Creating Domains

Objectives

After completing this lesson, you should be able to:

- Describe a domain's file system
- Create a domain by using the Configuration Wizard
- Configure resources by using the Configuration Wizard
- Copy a domain to another computer with the pack and unpack utilities

Domain Planning Questions

- How many domains?
  - A domain is an arbitrary, administrative boundary.
  - Possible domain boundaries include:
    - Business unit
    - Cost center
    - Data center location
    - Administrator or administrative group
    - Application or application type (for example, one domain for end-user functions and another for back-end accounting)
    - Size (breaking up a large domain into smaller ones to manage them more efficiently)

Domain Planning Questions

- For each domain:
  - What other FMW products are running in the domain?
    - What extra requirements do they impose?
      - See the *Fusion Middleware Enterprise Deployment Guides* which provide product installation recommendations.
  - What applications are running in the domain?
    - Do we need them to be highly available?
      - Will we be using WebLogic clustering or Coherence?
    - Do we need a database?
      - Do we need a highly available database like Oracle RAC?
    - Do our applications use JMS?
    - Do our applications contain EJBs?

Domain Planning Questions

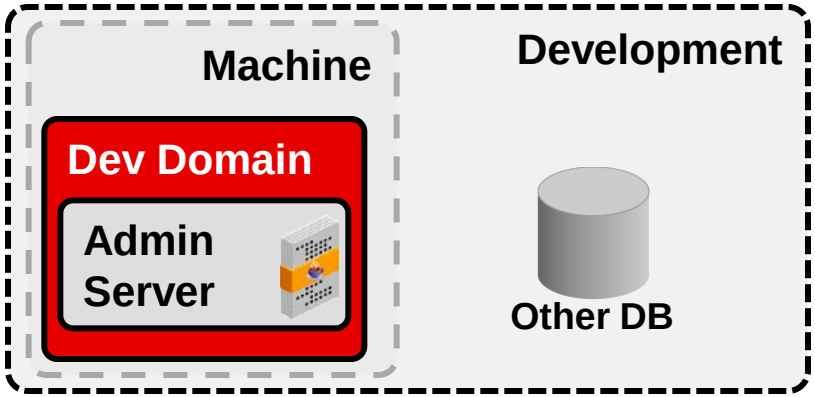
- What is the topology?
  - How many computers?
  - How many instances of WebLogic Server?
  - What hosts and ports?
    - Use virtual IP addresses or virtual host names
  - How many clusters?
  - What will proxy the web-tier clusters? A web server? A hardware load balancer?

Virtual IP Address and Virtual Host Name

- Virtual IP
  - A network interface card typically binds to a single IP address. It can be set up to listen on extra addresses. These are called virtual IP (VIP) addresses.
  - Use VIP addresses when defining WebLogic Servers.
    - If the server must be brought up on new hardware, the VIP address can be moved over to the new hardware.
- Virtual host name
  - A host name is the primary name of a machine in the Domain Name System (DNS). Other (virtual) host names can be assigned to the same machine.
  - Use a virtual host name for each component in FMW. That way, if a component needs to be relocated, no URLs used to access that component must change.

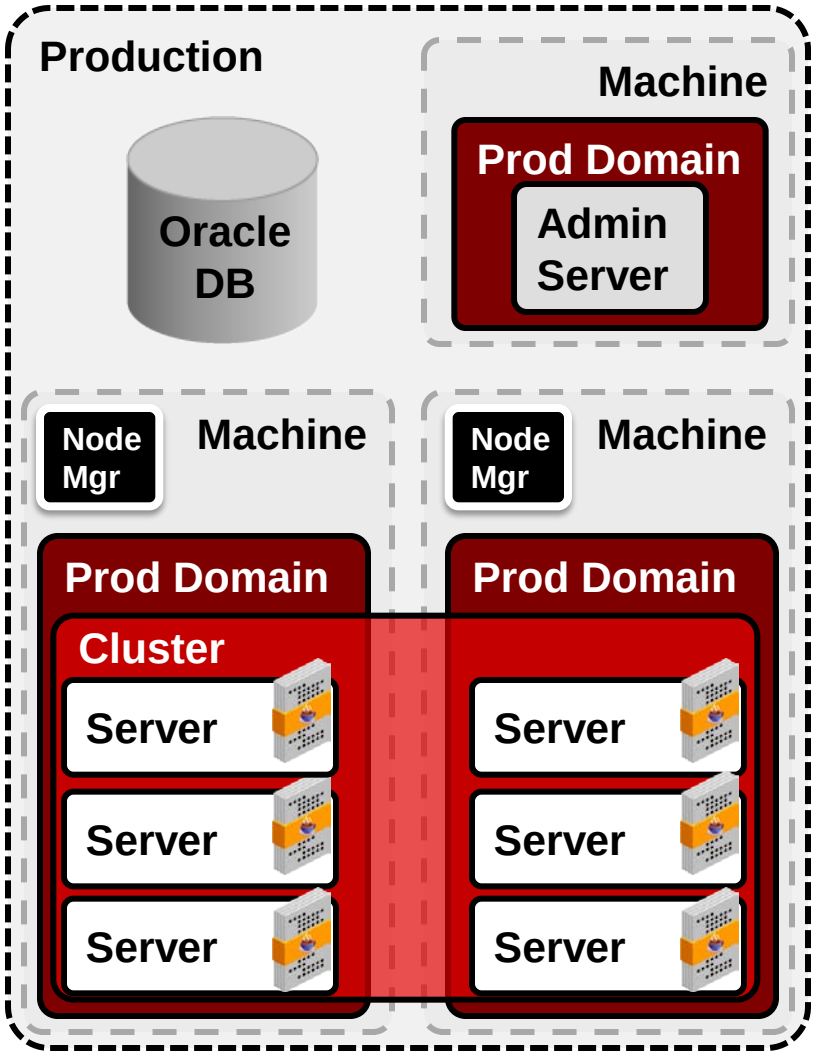
Domain Mode: Development

- Development mode
  - It allows applications to be auto-deployed.
  - It is OK to use demonstration digital certificates for SSL.
  - You are not prompted for a username and password to start (or stop) the admin server.
  - The admin console auto-locks the configuration by default.
  - Often no managed servers are defined in the domain.
    - The admin server handles administration and runs applications.



Domain Mode: Production

- Production mode
  - Auto-deploy is disabled.
  - You should not use the demo certificates for SSL.
  - You are prompted for a username and password to start (or stop) servers
  - The admin console does not allow auto-locking of the configuration.



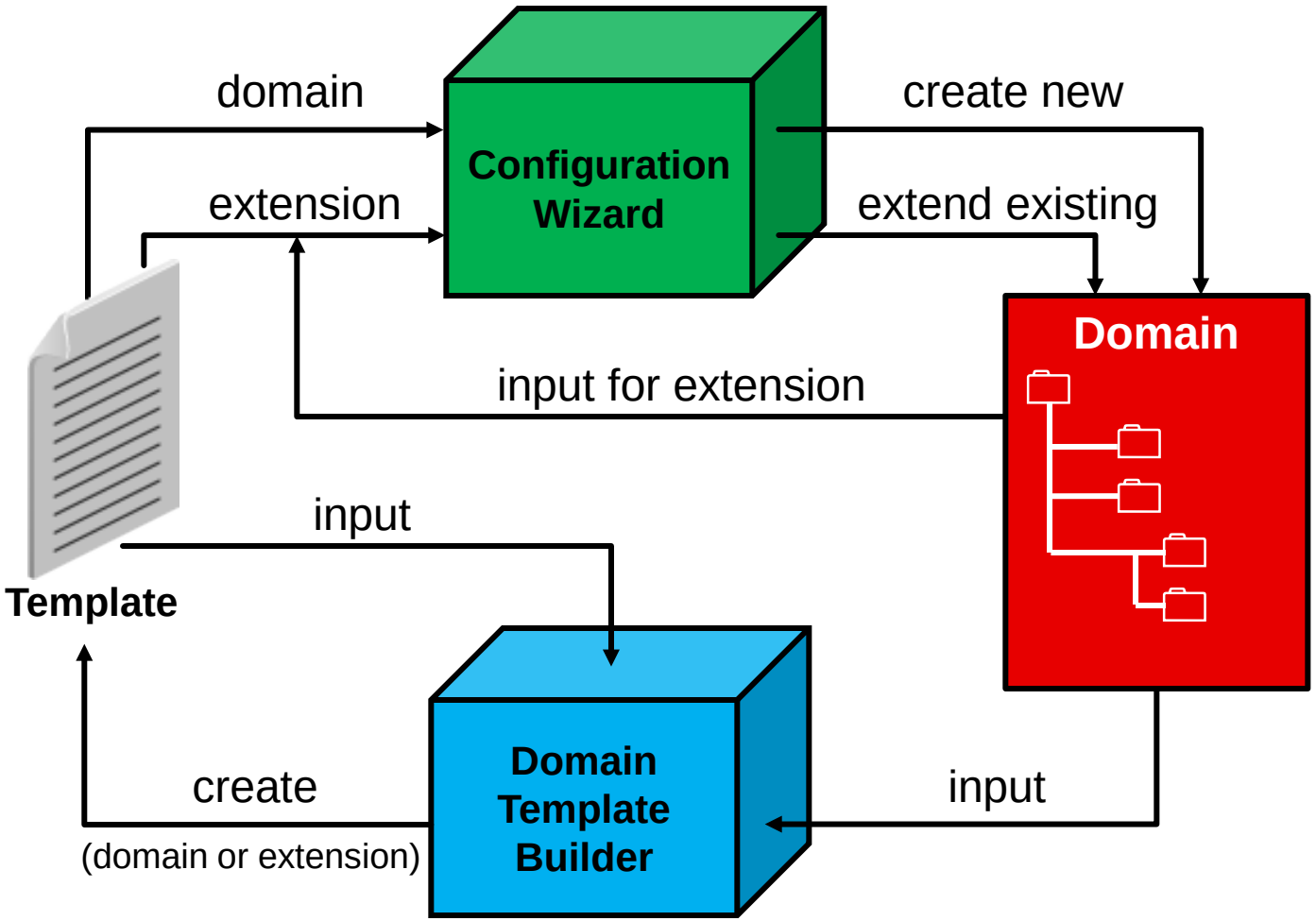
Domain Creation Tools

- **The Configuration Wizard:** Is the graphical domain creation tool
- **WebLogic Scripting Tool (WLST):** Can create domains interactively or by running a WLST script
- **Pack and unpack utilities:** Is used to copy an existing domain to another machine

Domains Are Created from Templates

- Domains are created from domain templates.
  - Domain templates based on FMW products are supplied with those products.
  - You can create custom domain templates by using the Template Builder tool.
- Domains can be extended with extension templates
  - Extension templates based on FMW products are supplied with those products.
  - You can create custom extension templates by using the Template Builder tool.
- The Template Builder graphical tool is found here:
  - `<MW_HOME>/oracle_common/common/bin/config_builder.sh`

Creating Domains

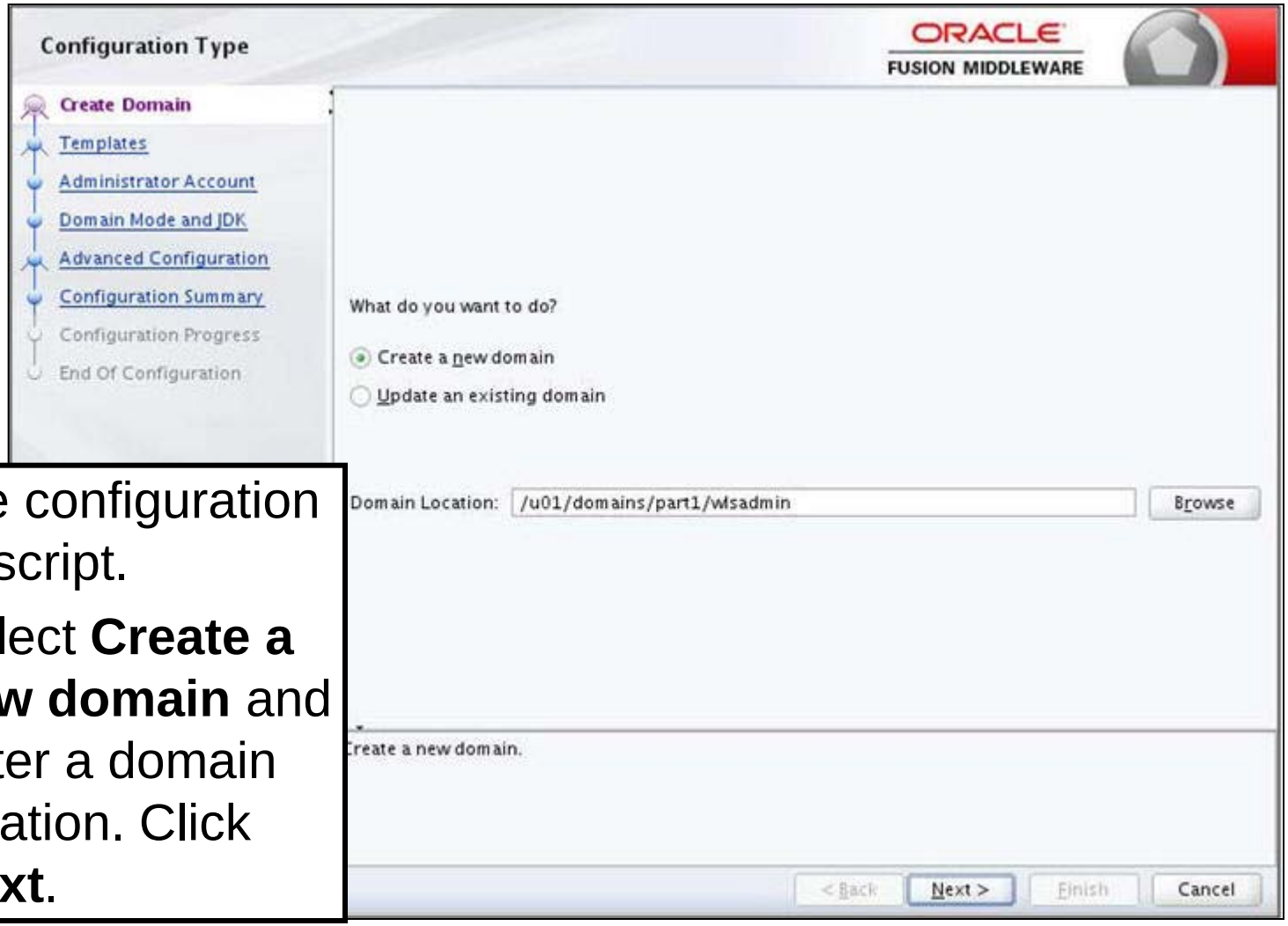


Where to Place the Domain

Each computer that has WebLogic Servers running on it will have a domain directory.

- The administration server domain directory is created by the Configuration Wizard.
  - It is a best practice to place the directory outside the installation directories.
    - This separates the product from your domain, which makes product upgrades and patching easier.

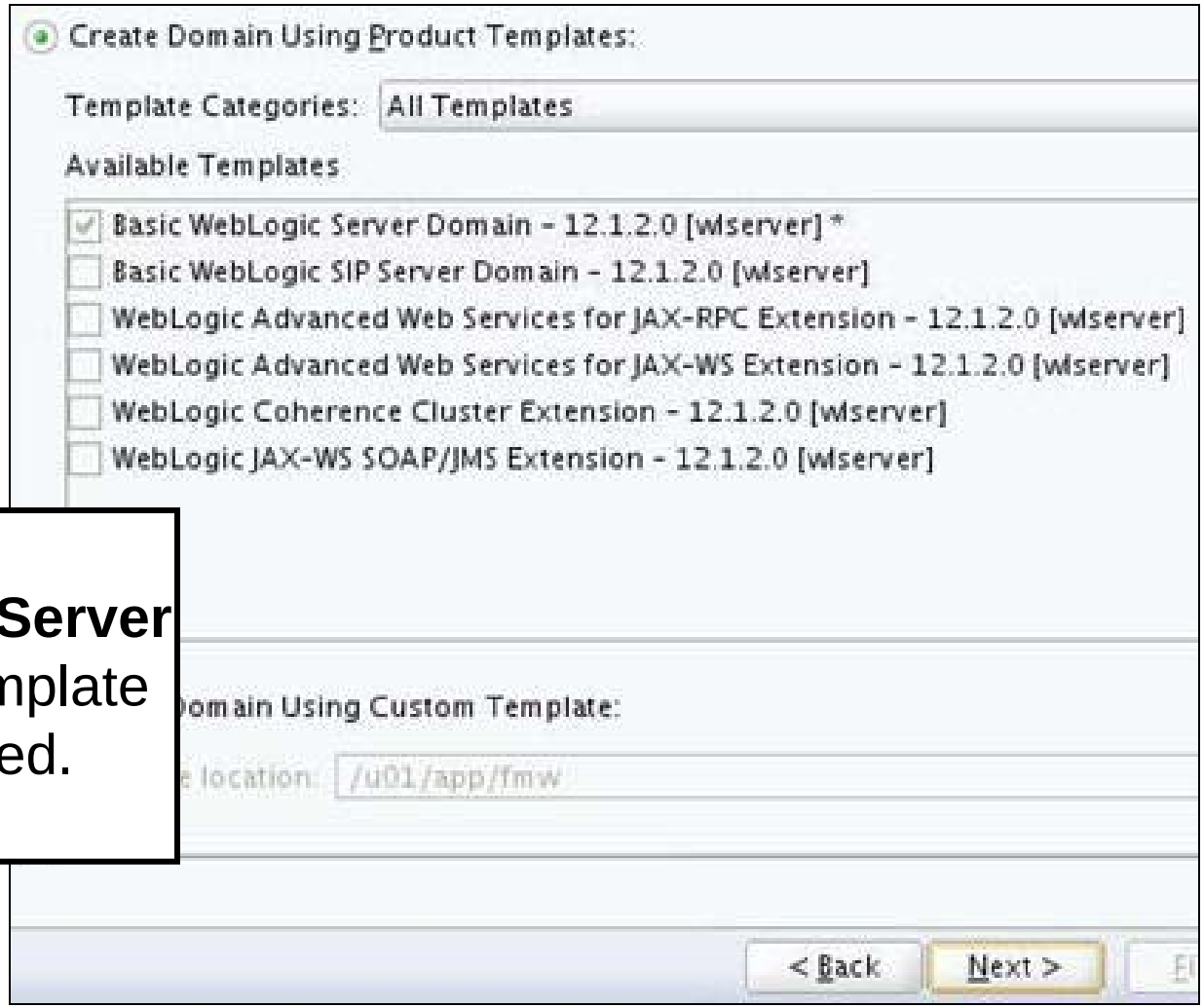
Creating a Domain with the Configuration Wizard



Run the configuration wizard script.

1. Select **Create a new domain** and enter a domain location. Click **Next**.

Creating a Domain with the Configuration Wizard

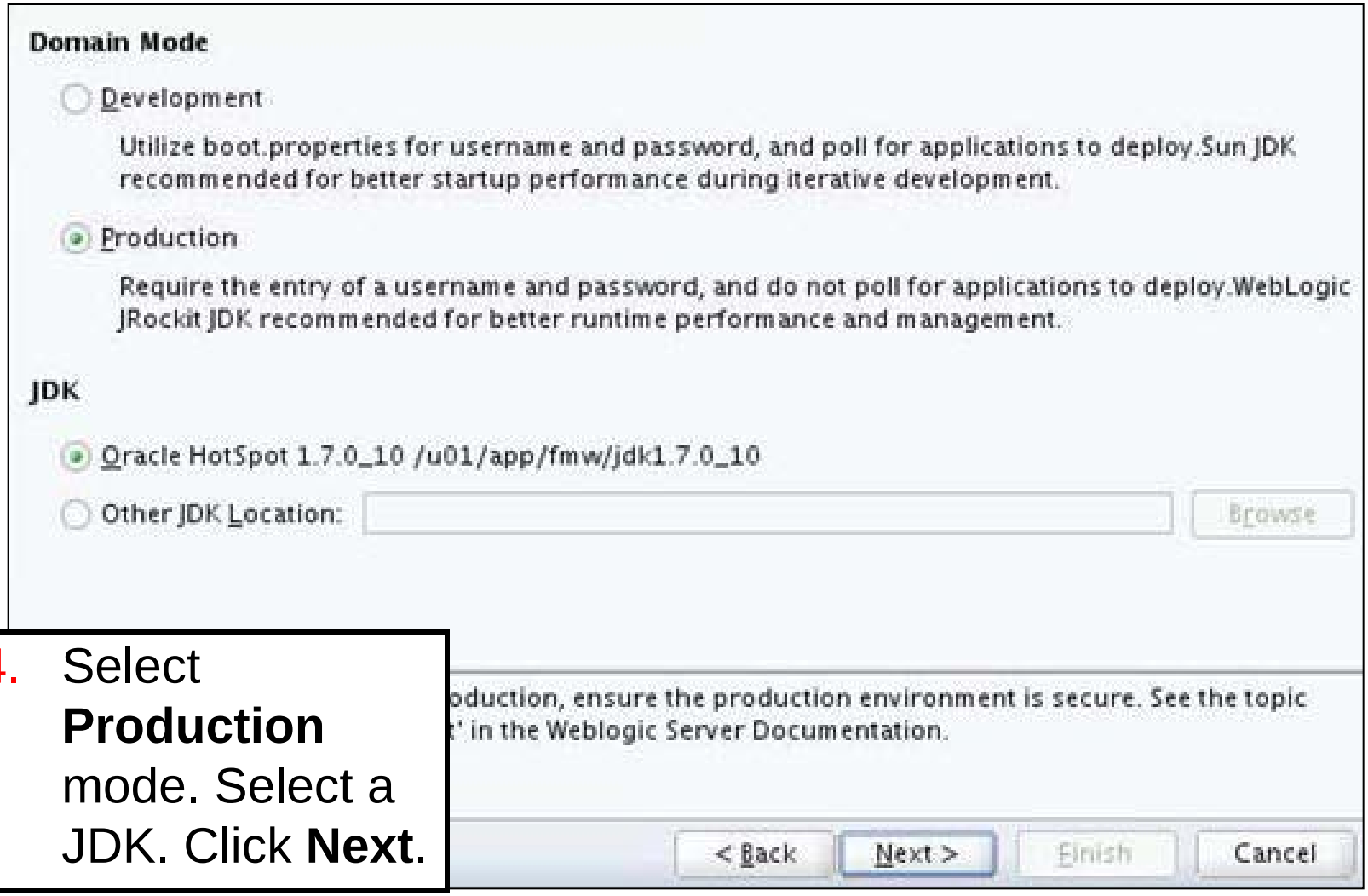


2. The **Basic WebLogic Server Domain** template is preselected. Click **Next**.

Creating a Domain with the Configuration Wizard

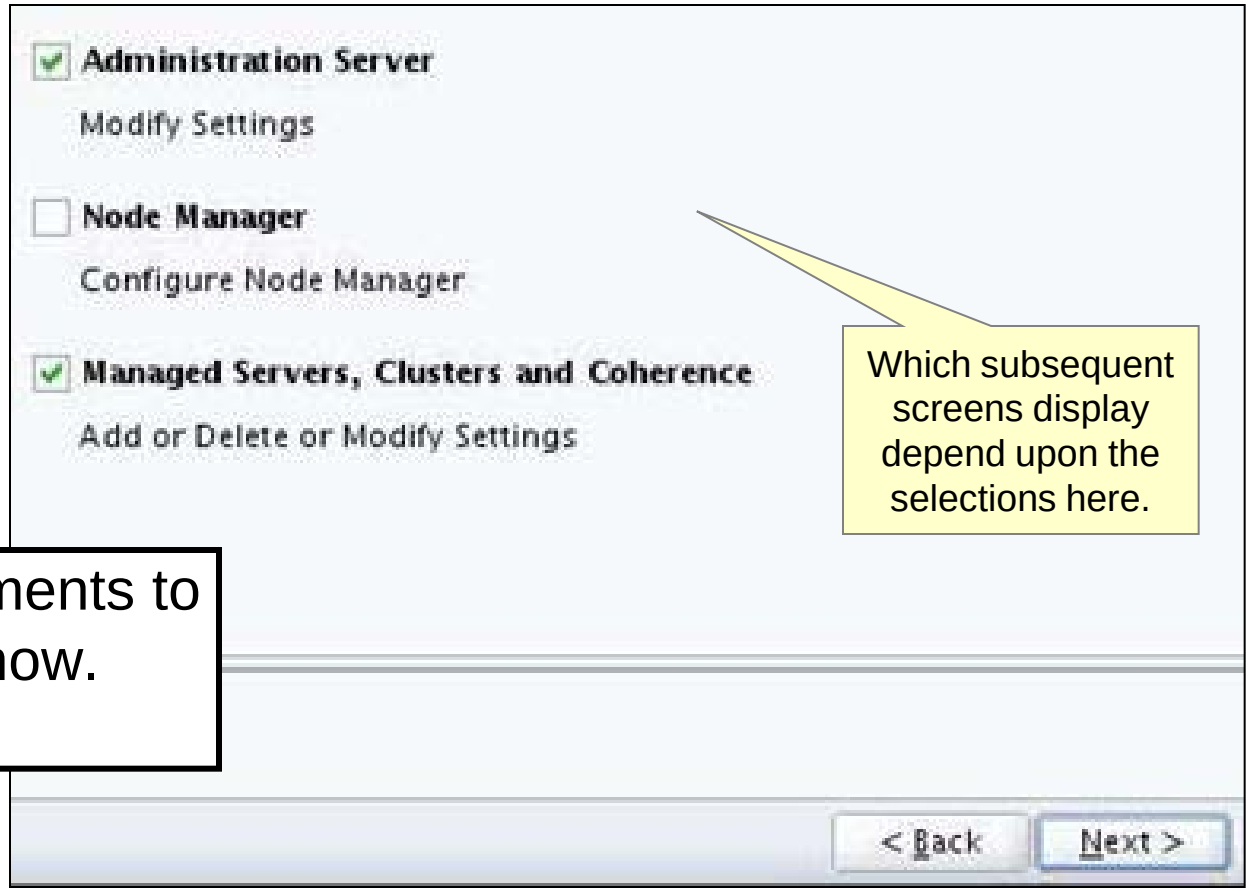
3. Enter account information for the main WebLogic Server administrator. Click **Next**.

Creating a Domain with the Configuration Wizard



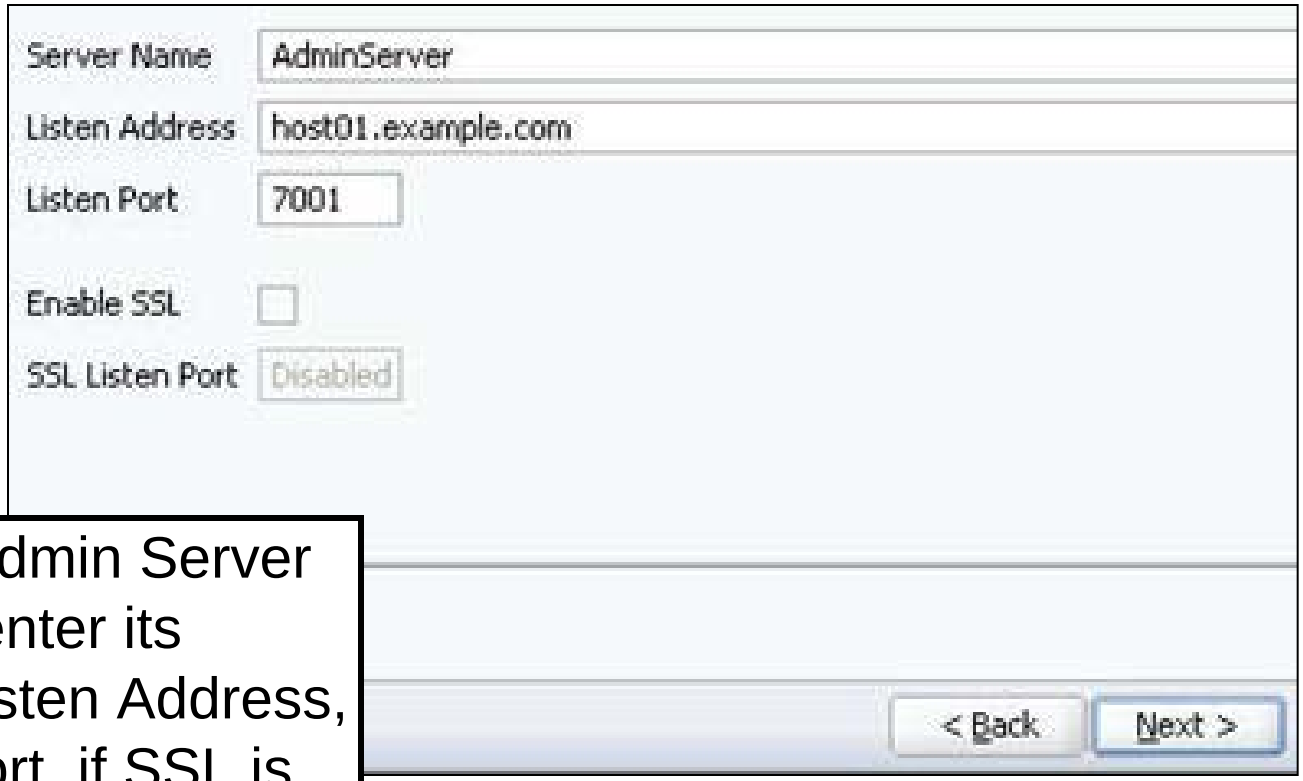
4. Select **Production** mode. Select a JDK. Click **Next**.

Creating a Domain with the Configuration Wizard



5. Select elements to configure now. Click **Next**.

Creating a Domain with the Configuration Wizard



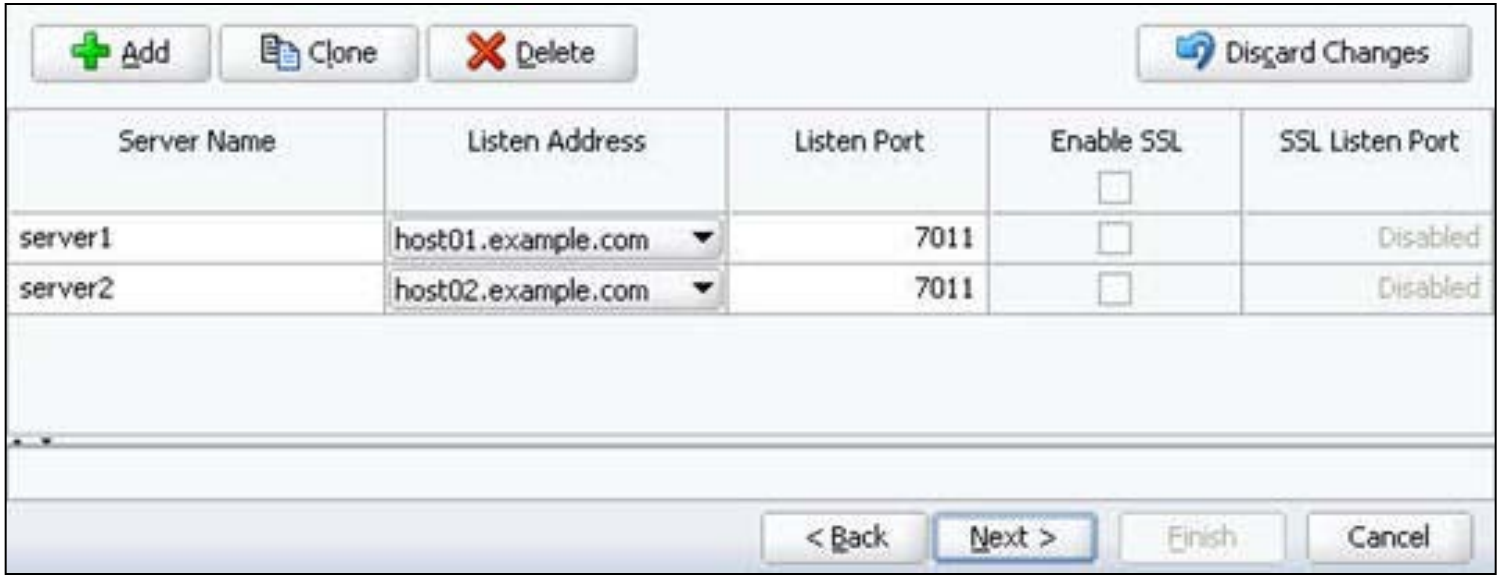
6. On the Admin Server screen, enter its name, Listen Address, Listen Port, if SSL is enabled (and, if so, the SSL Listen Port). Click **Next**.

Admin Server Listen Address

- By default, the Listen Address field for the administration server is “All Local Addresses.”
  - This means the server binds to all available IP addresses on the machine.
  - If the Listen Address is left blank, the effect is the same as choosing “All Local Addresses.”
- Another drop-down option is “localhost”
  - This is not a good option, since only processes that reside on this machine (local processes) can connect to this server.
- Best practice: Enter a virtual IP address or virtual host name for the Listen Address.

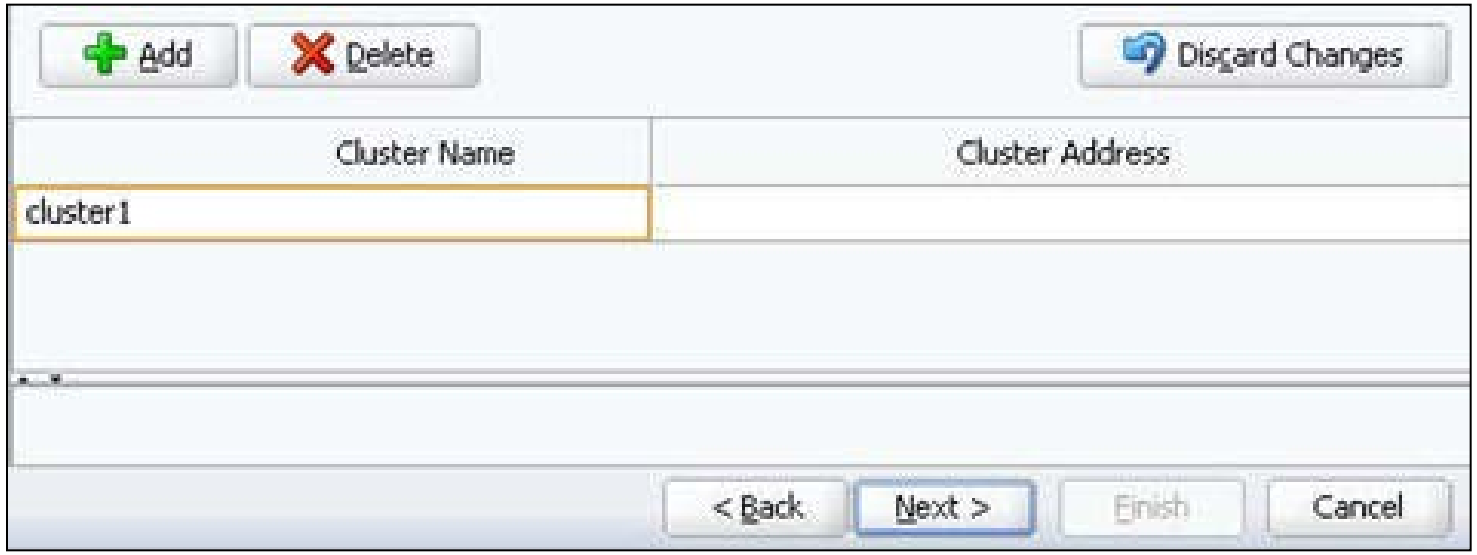
Creating a Domain with the Configuration Wizard

7. On the Managed Servers screen:
   A. Click **Add**.
   B. Enter the server's name, listen address, port, if SSL is enabled (and, if so, the SSL Listen Port).
   C. Do this for each one.
   D. Click **Next**.



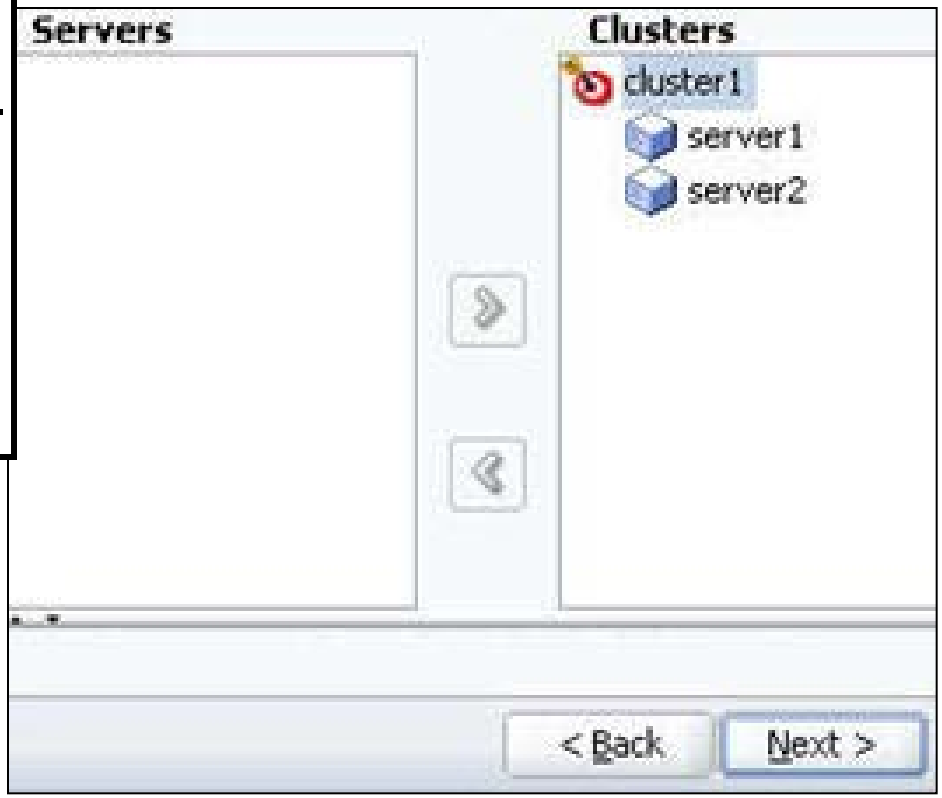
Creating a Domain with the Configuration Wizard

8. On the Clusters screen:
   A. Click **Add**.
   B. Enter the cluster's name and address (optional).
   C. Do this for each cluster.
   D. Click **Next**.



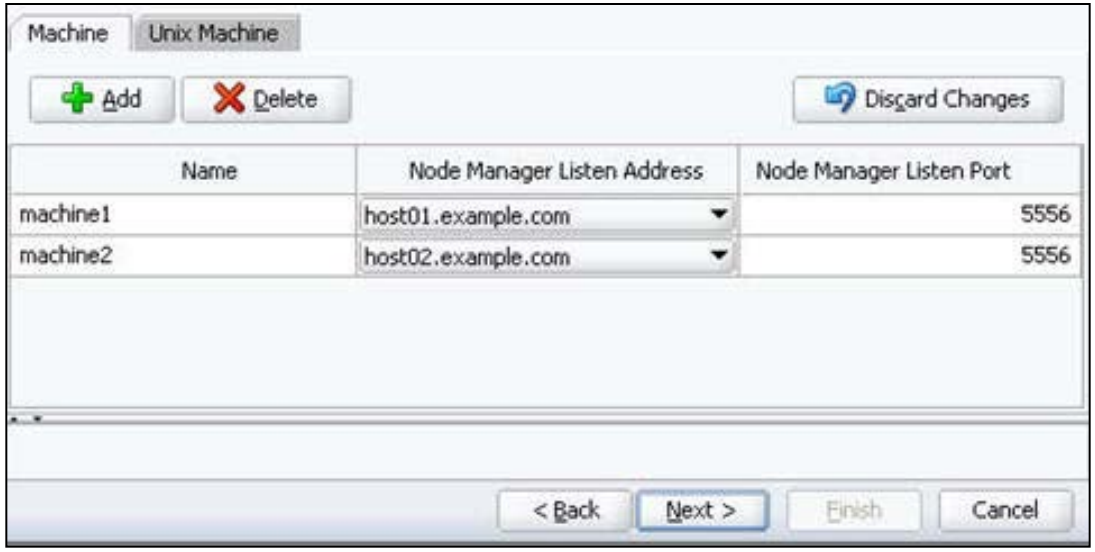
Creating a Domain with the Configuration Wizard

9. On the Assign Servers screen:
   A. Select a cluster.
   B. Select a server.
   C. Click the right arrow.
   D. Repeat as needed.
   E. Do this for each cluster.
   F. Click **Next**.



Creating a Domain with the Configuration Wizard

10. On the Machines screen:
    A. Click the proper tab.
    B. Click **Add**.
    C. Enter the Name, Node Manager Listen Address, and Port.
    D. Do this for each machine.
    E. Click **Next**.

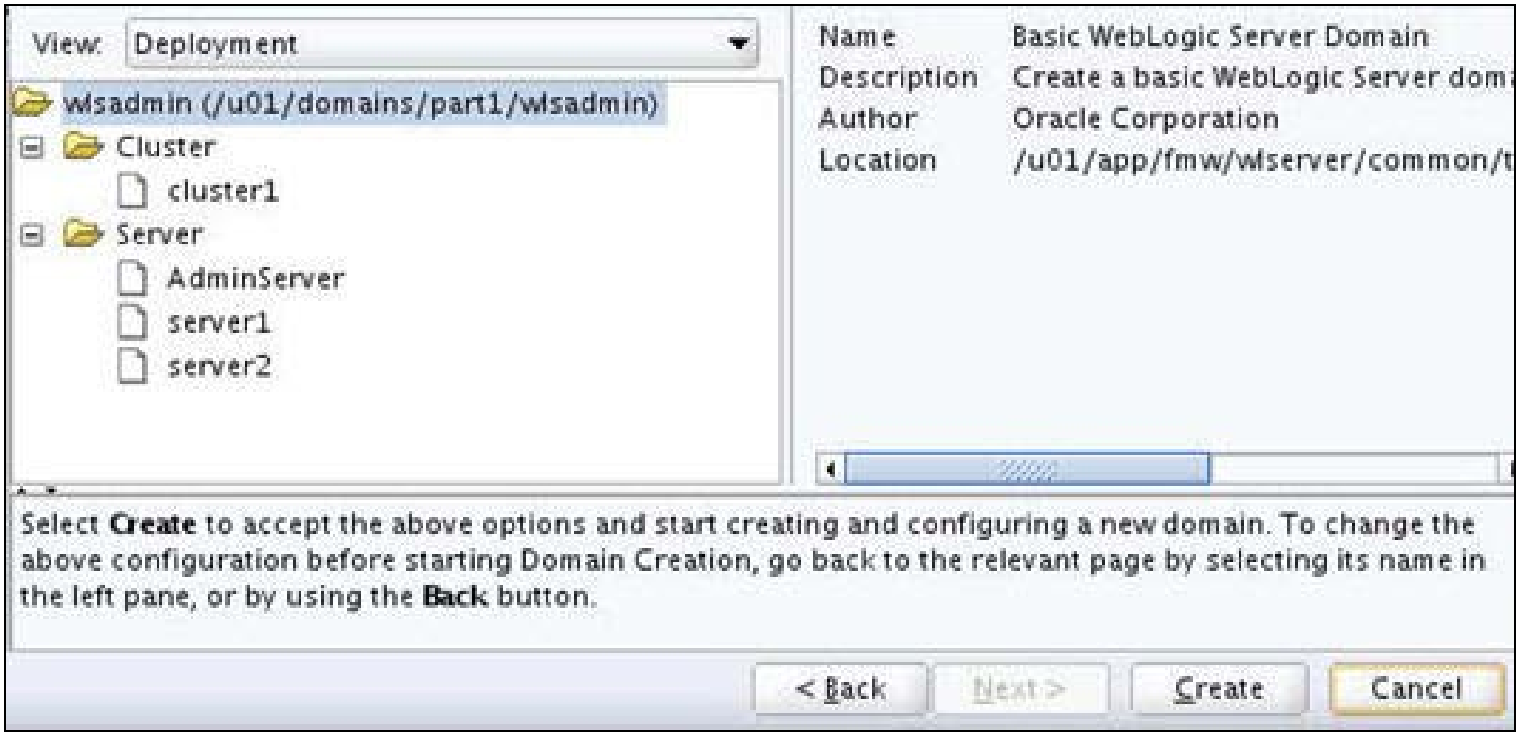


Creating a Domain with the Configuration Wizard

11. On the Assign Servers to Machines screen:
    A. Select a machine.
    B. Select a server.
    C. Click the right arrow.
    D. Repeat as needed.
    E. Do this for each machine.
    F. Click **Next**.

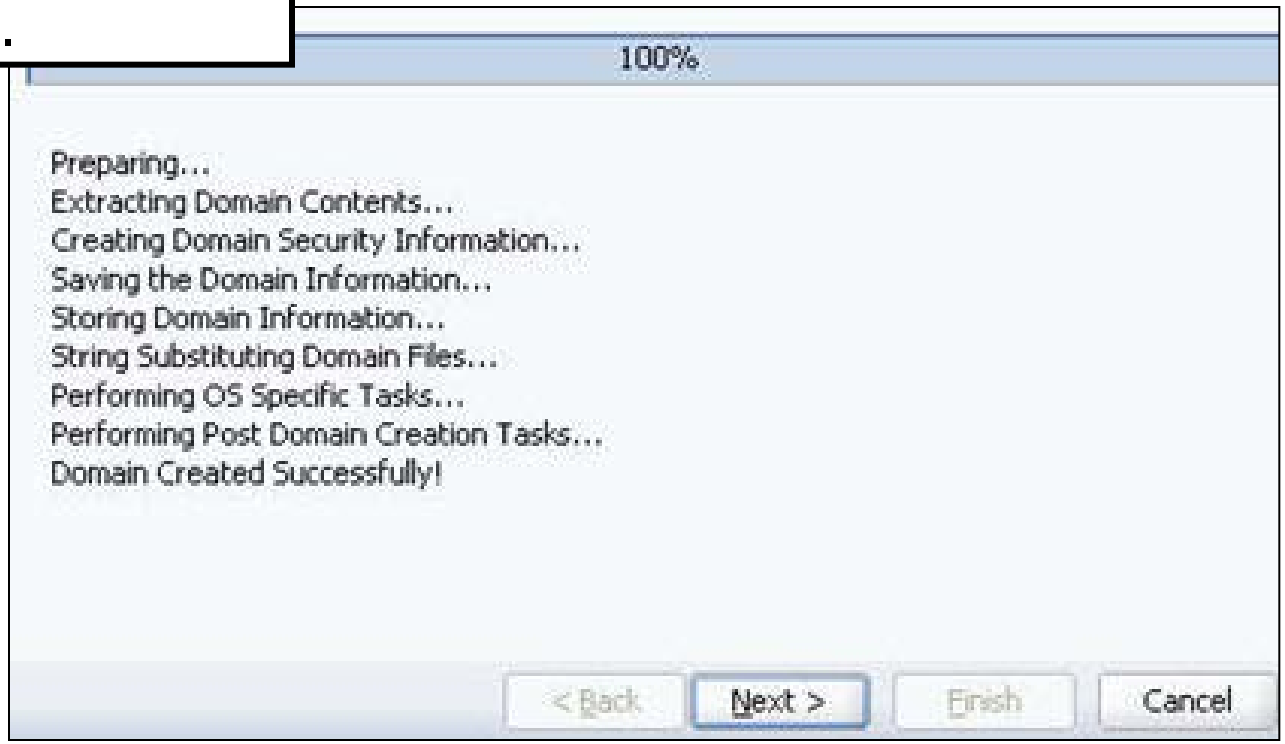
Creating a Domain with the Configuration Wizard

12. On the Configuration Summary screen, review the configuration and click **Create**.



Creating a Domain with the Configuration Wizard

13. On the Configuration Progress screen, when the progress bar reaches 100%, click **Next**.



Creating a Domain with the Configuration Wizard

14. On the Configuration Success screen, click **Finish**.

Domain File Structure

Directory	Description
🗁 ***domain-name***	The name of this directory is the name of the domain.
🗀 **bin**	Scripts for starting and stopping the servers in the domain
🗀 **config**	The saved configuration of the domain is contained in the **config.xml** file and other subdirectories and files.
🗀 **lib**	JAR files placed here are automatically added to the CLASSPATH of each WebLogic Server started on this machine.
🗀 **nodemanager**	The default location for the domain's Node Manager
🗀 **pending**	Domain configuration changes that have been saved but not yet activated are stored here temporarily.
🗀 **security**	Domain-wide security-related files
🗁 **servers**	One subdirectory for each server in the domain
🗁 ***server1***	The server directory for the server of the same name
🗀 **data**	Data for internal LDAP, Node Manager, and saved diagnostics
🗀 **logs**	Server log files
🗀 **stage**	Default staging directory for deployed applications

Creating a Domain to Support FMW Components

Domain templates are supplied when certain FMW components are installed, such as Oracle SOA Suite.

- If you add another FMW component, extend the domain with that product's extension template.

Existing Domain Template	Components that Can Be Added/Registered
Oracle SOA Suite	Any other Oracle SOA Suite component Any Oracle WebCenter component Any Web Tier component
Oracle Identity Management	Other Identity Management components Any Web Tier component
Oracle Portal, Oracle Reports, Oracle Forms Services, Oracle Business Intelligence Discover	Any of these components Any Web Tier component

The Domain on Other Hardware

Remember, each computer that has instances of WebLogic Server running on it must have a domain directory.

- The administration server domain directory is created by the Configuration Wizard.
- To create the domain directory on other computers (for managed servers) use the pack utility to create a managed server template. Move the managed server template JAR file to the other computer, and then use the unpack utility.
- It is a best practice to place the domain directory in the same location on all computers that run that domain's servers.

Creating the Domain Archive: Pack

1. On the administration server machine, use the `pack.sh` script with the managed option.

```
$> cd <MW_HOME>/oracle_common/common/bin
$> ./pack.sh -domain=domain_path/domain_name
             -template=name.jar
             -template_name=somename
             -managed=true
```

Using the Domain Archive: Unpack

2. Move the JAR file to the machine where a managed server will run. (The WebLogic Server product must already be installed there.)
3. Before running the `unpack.sh` script on that machine, create the directory in which to place the domain. (In the example below, it is called *`domain_path`*.)
4. Run the `unpack.sh` script:

```
$> cd <MW_HOME>/oracle_common/common/bin
$> ./unpack.sh -domain=domain_path/domain_name
               -template=pathtojar/name.jar
```

Quiz

Domains are created from _____.

a. The administration server
b. WAR files
c. Templates
d. The administration console

Quiz

To copy a domain from the administration server machine to a managed server machine, use the _____.

a. Pack and unpack utilities
b. Configuration Wizard
c. Template builder
d. Zip and unzip utilities

Summary

In this lesson, you should have learned how to:

- Describe a domain's file system
- Create a domain by using the Configuration Wizard
- Configure resources by using the Configuration Wizard
- Copy a domain to another computer with the pack and unpack utilities

Practice 4-1 Overview: Creating a New Domain

This practice covers creating a new domain by using the Configuration Wizard.

Practice 4-2 Overview: Copying a Domain to a New Machine

This practice covers copying a domain to another machine that will run managed servers.