4

Configuring a Simple Domain

Objectives

After completing this lesson, you should be able to:

- Describe the common elements in a WebLogic Server domain
- Describe how domains are used in the enterprise
- Compare administration and managed servers
- Configure a domain
- Describe the organization and contents of the WLS directory structure
- Describe the use of WLST offline to manage domains
- Create a simple domain with one managed server
- Check the port numbers that are used for components

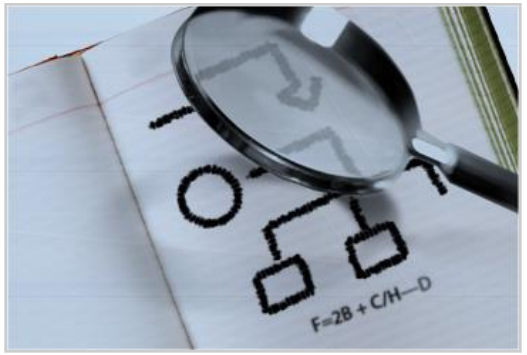
Objectives

After completing this lesson, you should be able to:

- Identify the location of process management scripts
- Describe the hierarchy of scripts and the setting of environment variables
- Use scripts to start and stop the administration server and the managed servers

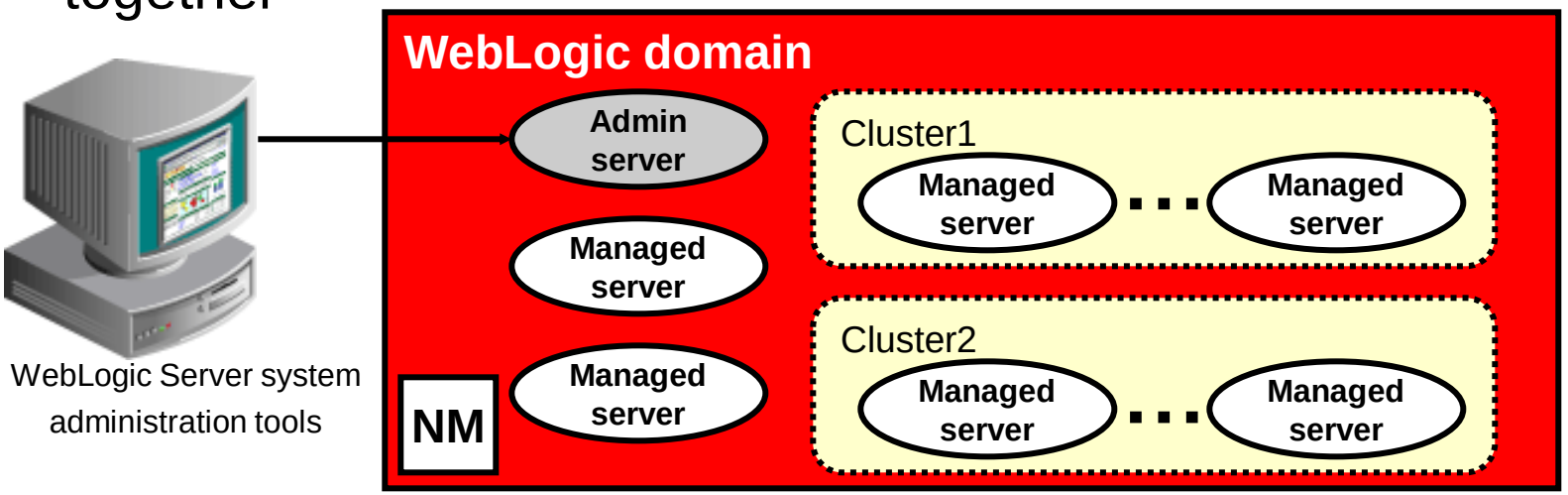
Road Map

- Domains
  - Explaining how the domain works
  - Describing the domain directory structure
  - Configuring a domain
- Starting and stopping the Oracle WebLogic Server

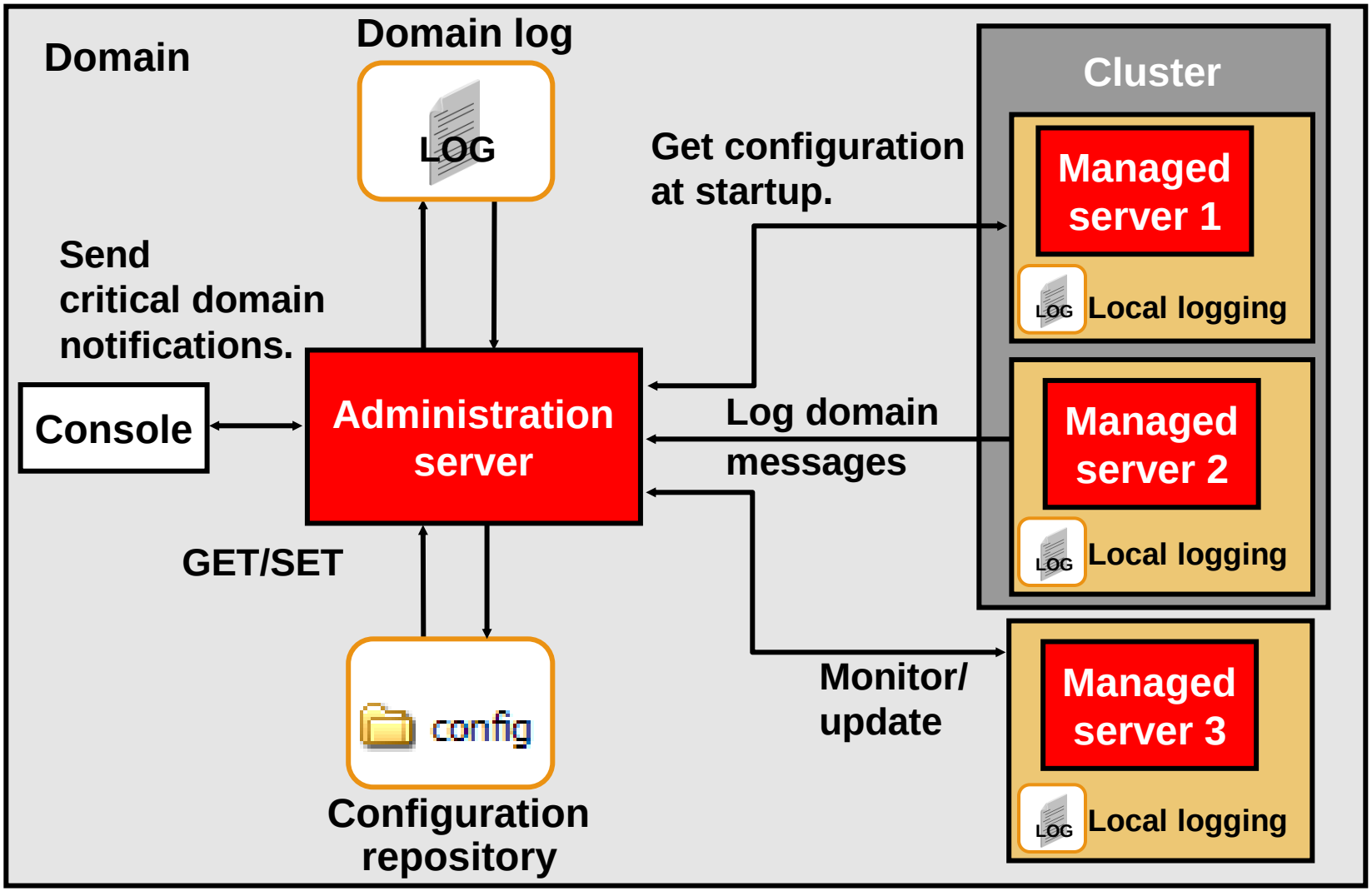


Domain: Overview

- Is the basic administration unit for Oracle WebLogic Server
- Always includes one Oracle WebLogic Server instance configured as an administration server
- May include optional Oracle WebLogic Server instances in a domain called managed servers
- May also include clusters of server instances that work together



Domain Diagram

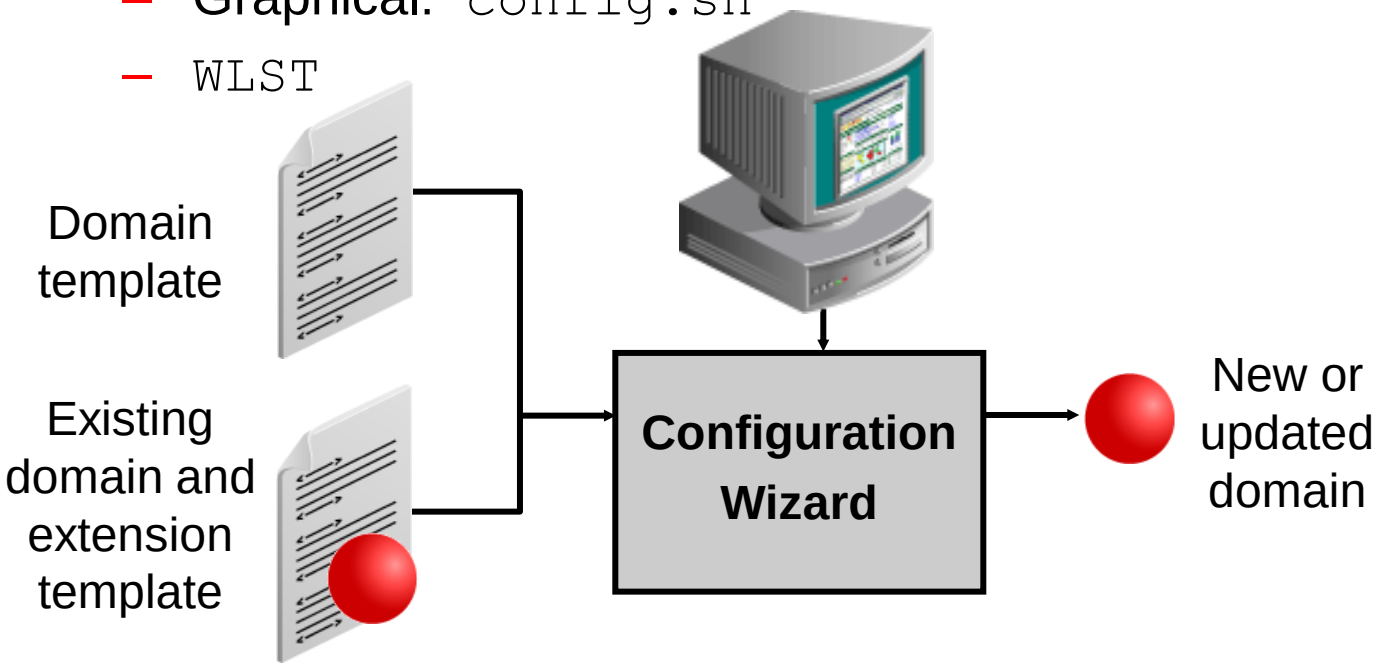


Configuring a Domain

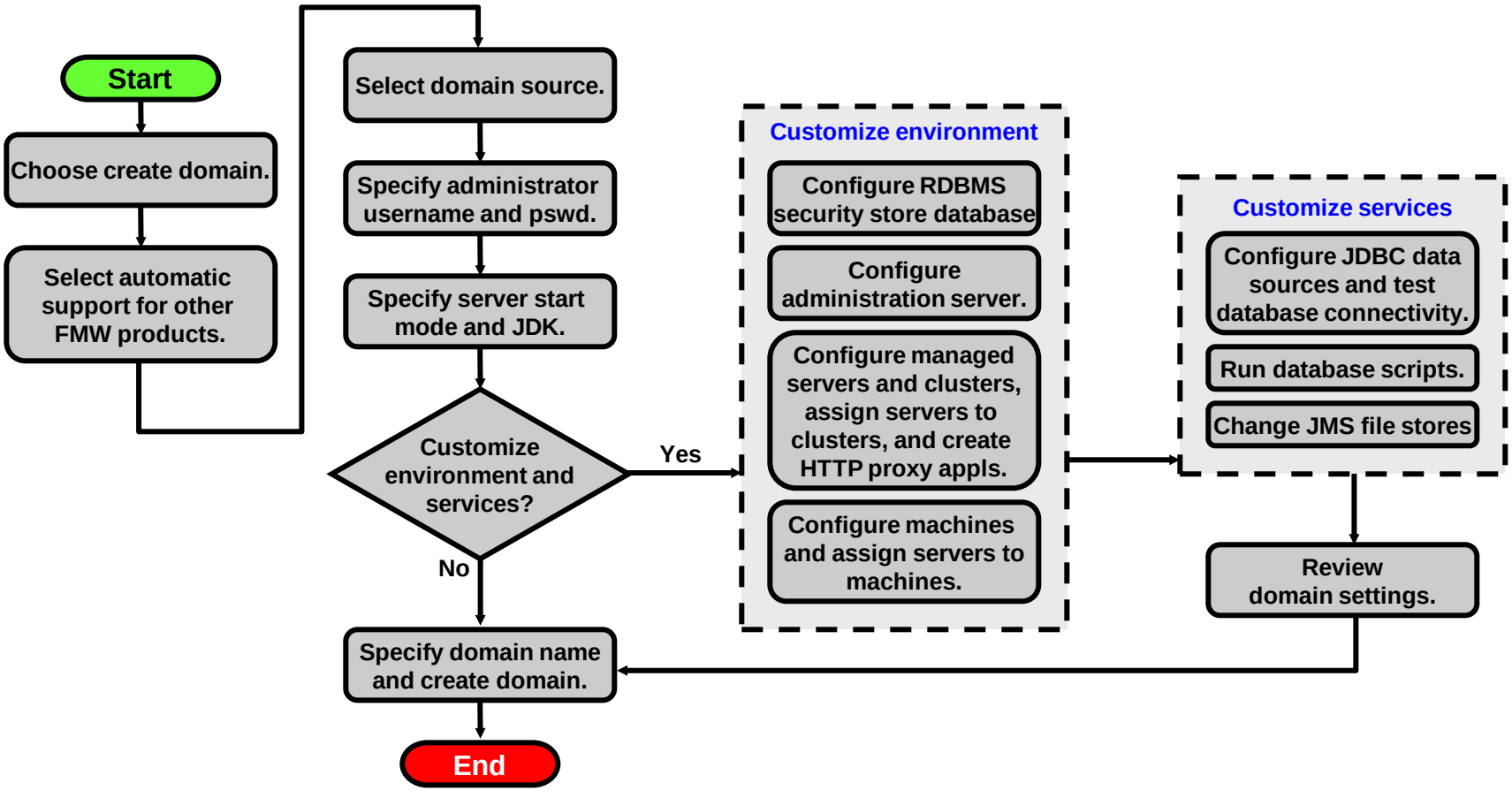
- After the installation, configure a domain on which to develop and deploy applications.
- By creating a domain, you define a collection of resources, such as:
  - Managed servers
  - Clusters
  - Database connections
  - Security services
  - Java EE applications
- Configuration Wizard creates and configures domains
- Common domain configurations are:
  - Development or test
  - Production

Starting the Domain Configuration Wizard

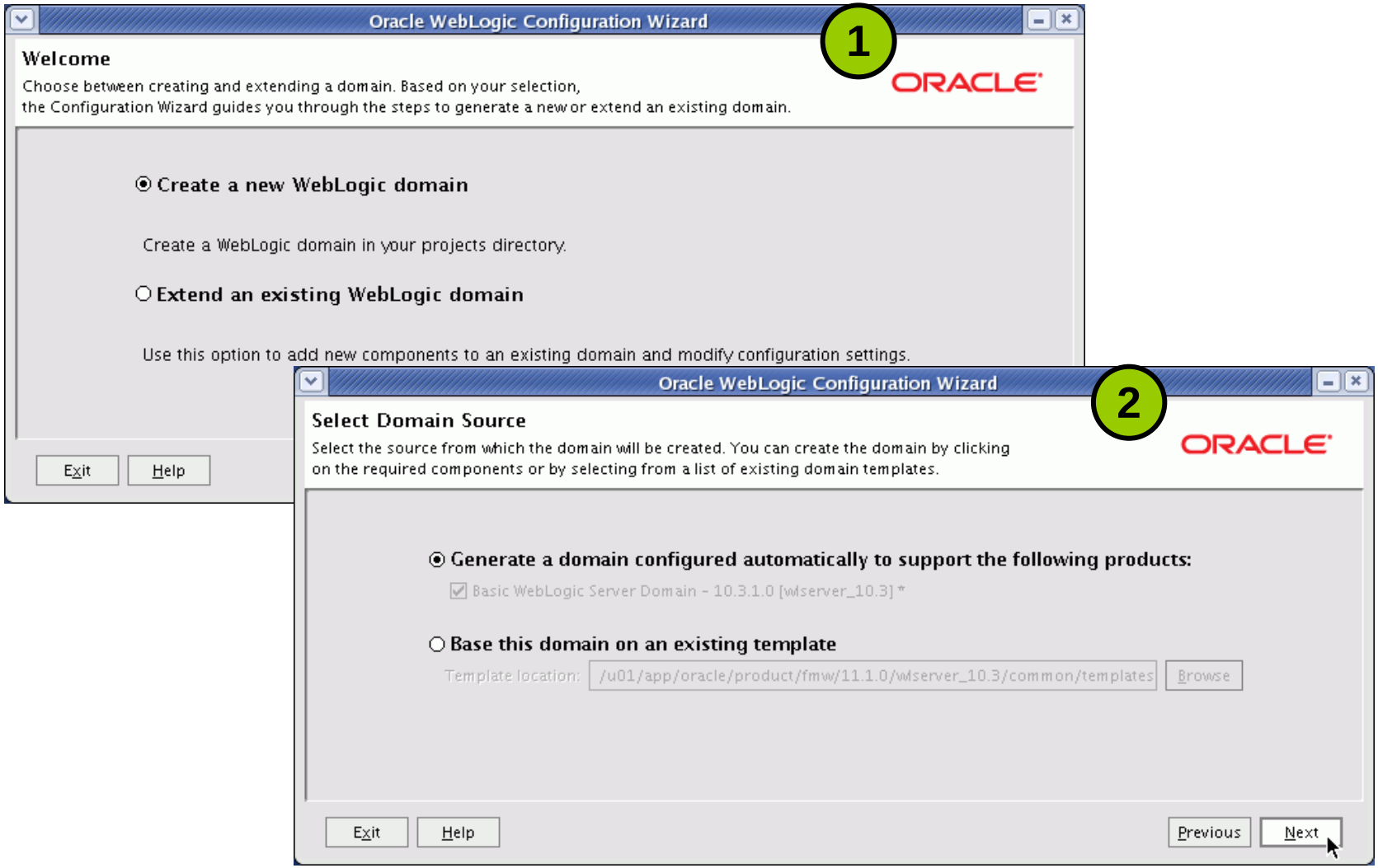
- Scripts are in the `<ORACLE_HOME>/oracle_common/common/bin` directory.
- Two modes:
  - Graphical: `config.sh`
  - `WLST`



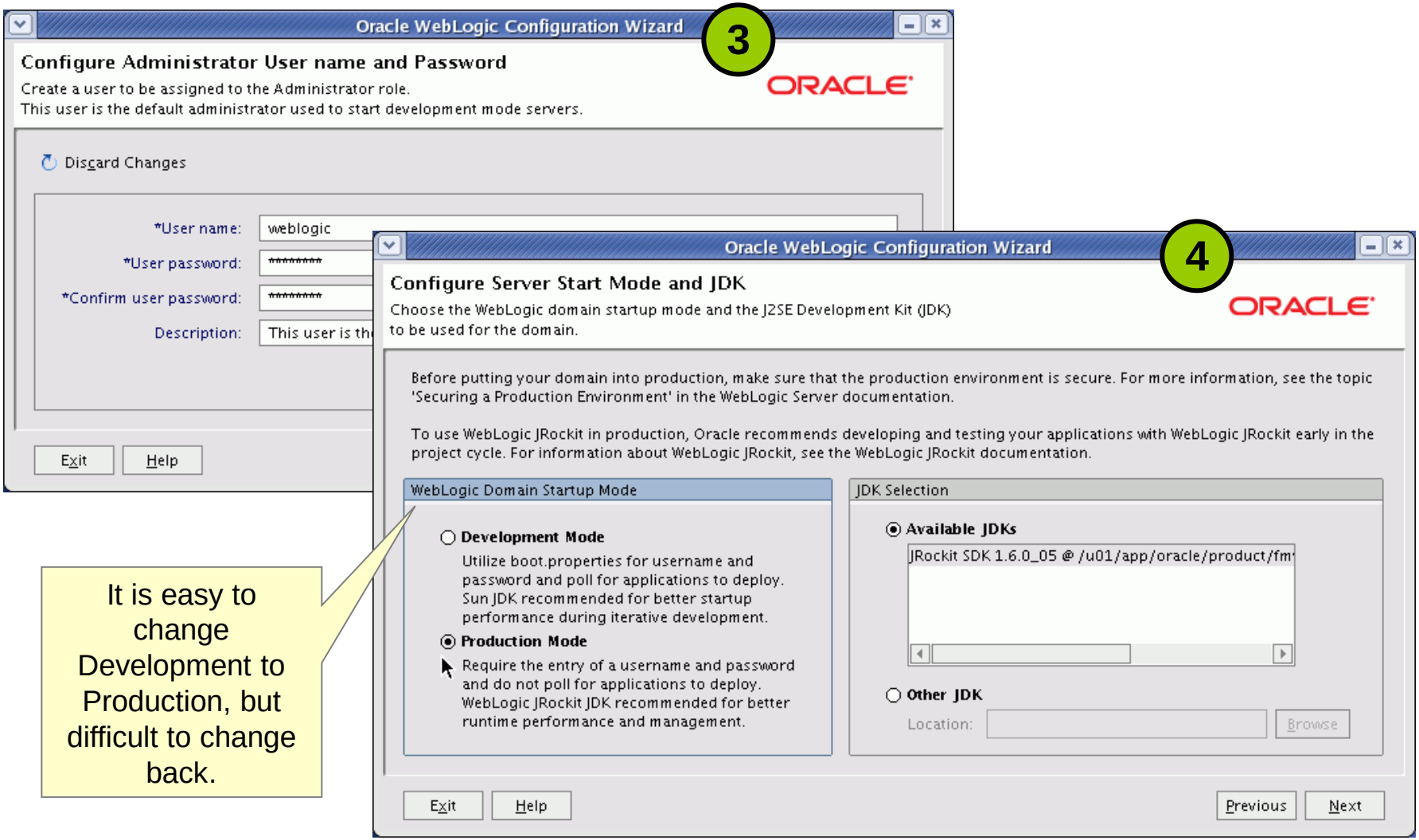
Creating a Domain Using the Domain Configuration Wizard



Creating a New WebLogic Domain and Selecting the Domain Source

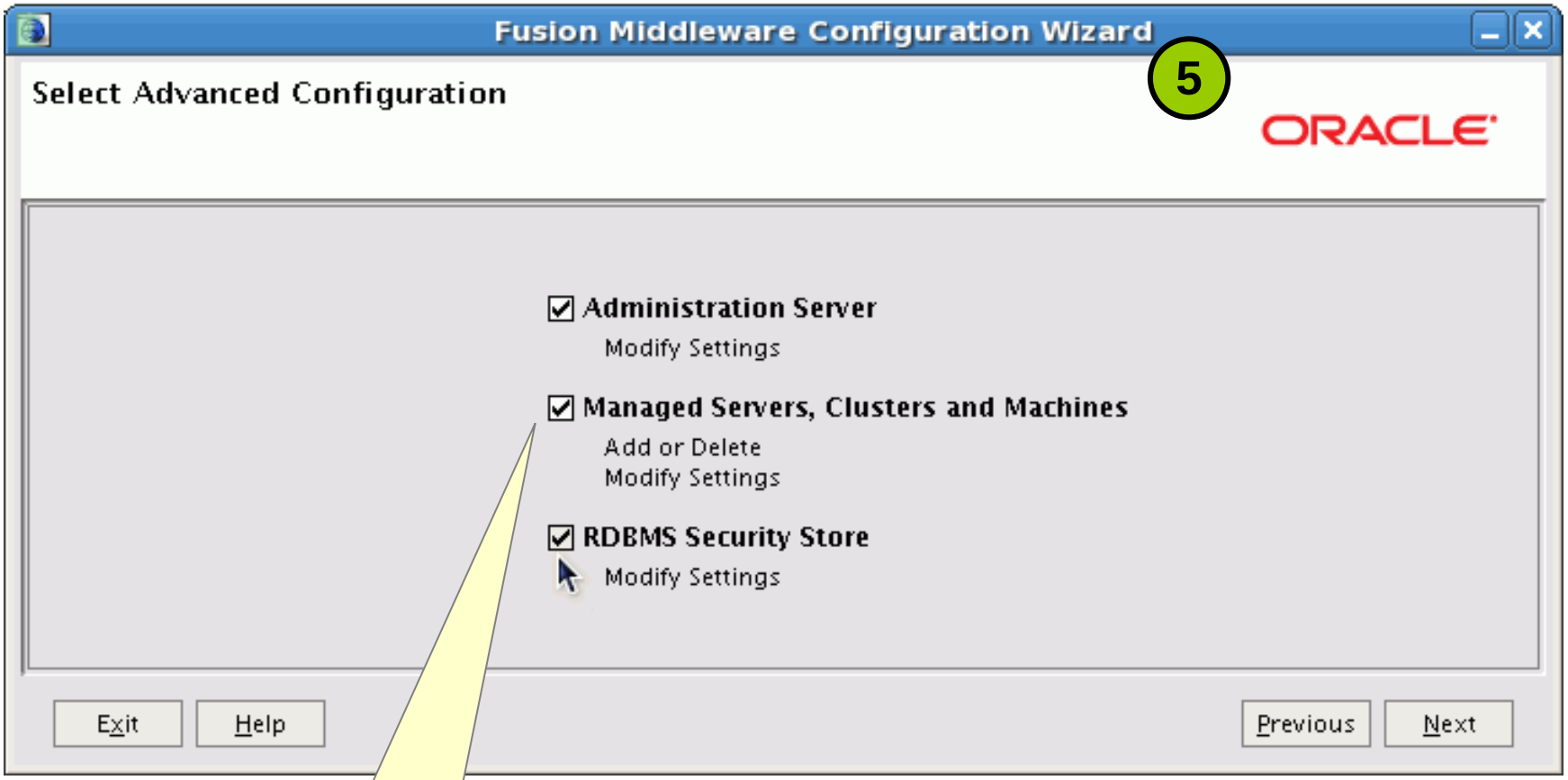


Configuring Administrator Settings, Start Mode, and JDK

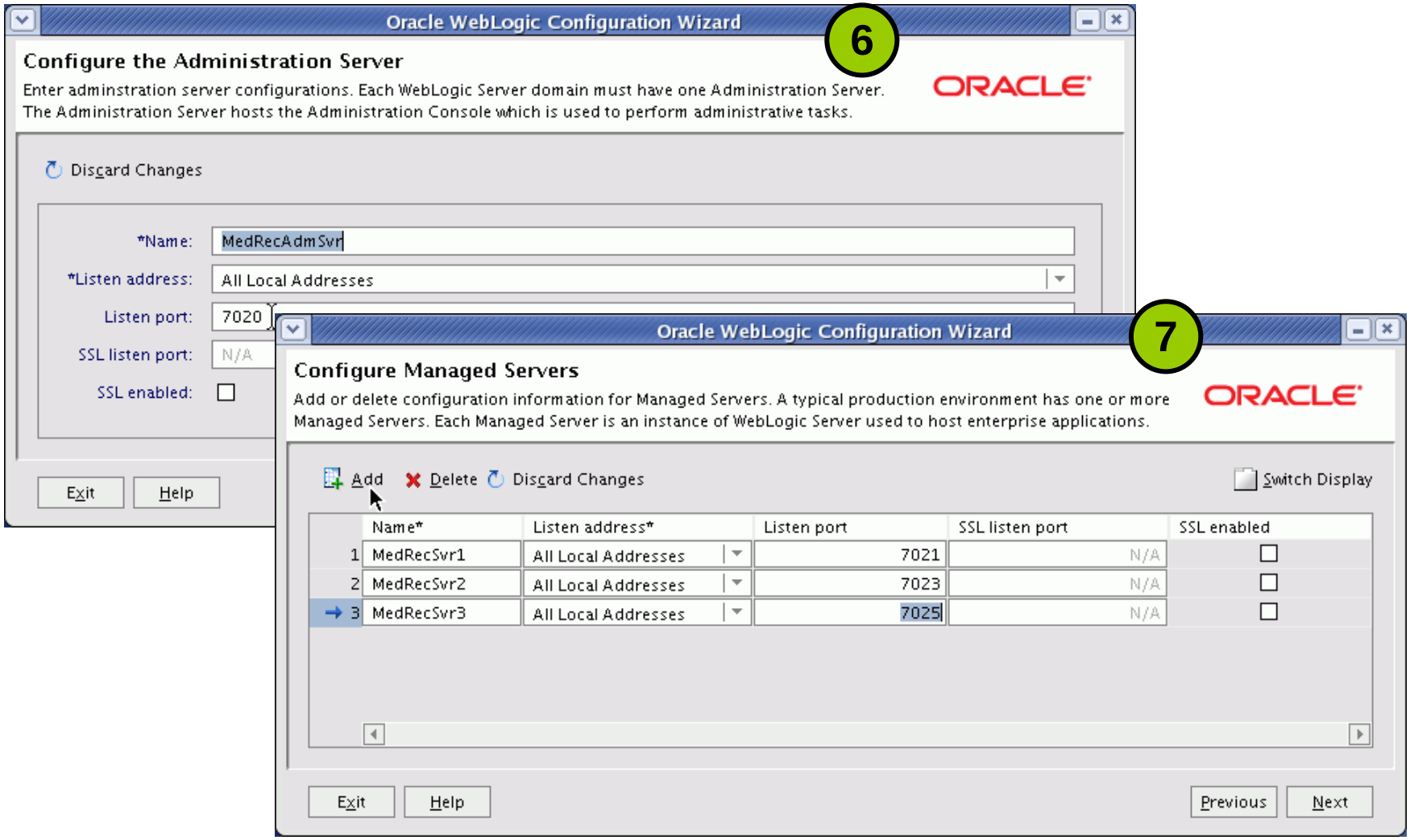


It is easy to change Development to Production, but difficult to change back.

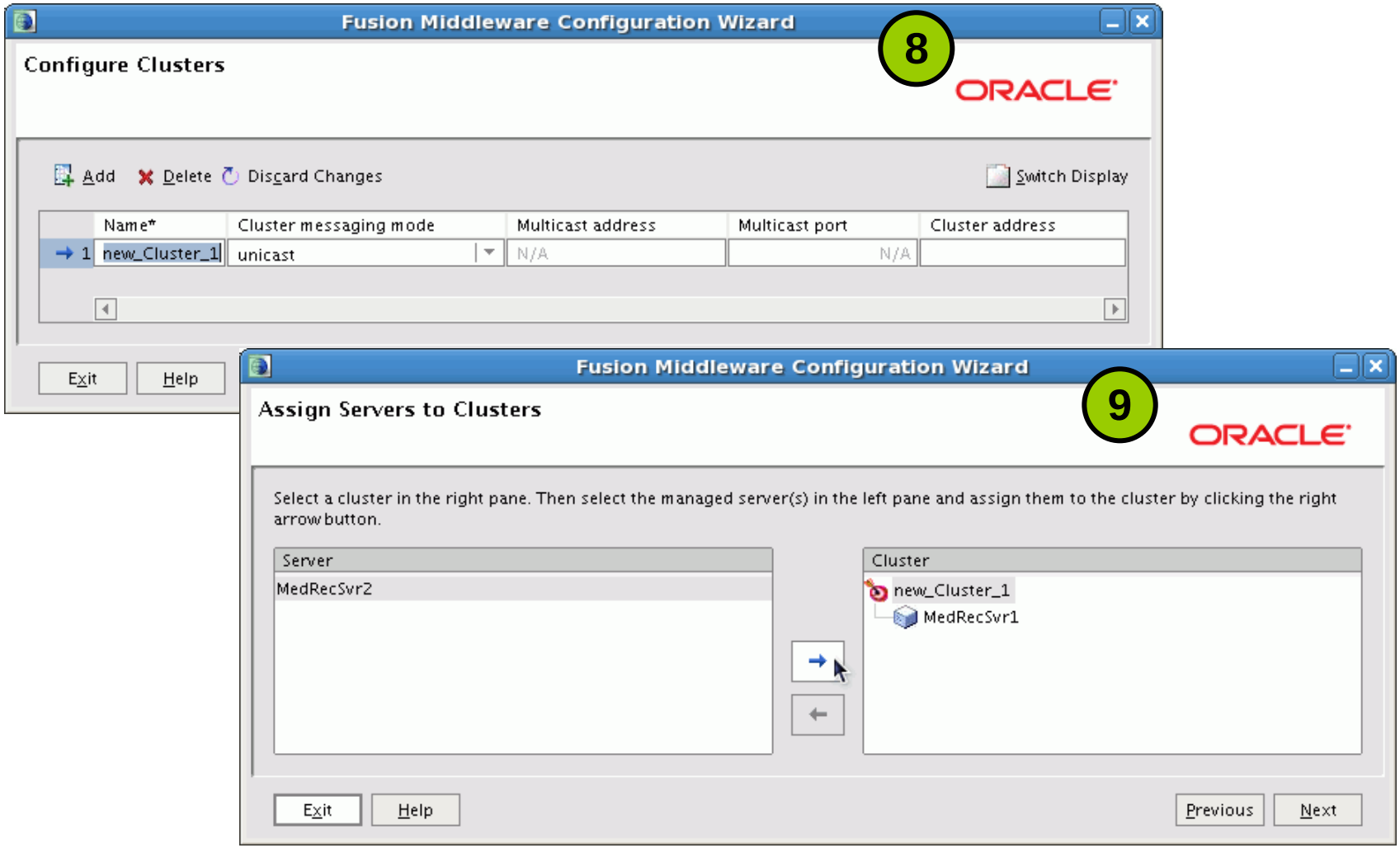
Customizing Advanced Configuration



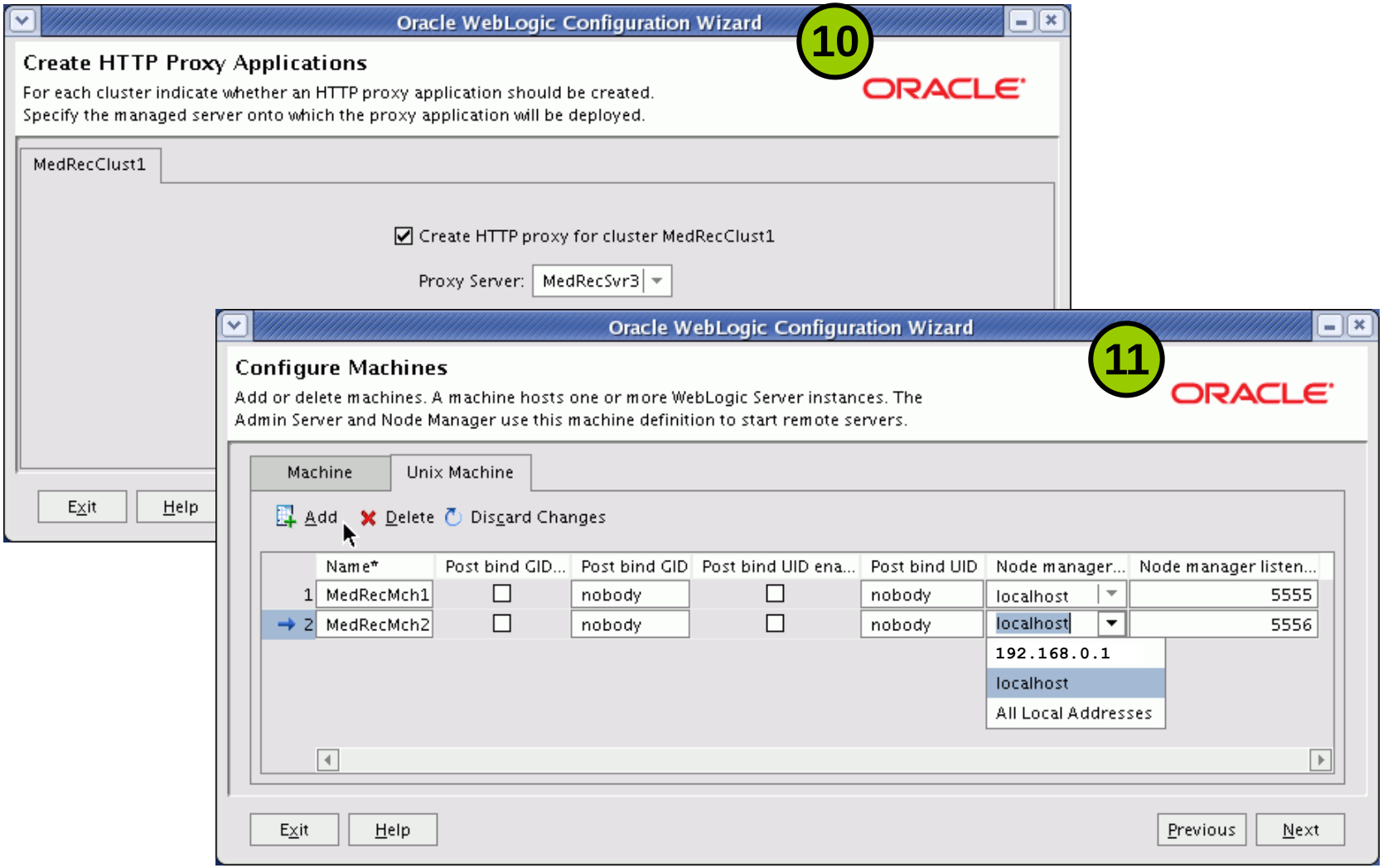
Configuring the Administration and Managed Servers



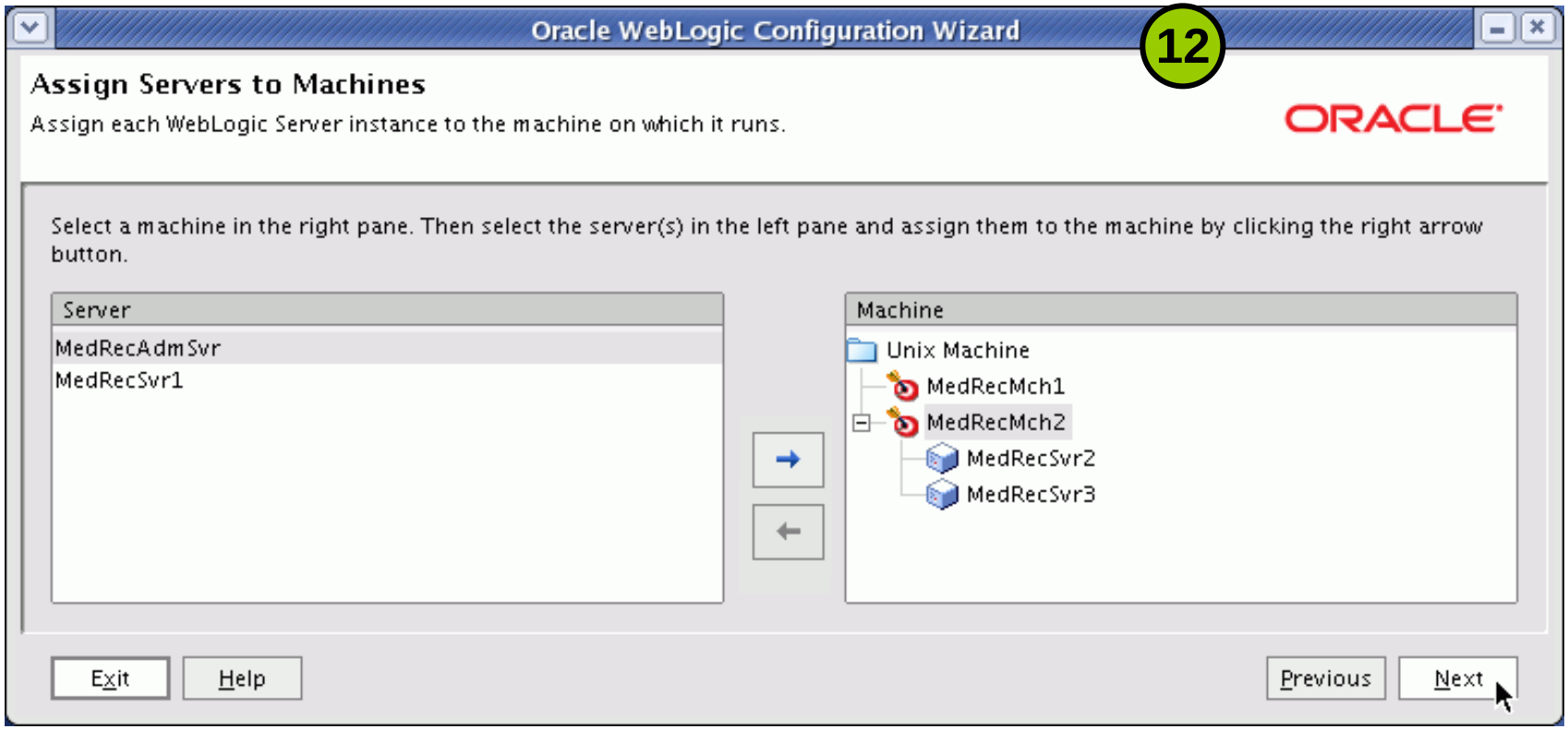
Configuring Clusters and Assigning Servers to Clusters



Creating an HTTP Proxy Application and Configuring Machines

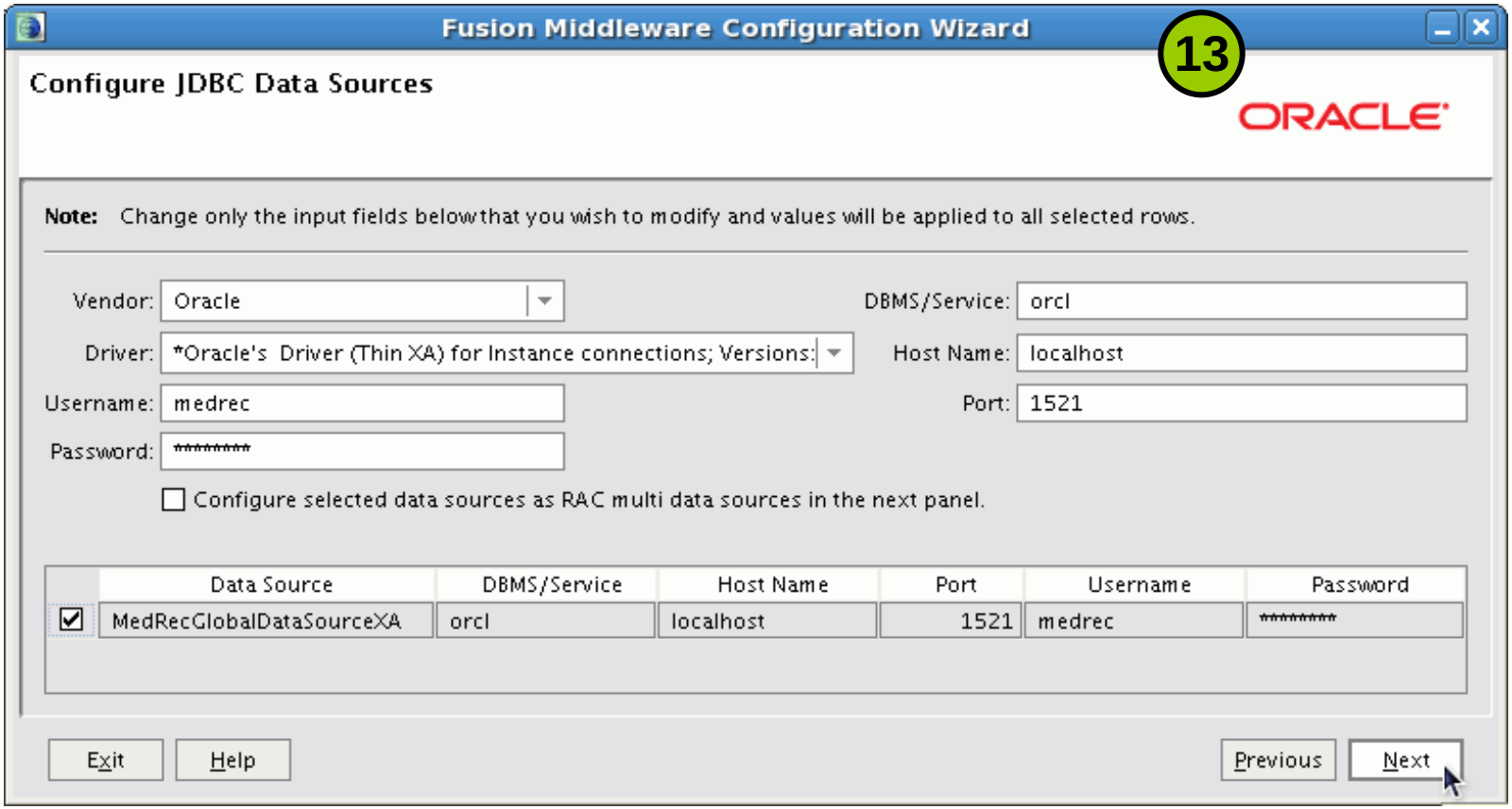


Assigning Servers to Machines

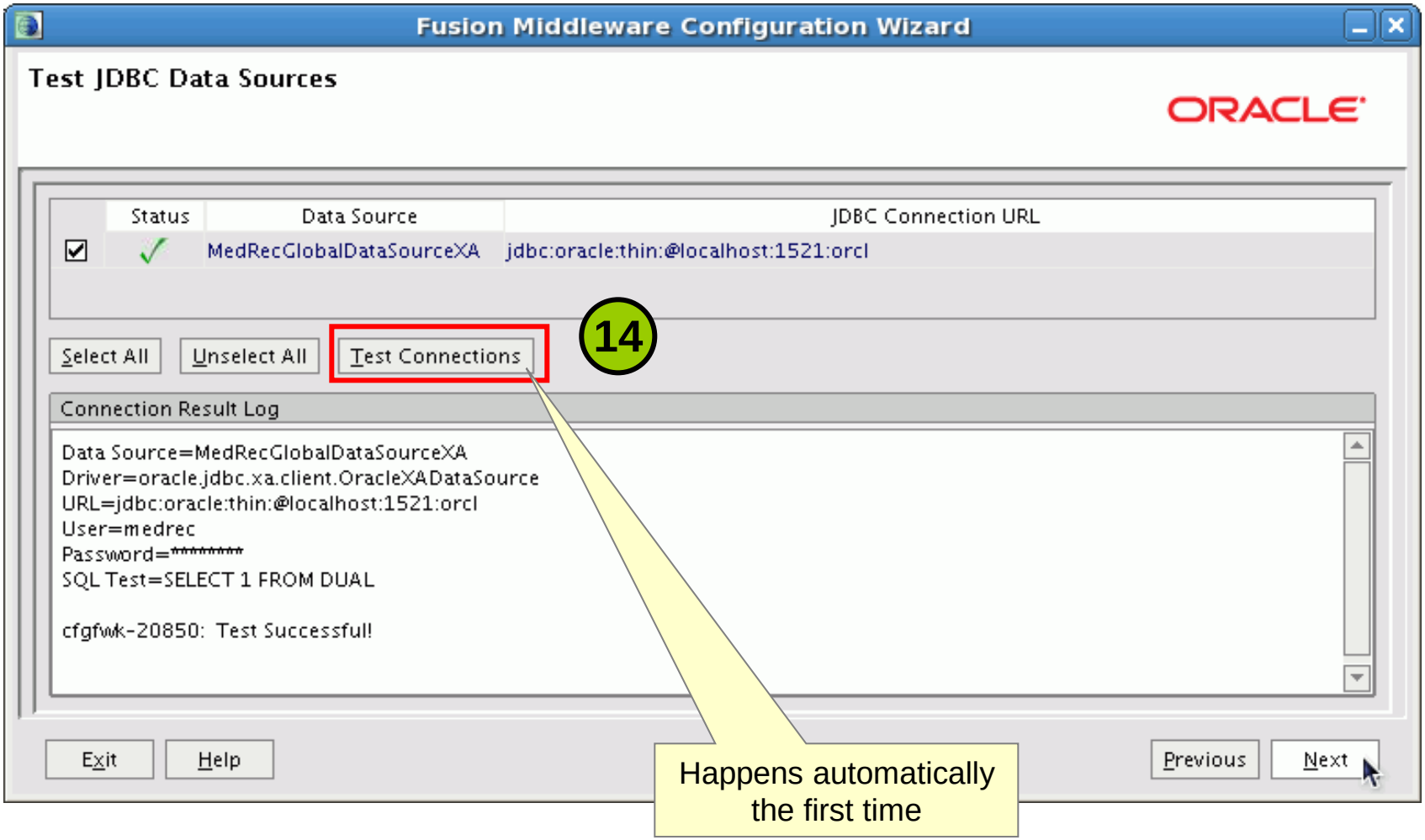


Configuring JDBC Data Sources

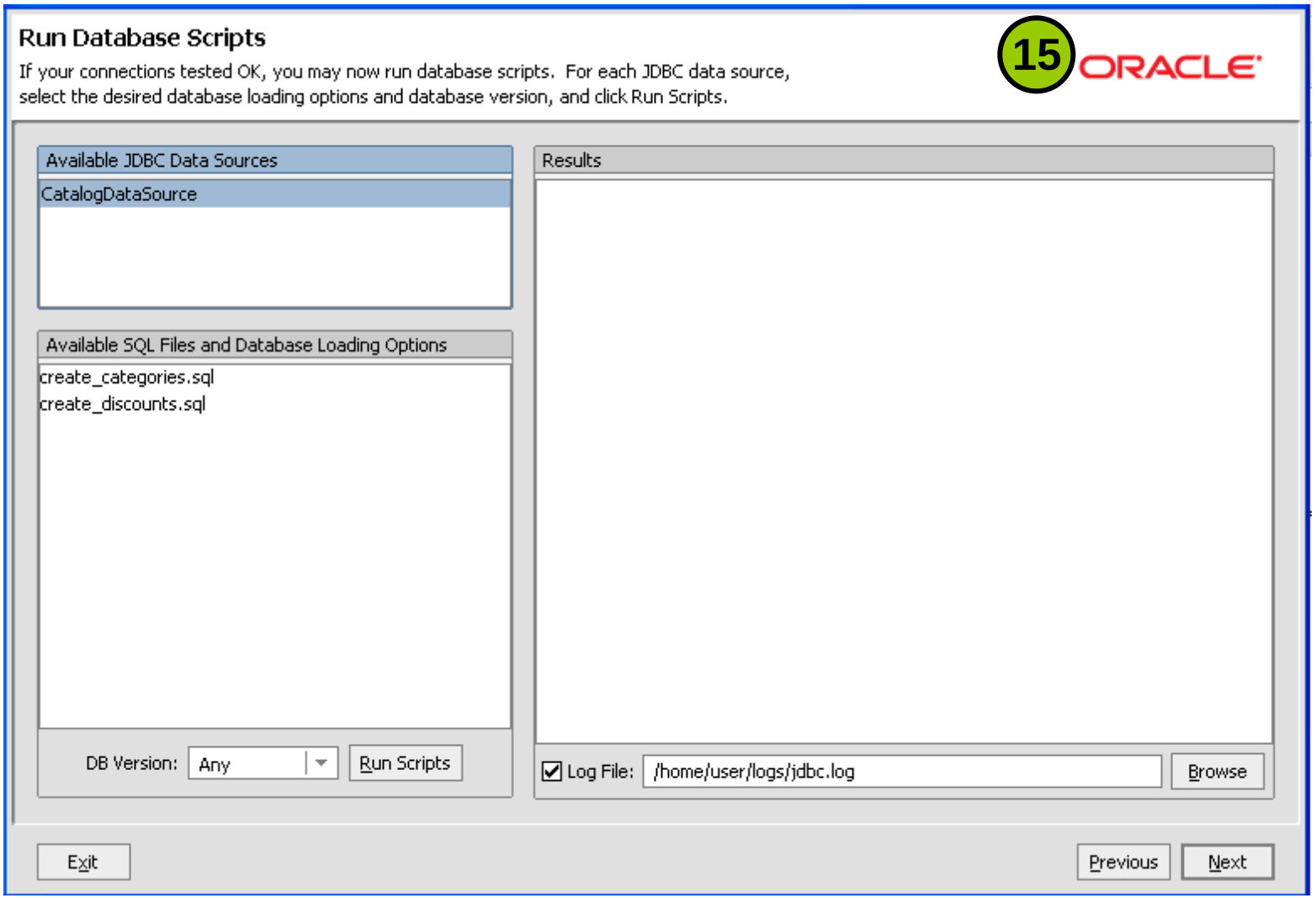
Only shown if you choose a template that contains JDBC data sources or JMS store definitions, or both



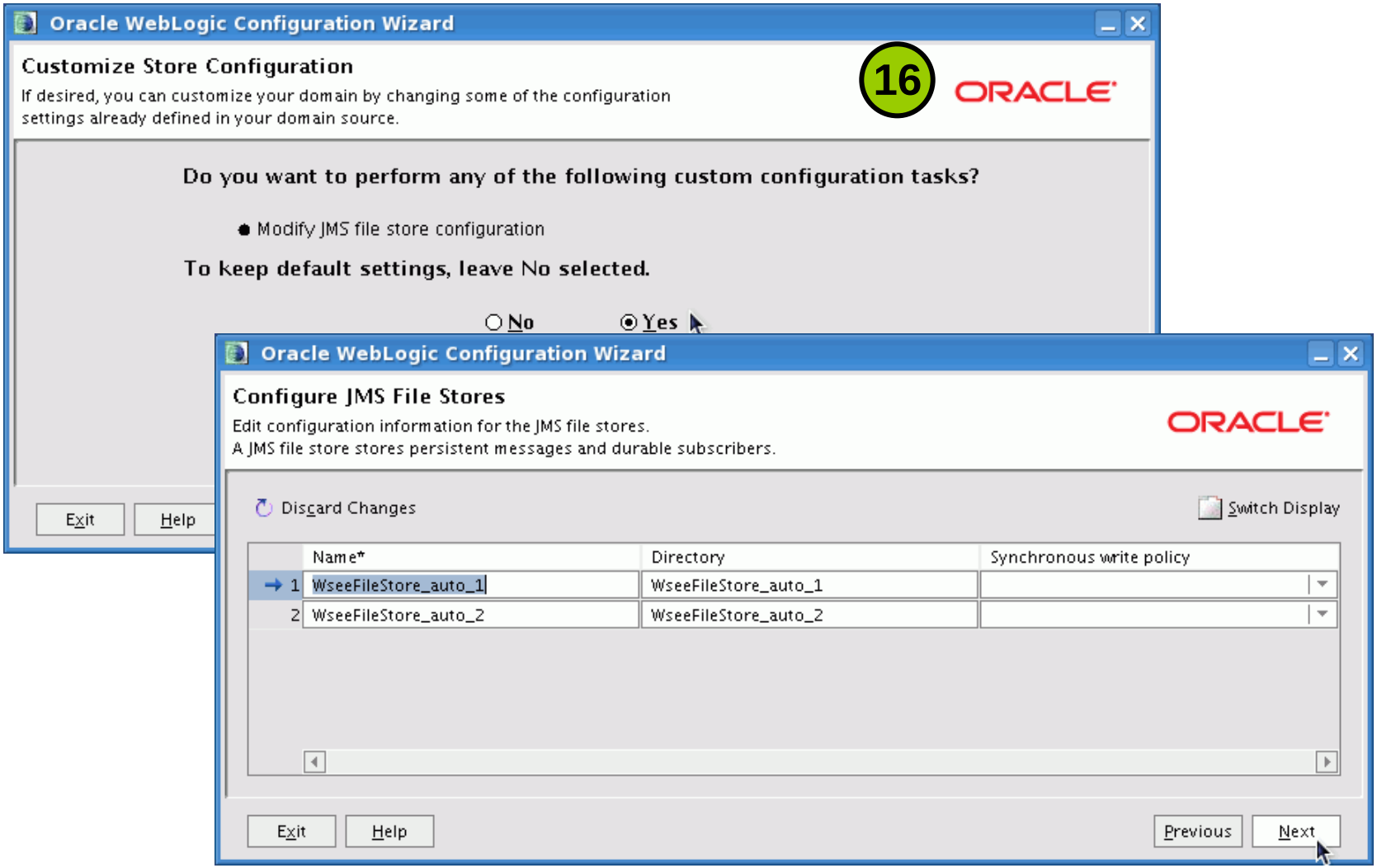
Testing Data Source Connections



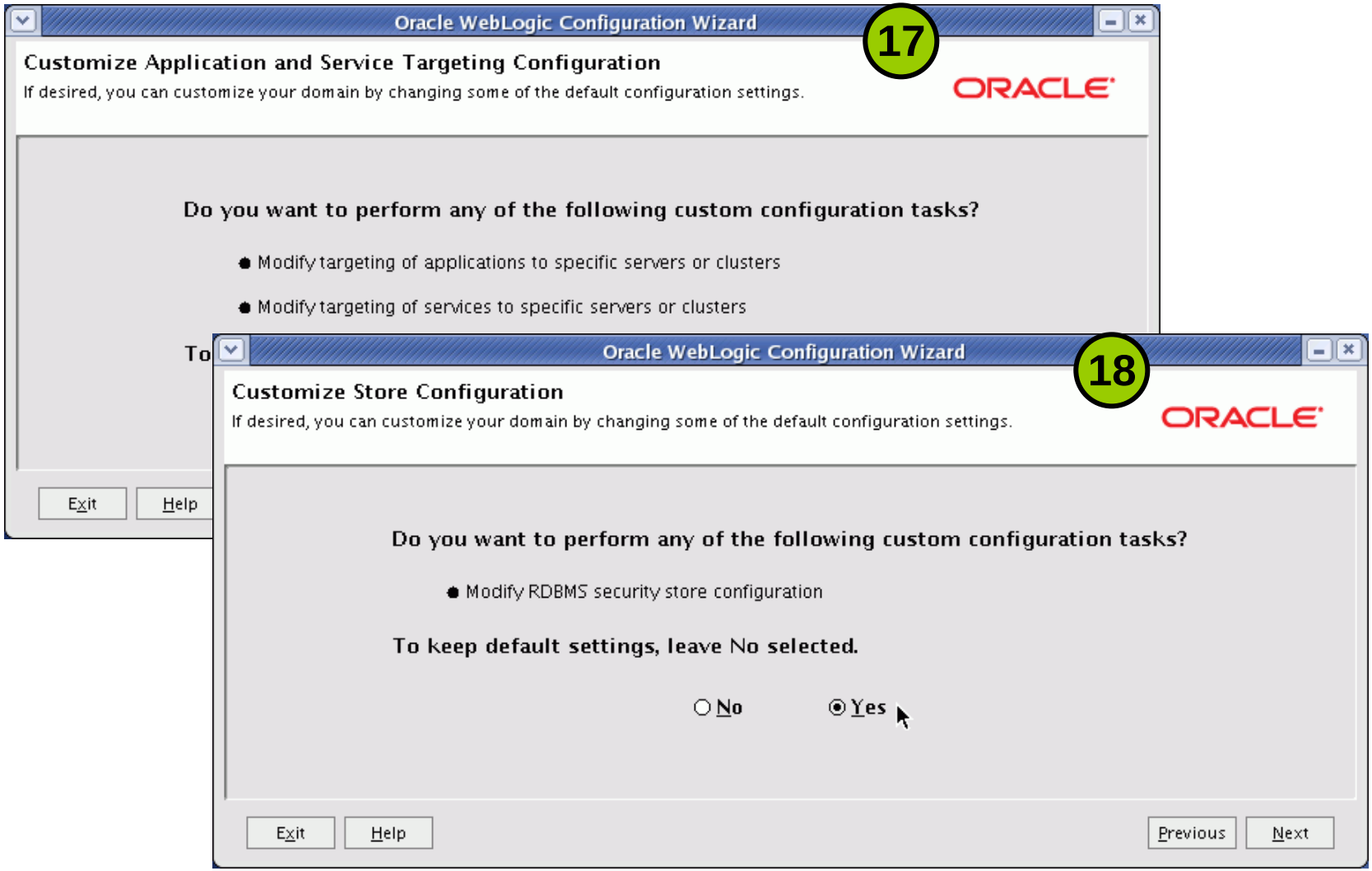
Running Database Scripts



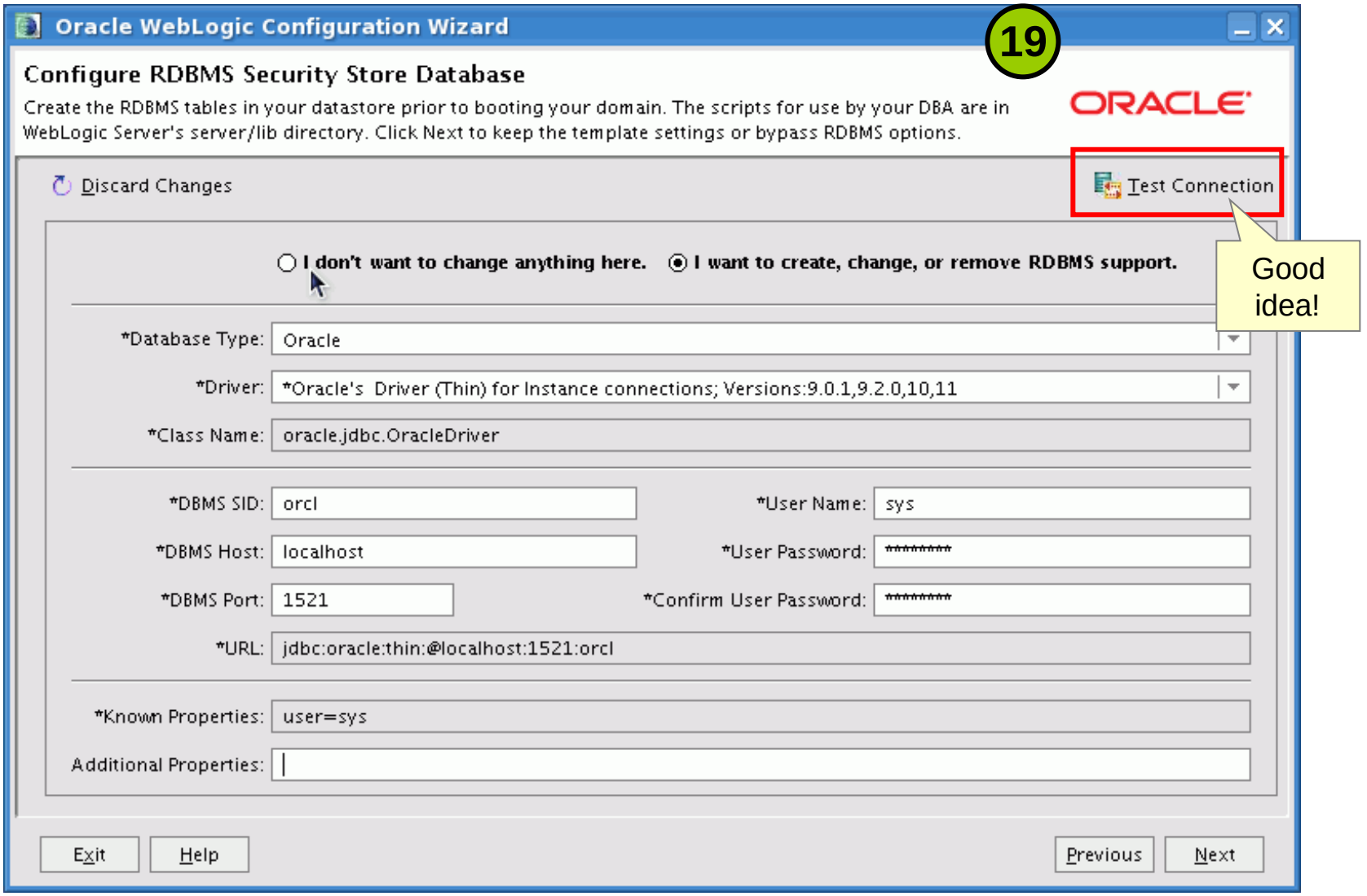
Configuring the JMS File Store



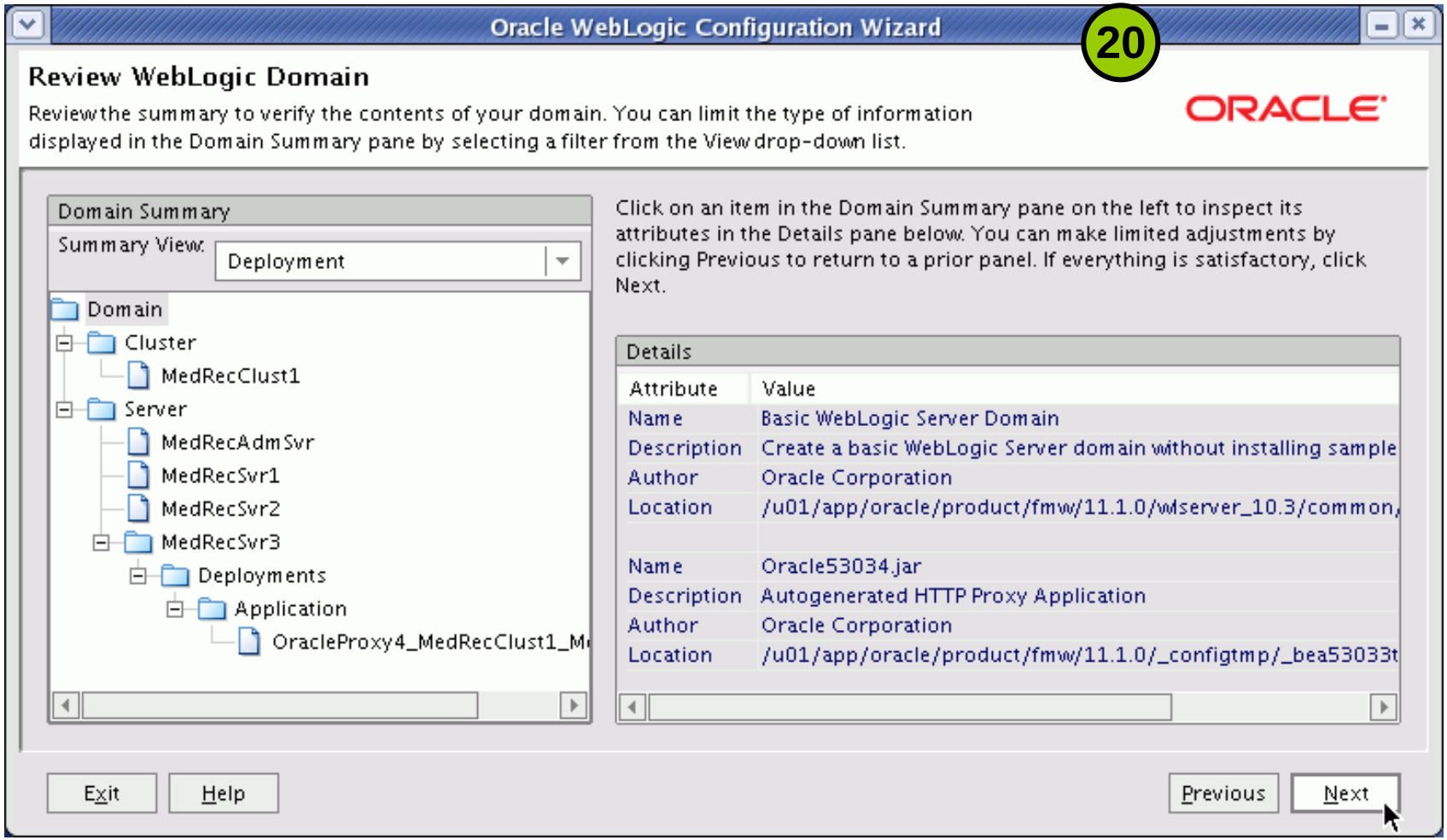
Customizing Application and Service Targeting Configuration



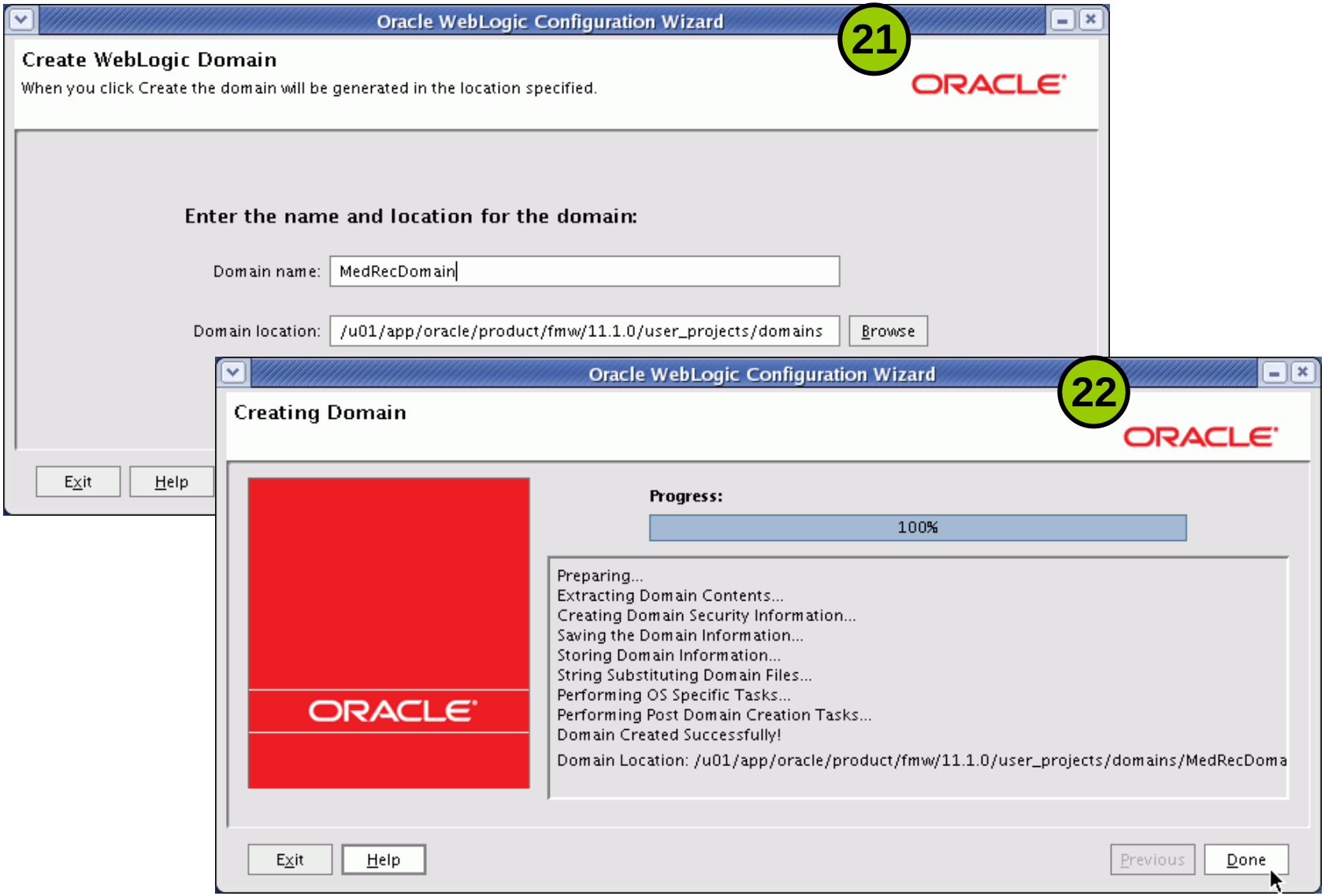
Configuring RDBMS Security Store Database



Reviewing the WebLogic Domain



Creating the WebLogic Domain

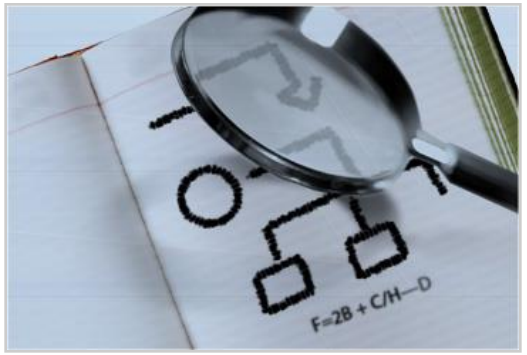


Domain Directory Structure

Directory	Description
🗁 ***domain-name***	The name of this directory is the name of the domain.
🗀 **autodeploy**	In development mode, WLS automatically deploys any applications or modules that you place in this directory.
🗀 **bin**	The scripts for starting and stopping the administration server and the managed servers in the domain
🗀 **config**	The current configuration and deployment state of the domain; **config.xml**
🗀 **console-ext**	Console extensions
🗀 **init-info**	Domain initialization information
🗀 **lib**	JAR files added to `CLASSPATH` of each server instance
🗀 **pending**	Domain configuration changes that have been requested, but not yet been activated
🗀 **security**	Domainwide security-related files
🗁 **servers**	One subdirectory for each server in the domain
🗀 ***server-name***	The server directory for the WLS instance with the same name

Road Map

- Domains
- Starting and stopping the Oracle WebLogic Server



JVM Run-Time Arguments

- Oracle WebLogic Server can be executed with most Java Virtual Machines, such as Oracle JVM or JRockit.
- Oracle WebLogic Server supports JDK 1.8.
- The syntax for running a virtual machine is :

```
java options FullyQualifiedJavaClass
   ProgramOptions
```

- Some virtual machine options:
  - `-Xms`: The minimum size of the dynamic heap
  - `-Xmx`: The maximum size of the dynamic heap
  - `-D`*`prop`*`=`*`val`*: An environment variable that is accessible by the program
  - `-classpath` *`CLASSPATH`*: The list of files or directories that contain the dependent classes

Oracle WebLogic Server Dependencies

- To run Oracle WebLogic Server *itself*, `PATH` and `CLASSPATH` environment variables are usable without needing any additional modification.
  - Environment variables are set properly in start scripts, which call `setWLSEnv.sh`.
  - Start scripts are created during installation.
  - You may want to modify the start scripts' environment variables based on deployed applications' requirements.
- To run your *deployed applications* on Oracle WebLogic Server, configure the following environment variables:
  - `PATH` to include all executable programs (including the Java interpreter)
  - `CLASSPATH` to include dependencies for the applications

Configuring CLASSPATH

- The Oracle WebLogic Server CLASSPATH is configured by the Java system CLASSPATH environment variable.
- Files that *must* be in CLASSPATH:
  - <WL_HOME>/wlserver/lib/weblogic.jar
  - Any additional service pack JAR files
- Files that *can* be in CLASSPATH:
  - <WL_HOME>/common/eval/pointbase/lib/pbclient51.jar
  - <WL_HOME>/common/eval/pointbase/lib/pbembedded51.jar
  - <WL_HOME>/server/lib/log4j.jar
  - <WL_HOME>/server/lib/wlepool.jar
  - <WL_HOME>/server/lib/wleorb.jar

Starting Oracle WebLogic Administration Server

Start the Administration Server by using the following:

- *DOMAIN_NAME*/bin/startWebLogic.sh
- WebLogic Scripting Tool (WLST) and Node Manager
- WLST without Node Manager
- Start menu (only Windows)
- A custom script calling `weblogic.Server` (only in development)

Starting Administration Server Using `startWebLogic.sh`

Run *DOMAIN_NAME*`/bin/startWebLogic.sh`.

- Sets the environment by using `setDomainEnv.sh`
- Invokes `java weblogic.Server`

```
<Feb 2, 2009 11:27:29 AM EST> <Info> <Management> <BEA-141107> <Version: WebLogic
     Server 10.3.1.0  Mon Jan 19 23:37:46 EST 2009 1185576 >
<Feb 2, 2009 11:27:31 AM EST> <Info> <Security> <BEA-090065> <Getting boot identity
     from user.>
Enter username to boot WebLogic server:weblogic
Enter password to boot WebLogic server:********
<Feb 2, 2009 11:27:43 AM EST> <Notice> <WebLogicServer> <BEA-000365> <Server state
     changed to STARTING>
<Feb 2, 2009 11:27:43 AM EST> <Info> <WorkManager> <BEA-002900> <Initializing self-
     tuning thread pool>
```

```
<Feb 2, 2009 11:28:01 AM EST> <Notice> <WebLogicServer> <BEA-000329> <Started
     WebLogic Admin Server "MedRecAdmSvr" for domain "MedRecDomain" running in
     Production Mode>
<Feb 2, 2009 11:28:02 AM EST> <Notice> <WebLogicServer> <BEA-000365> <Server state
     changed to RUNNING>
<Feb 2, 2009 11:28:02 AM EST> <Notice> <WebLogicServer> <BEA-000360> <Server
     started in RUNNING mode>
```

Starting the Administration Server by Using the `java weblogic.Server` Command

- Run `<WL_HOME>/server/bin/setWLSEnv.sh`.
- Run `java weblogic.Server`.
- Optionally, run `java weblogic.Server` with these additional options:

```
java -server -Xms256m -Xmx512m -classpath
"CLASSPATH"
-Dweblogic.Name=SERVER_NAME
-Dplatform.home=<WL_HOME>
-Dweblogic.management.username=WLS_USER
-Dweblogic.management.password=WLS_PW
-Djava.security.policy=
<WL_HOME>/server/lib/weblogic.policy
 weblogic.Server
```

Stopping the Administration Server

- Graceful:
  - Stop the server from the Administration Console.
  - This also closes the Administration Console, so restarting requires a command-line action.
- Abrupt:
  - Press Ctrl + C to interrupt the running `startWebLogic` program.
  - Usually, your applications are running on managed servers, not on the administration server; so even though this is abrupt, it is not disruptive.

Quiz

Which directory within a domain directory is used to maintain its configuration repository?

1. /console
2. /cache
3. /config
4. /logs
5. /AdminServer

Quiz

Invoke the Domain Configuration Wizard by using _____.

1. `config.sh` under `<WL_HOME>/common/bin`
2. `config_builder.sh` under `<WL_HOME>/common/bin`

Quiz

What is the main configuration file for the domain called?

1. `configuration.xml`
2. `wlsconfig.xml`
3. `wls.xml`
4. `config.xml`

Quiz

You can use boot identity files to start the following without being prompted for the administrator username and password.

1. Managed servers
2. Administration server
3. Both

Quiz

Which of the following statements is *NOT* true?

1. Managed servers in a domain may run a different OS version of Oracle WebLogic Server (for example, Windows + Linux).
2. A domain comprises only the administration server, only the managed server, or the administration and managed servers.
3. The administration server stores the configuration information and logs for a domain.
4. The administration server in a domain must run the same or later version number of Oracle WebLogic Server as the managed servers in the domain.

Quiz

Where are all users, groups, and roles stored by default?

1. Oracle Database
2. PointBase Database
3. Oracle Internet Directory
4. LDAP store of the administration server

Summary

In this lesson, you should have learned how to:

- Describe how the domain works
- Describe the domain directory structure
- Configure a domain
- Start or stop the Oracle WebLogic Administration Server

Practice 4 Overview: Configuring a Simple Domain

This practice covers the following topics:

- Creating a new custom domain template
- Creating a new domain using the custom domain template
- Starting and stopping the administration server and the managed servers