure the Domain

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

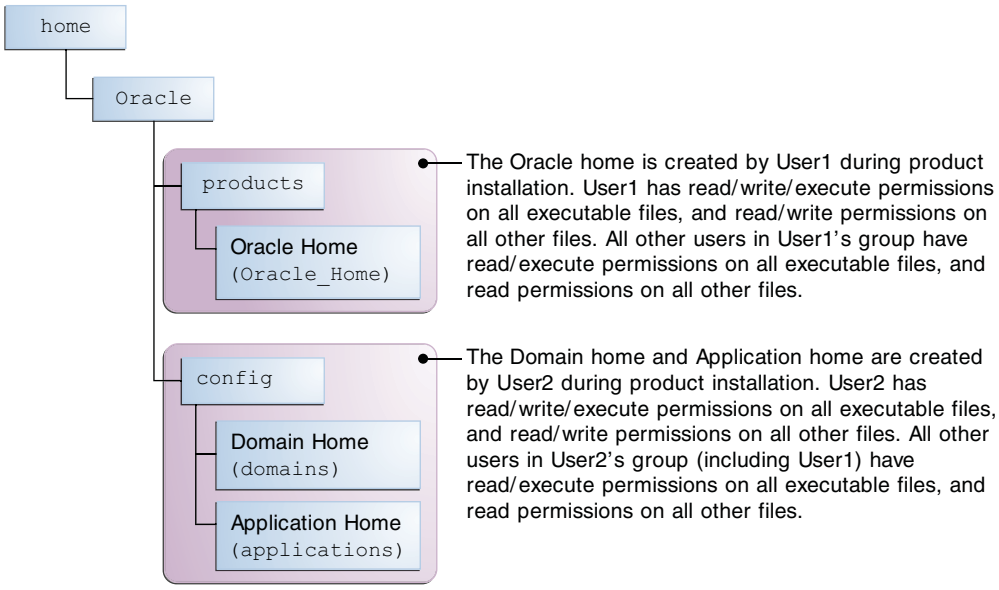
To ensure the proper permissions and privileges for all files, Oracle recommends that the same owner perform both tasks: install the Oracle Fusion Middleware product and configure the WebLogic Server domain using the Configuration Wizard.



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.



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 Section 1.4.3 for more information.

1.4.2 Granting Permissions to a Non-Default User 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.

1.4.3 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 on **Command Prompt** and select **Run as administrator**.

   This will open a new command prompt window, and all actions performed in this windows will be done so 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, start the product installer.

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

1.5 Selecting 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

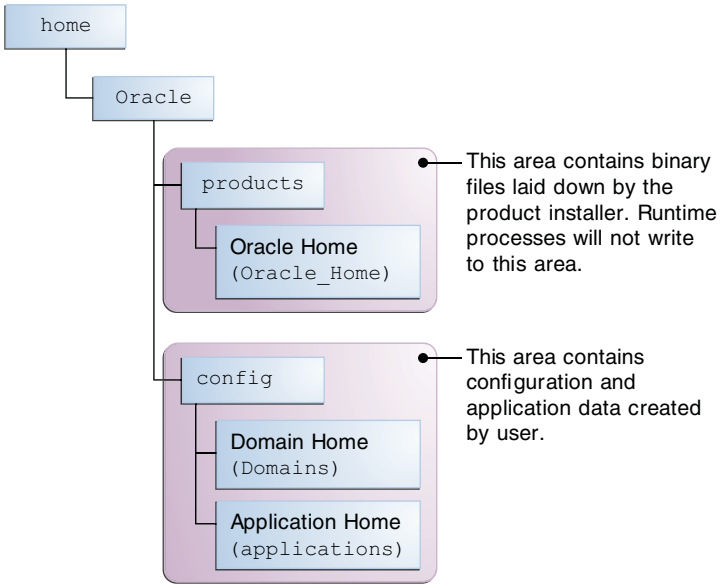
This section contains information that will help you decide where you want to end up creating these directories.

- Section 1.5.1, "Understanding the Recommended Directory Structure"
- Section 1.5.2, "Choosing an Oracle Home Directory"
- Section 1.5.3, "Choosing a Domain Home"
- Section 1.5.4, "Choosing an Application Home"
- Section 1.5.5, "Installing Multiple Products in the Same Domain"
- Section 1.5.6, "Preparing for Shared Storage"

1.5.1 Understanding the Recommended Directory Structure

Oracle recommends a directory structure similar to the one shown in Figure 1–1.

Figure 1–1 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 `products` directory should contain the product binary files and all of the Oracle home directories. The `config` directory should contain your domain and application data.

It is recommended that you do not keep your configuration data anywhere underneath the Oracle home; if you upgrade your product to a 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/products` (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.

1.5.2 Choosing an 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 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.

  It is recommended that you create a single Oracle home directory on your machine for all your Oracle products; separate Oracle home directories are only needed for multiple versions of the same product.

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

Creating 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.
- After installation, products are not compatible with each other. See *Understanding Interoperability and Compatibility* for more information.

1.5.3 Choosing a Domain Home

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 a another major release, you will be required to create a new Oracle home for binaries.

See Section 1.5.1 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`.

1.5.4 Choosing an Application Home

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 a another major release, you will be required to create a new Oracle home for binaries.

See Section 1.5.1 for more information about the recommended directory structure and locating your Application home.

The Application home directory is referenced as *APPLICATION_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 application data in the `/home/Oracle/config/applications` directory, *APPLICATION_HOME* would be used in the documentation to refer to `/home/Oracle/config/applications/exampledomain`.

1.5.5 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:

1. 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.

   To install Product B, you must stop all the servers and process, 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.

   This process can be repeated for as many products as necessary, making sure that all the servers are stopped before the installation of the next product begins.

2. 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.

1.5.6 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 *High Availability Guide* for more information.

1.6 Installing 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.

1.7 Installing a JDK

Oracle Fusion Middleware requires that a certified JDK is already installed on your system.

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

You can download an Oracle JDK from the following page on Oracle Technology Network:

`http://www.oracle.com/technetwork/java/index.html`

1.8 Installing and Configuring a Certified Database

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 12*c* (12.1.2), only a certified Oracle database can be used for the Oracle Fusion Middleware Infrastructure standard installation topology.

The Oracle Platform Security Services (OPSS) schema is not supported on third-party databases for this release.

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 your product installation guides for the specific schemas (if any) required by your Oracle Fusion Middleware product along with instructions to create the schemas.
- Refer to *Creating Schemas with the Repository Creation Utility* for more information about the Repository Creation Utility.

2

Understanding the Documentation Roadmap to High Availability

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

The following sections are included:

- Section 2.1, "Understanding the Roadmap to High Availability"
- Section 2.2, "Verifying Pre-Installation Requirements"
- Section 2.3, "Installing the Oracle Fusion Middleware Infrastructure"
- Section 2.4, "Installing Oracle HTTP Server"
- Section 2.5, "Moving to High Availability"

2.1 Understanding the Roadmap to High Availability

Figure 2–1 shows how the standard installation topology for Oracle Fusion Middleware Infrastructure, which contains most of the components required by other Fusion Middleware products, can be configured for high availability. The documentation is designed to take this standard installation topology and arrive at the standard topology for high availability.

Note: The topologies represented are the defined standard installation topologies (see Section 1.2). As needed, links to additional tasks and documentation are provided should your environment require such additional information to arrive at a high availability environment.

Figure 2–1 Roadmap of Topologies to Arrive at High Availability

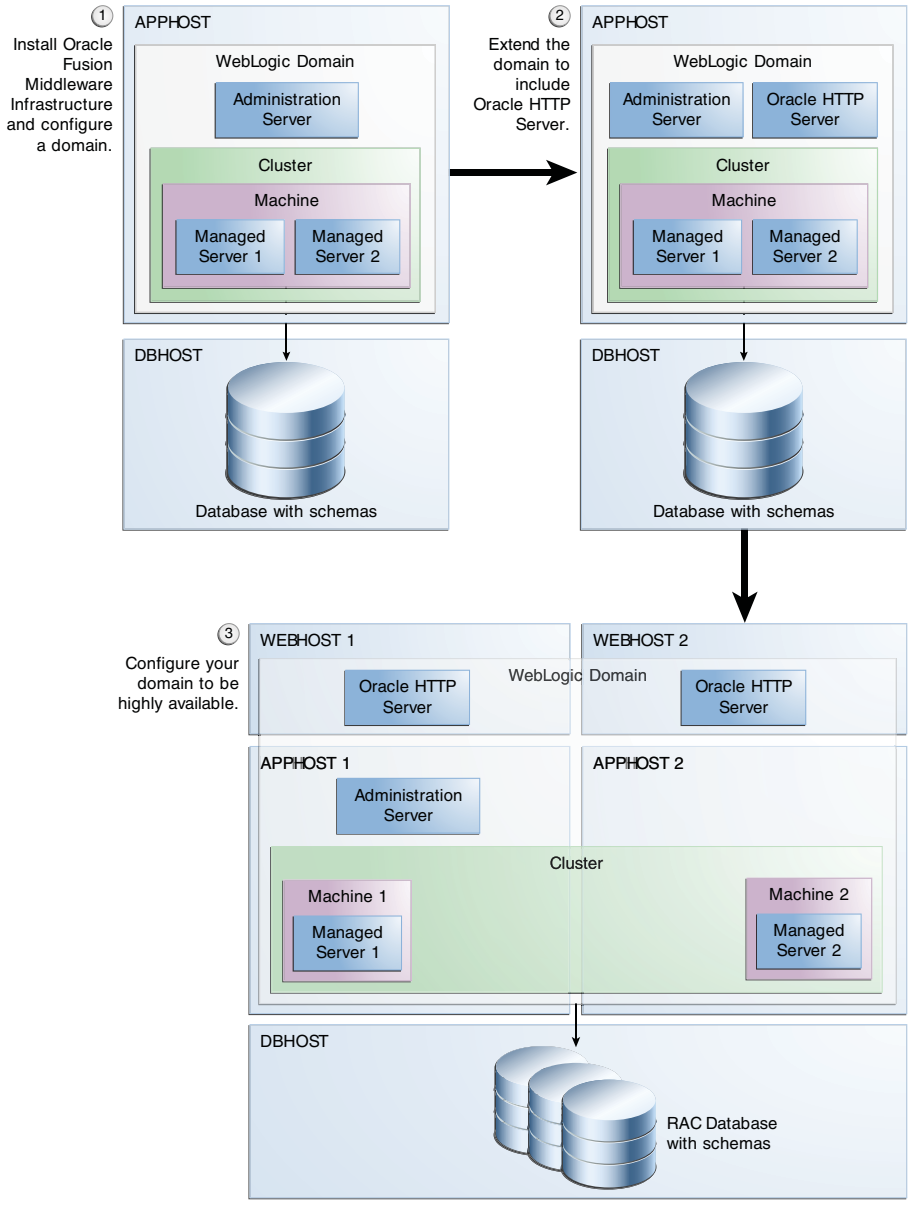


Table 2–1 describes the documentation roadmap for arriving at high availability.

Table 2–1 Documentation Roadmap for Arriving at High Availability

Task	Description and Additional Documentation
Verify pre-installation requirements.	Section 2.2
Task 1 in Figure 2–1: install and configure the Oracle Fusion Middleware Infrastructure standard installation topology.	Section 2.3
Task 2 in Figure 2–1: extend the domain in the Oracle Fusion Middleware Infrastructure standard installation topology to include Oracle HTTP Server.	Section 2.4

Table 2–1 (Cont.) Documentation Roadmap for Arriving at High Availability

Task	Description and Additional Documentation
Task 3 in Figure 2–1: use various tools and scripts to move to a high availability environment.	Section 2.5

2.2 Verifying Pre-Installation Requirements

Table 2–2 describes the tasks that can be taken to verify your environment prior to installation.

Table 2–2 Tasks for Verifying Pre-Installation Requirements

Task	Documentation
Verify that your platform and system are certified and meet the necessary minimum requirements for installation and configuration.	Section 1.3
Make the necessary preparations in terms of understanding the environment you want to have at the end of your installation and configuration process.	*Planning an Installation of Oracle Fusion Middleware* (this document)
Review and understand basic Oracle Fusion Middleware concepts.	*Understanding Oracle Fusion Middleware*
When you are ready to begin, obtain the necessary software distributions.	Section 1.1.2

2.3 Installing the Oracle Fusion Middleware Infrastructure

Instructions for installing the first part of the topology, the Oracle Fusion Middleware Infrastructure, are located in *Installing and Configuring the Oracle Fusion Middleware Infrastructure*.

The standard installation topology for Oracle Fusion Middleware Infrastructure consists of a domain with two Managed Servers; a minimum of two Managed Servers is required for the standard high availability topology.

2.4 Installing Oracle HTTP Server

After configuring the domain for Oracle Fusion Middleware Infrastructure, the post-domain configuration chapter discusses tasks that should be performed to prepare your environment for high availability.

One of these tasks is to extend your domain to include Oracle HTTP Server in a WebLogic Server domain. Instructions for doing this and can be found in *Installing and Configuring Oracle HTTP Server*.

2.5 Moving to High Availability

After Oracle Fusion Middleware Infrastructure and Oracle HTTP Server are properly installed and configured, you can follow the instructions in either of the respective installation guides to help you move to high availability; the links will point you to the appropriate documentation in the *High Availability Guide*.

Some of the tasks required include:

- Adding Oracle RAC database connectivity

- Adding a load balancer
- Scaling out a machine

3

Recovering From a Partial or Interrupted Installation or Configuration

This chapter describes how to recover from a partial or interrupted installation of configuration.

This chapter contains the following sections:

- Section 3.1, "Understanding Oracle Fusion Middleware Installation and Configuration"
- Section 3.2, "Recovering From an Installation Phase Failure or Interruption"
- Section 3.3, "Recovering From a Configuration Phase Failure or Interruption"

3.1 Understanding Oracle Fusion Middleware Installation and Configuration

The installation of an Oracle Fusion Middleware product consists of two phases:

1. Installation Phase

   During this phase, the installer lays down the binaries in an Oracle home directory. No runtime processes can write to this directory.

   See Section 3.2 for information about recovering from an installation phase failure or interruption.

2. Configuration Phase

   During this phase, the configuration wizard is run to configure the WebLogic Server domain for the product. WebLogic Server domains contain no binaries; they hold files such as configuration files, log files, and temporary files that can be updated.

   See Section 3.3 for information about recovering from an configuration phase failure or interruption.

3.2 Recovering From an Installation Phase Failure or Interruption

If the product installation is interrupted during the installation phase, the recommended approach is to deinstall the product and remove the Oracle home, then start the installation again.

The product deinstaller is located in the *ORACLE_HOME*/oui/bin directory. Refer to your product installation guide for instructions to deinstall your product.

3.3 Recovering From a Configuration Phase Failure or Interruption

If the installation phase is completed successfully but the configuration phase is interrupted and cannot be restarted, the recommended approach is to:

1. Take steps to address and fix the cause of the failure or interruption. Troubleshooting advice can be found in any of the following locations:
   - Your Oracle Fusion Middleware product installation guide.
   - Log in to My Oracle Support:

     https://support.oracle.com/

     After logging in, click on one of the following tabs to find more information:
     - **Knowledge** to access and search the knowledge base.
     - **Communities** to access My Oracle Support Communities.
     - Click on **Service Requests** to search service requests or file a new service request regarding your issue.
2. Once the cause of the failure has been resolved, there are two potential paths to resuming the configuration:
   a. If the Configuration Wizard is still up and running, try clicking **Retry** in the graphical user interface. If a **Retry** button is not available or clicking the **Retry** button has no effect, exit the Configuration Wizard and refer to the following option:
   b. If you have exited the Configuration Wizard, manually remove objects which the Configuration Wizard may have already created. Typically, this will be the *DOMAIN_HOME* directory and its contents. It should not be necessary to remove the contents of the Oracle home.

   Note: Some products may require extra domain or product removal steps. Refer to the deinstallation chapter in your product installation guide for more details.

Once you have taken steps to remove what was created by the failed configuration attempt, launch the Configuration Wizard and attempt the configuration again.