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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

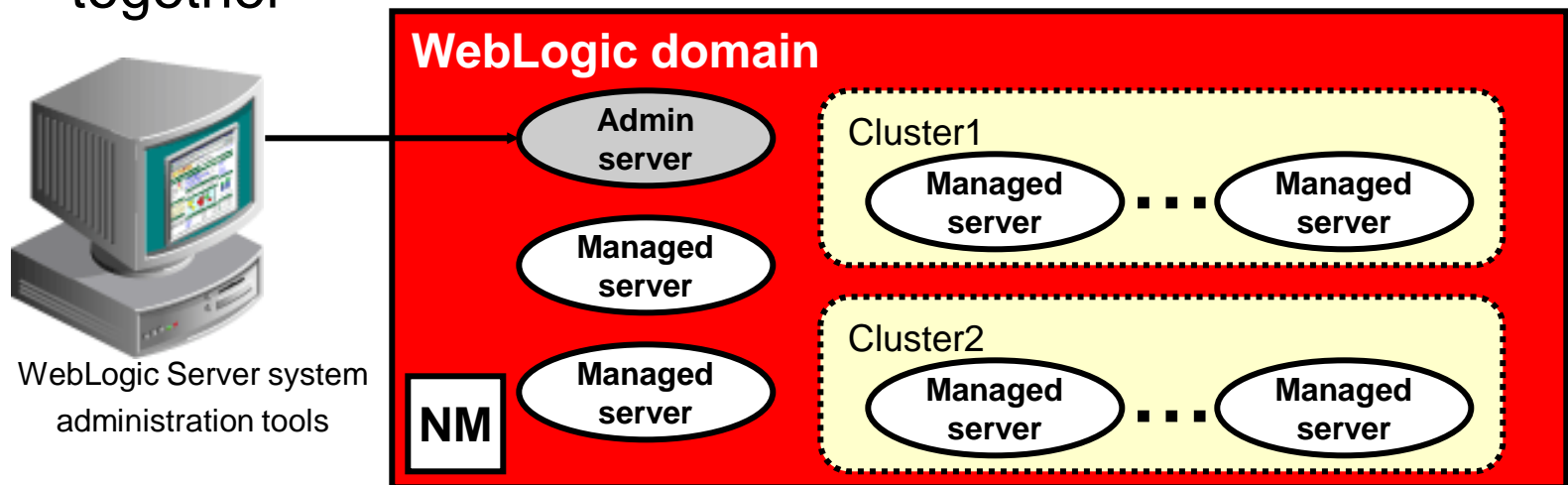
Road Map

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

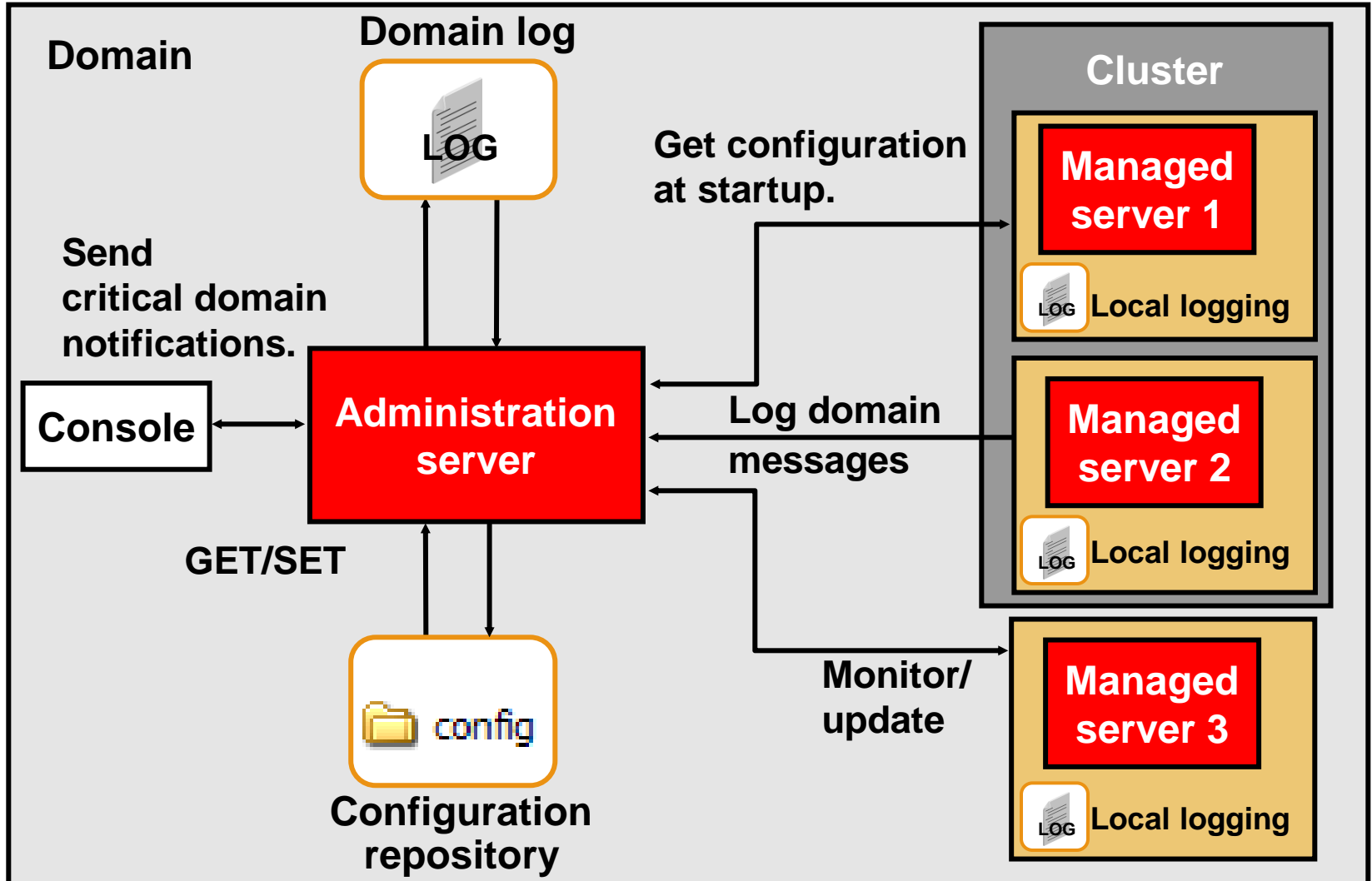


Domain: Overview

- 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

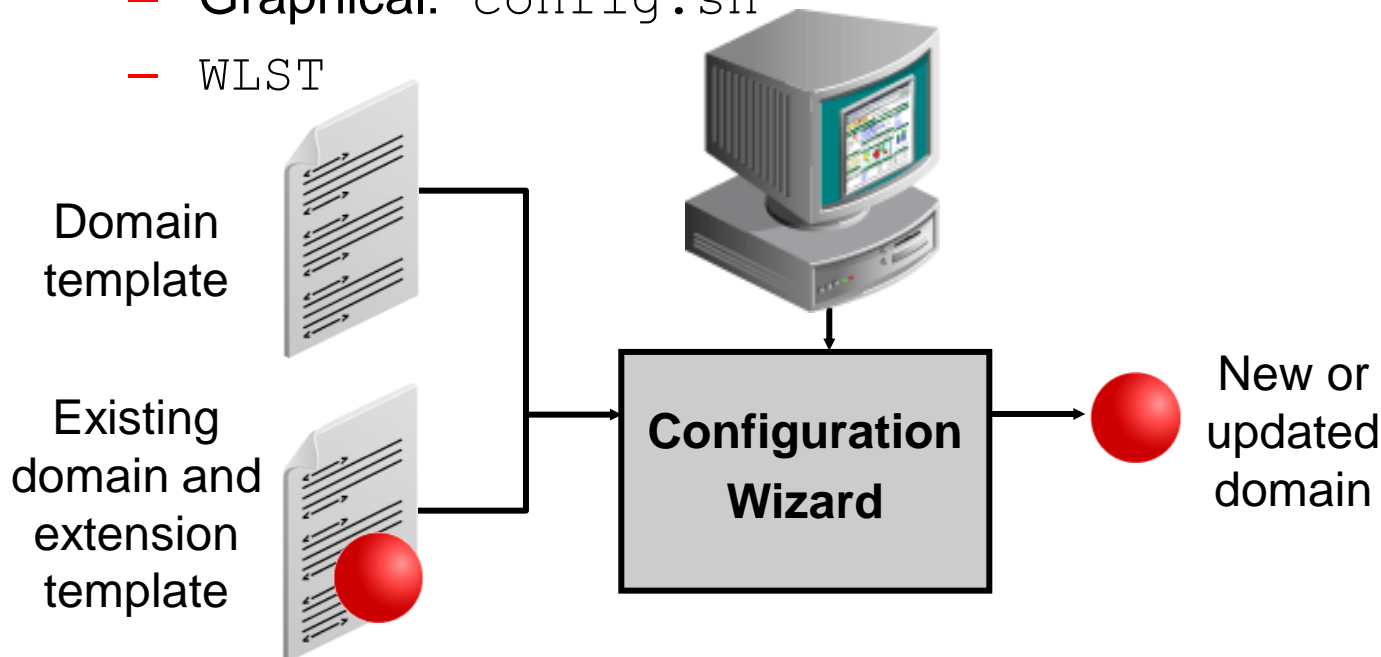


Configuring a Domain

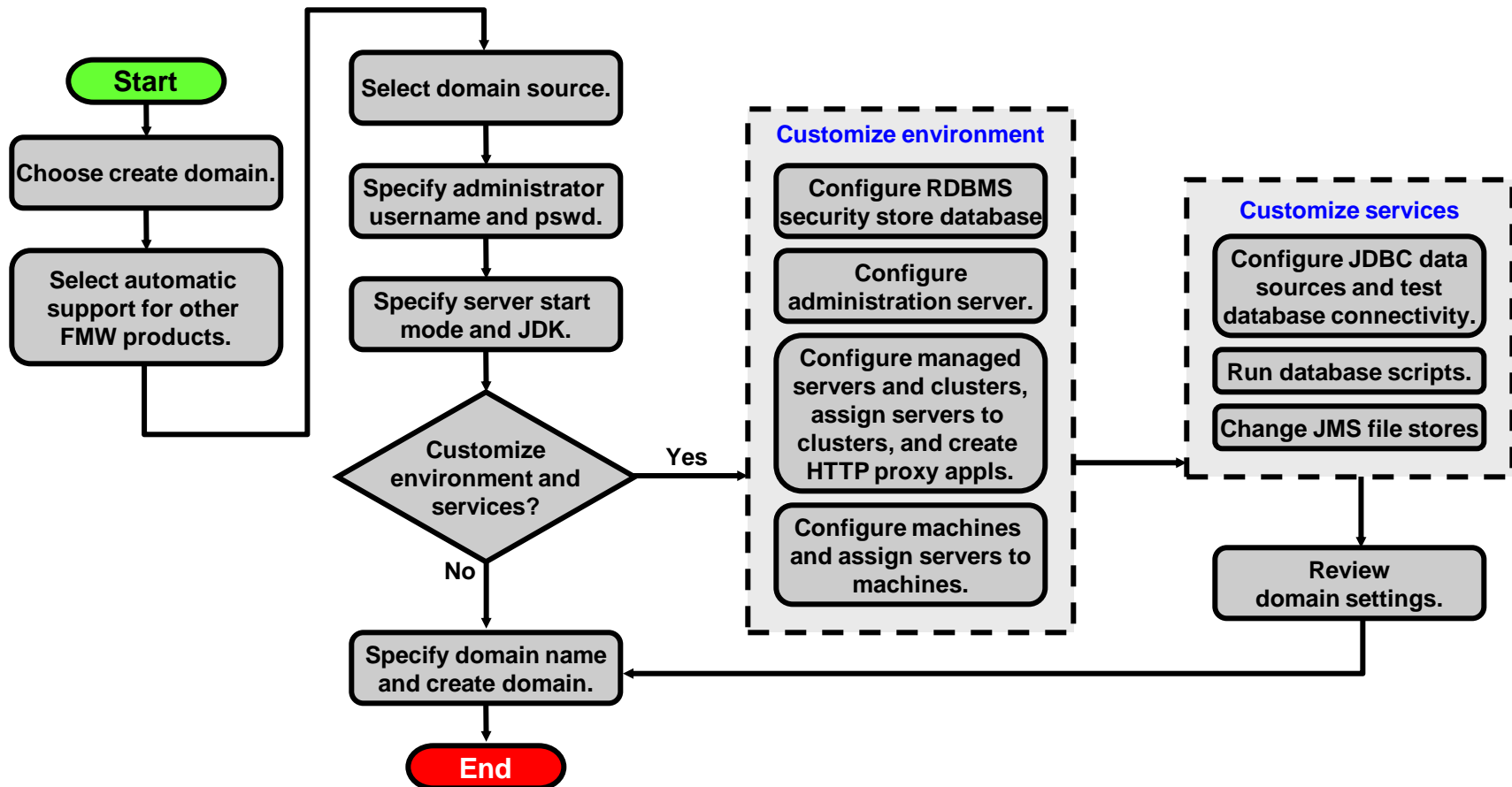
- After the installation, configure a domain on which to develop and deploy applications.
- By creating a domain, you define a collection of resources, such as:
 - Managed servers
 - Clusters
 - Database connections
 - Security services
 - Java EE applications
- Configuration Wizard creates and configures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

Starting the Domain Configuration Wizard

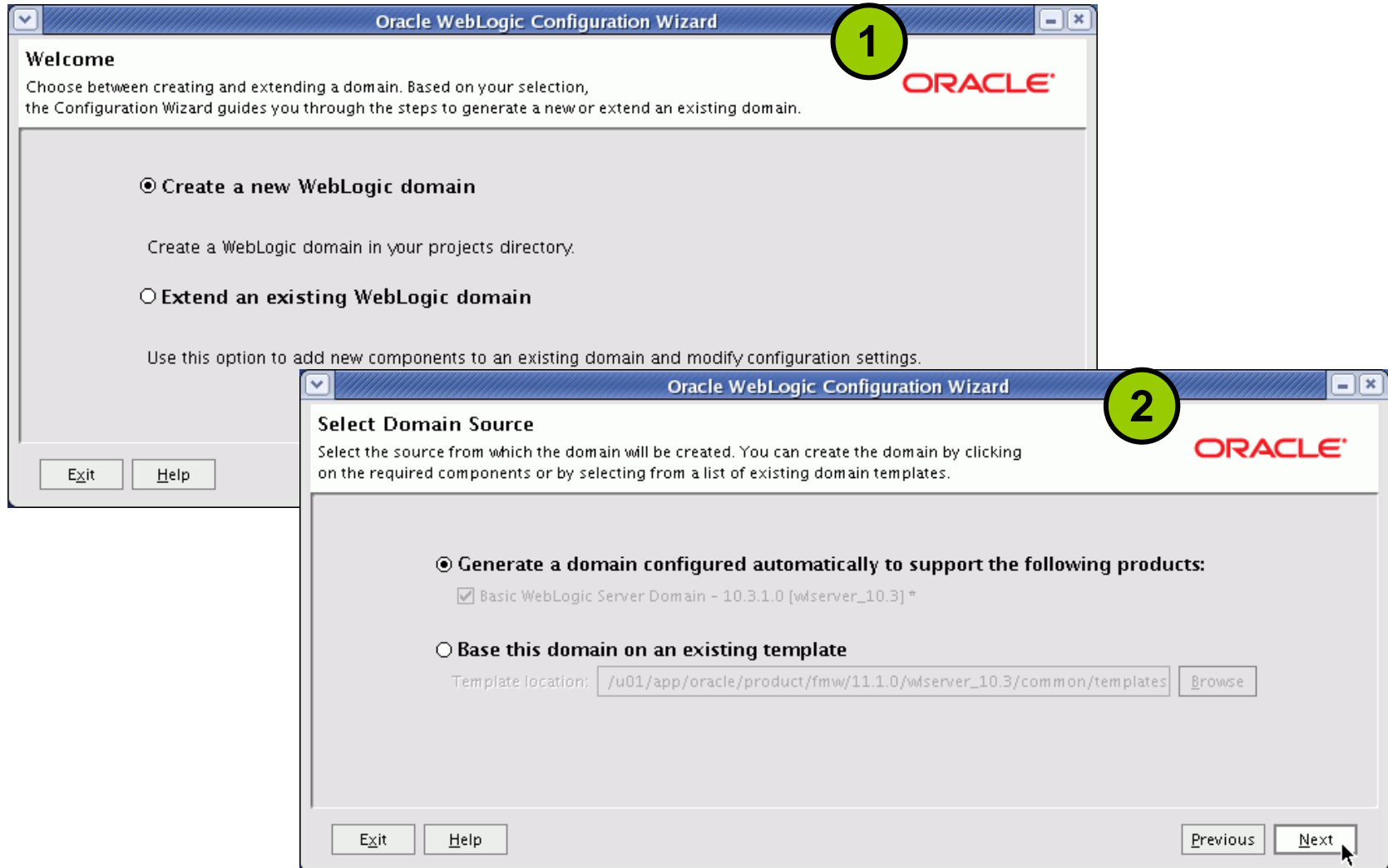
- Scripts are in the `<ORACLE_HOME>/oracle_common/common/bin` directory.
- Two modes:
 - Graphical: `config.sh`
 - WLST



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

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Oracle WebLogic Configuration Wizard

Configure Administrator User name and Password

Create a user to be assigned to the Administrator role.
This user is the default administrator used to start development mode servers.

Disard Changes

*User name: weblogic

*User password: *****

*Confirm user password: *****

Description: This user is the

Exit Help

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Oracle WebLogic Configuration Wizard

Configure Server Start Mode and JDK

Choose the WebLogic domain startup mode and the J2SE Development Kit (JDK) to be used for the domain.

Before putting your domain into production, make sure that the production environment is secure. For more information, see the topic 'Securing a Production Environment' in the WebLogic Server documentation.

To use WebLogic JRockit in production, Oracle recommends developing and testing your applications with WebLogic JRockit early in the project cycle. For information about WebLogic JRockit, see the WebLogic JRockit documentation.

WebLogic Domain Startup Mode

- ☐ **Development Mode**
Utilize boot.properties for username and password and poll for applications to deploy. Sun JDK recommended for better startup performance during iterative development.
- ☒ **Production Mode**
Require the entry of a username and password and do not poll for applications to deploy. WebLogic JRockit JDK recommended for better runtime performance and management.

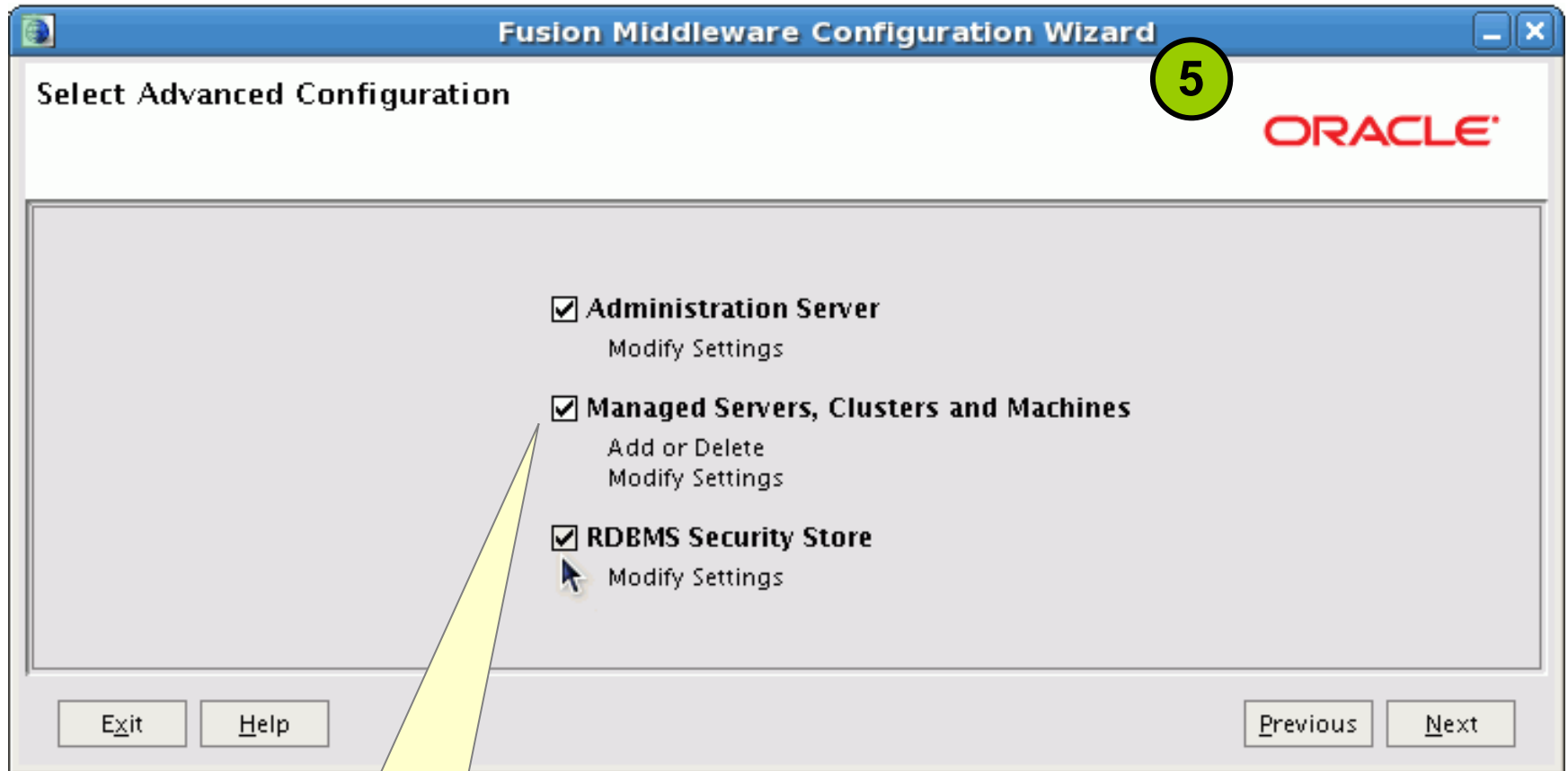
JDK Selection

- ☒ **Available JDKs**
JRockit SDK 1.6.0_05 @ /u01/app/oracle/product/fm
- ☐ **Other JDK**
Location:

Exit Help Previous Next

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

Customizing Advanced Configuration



All three are unselected by default.

Configuring the Administration and Managed Servers

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Oracle WebLogic Configuration Wizard

Configure the Administration Server

Enter administration server configurations. Each WebLogic Server domain must have one Administration Server. The Administration Server hosts the Administration Console which is used to perform administrative tasks.

Discard Changes

*Name: MedRecAdmSvr

*Listen address: All Local Addresses

Listen port: 7020

SSL listen port: N/A

SSL enabled: ☐

Exit Help

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Oracle WebLogic Configuration Wizard

Configure Managed Servers

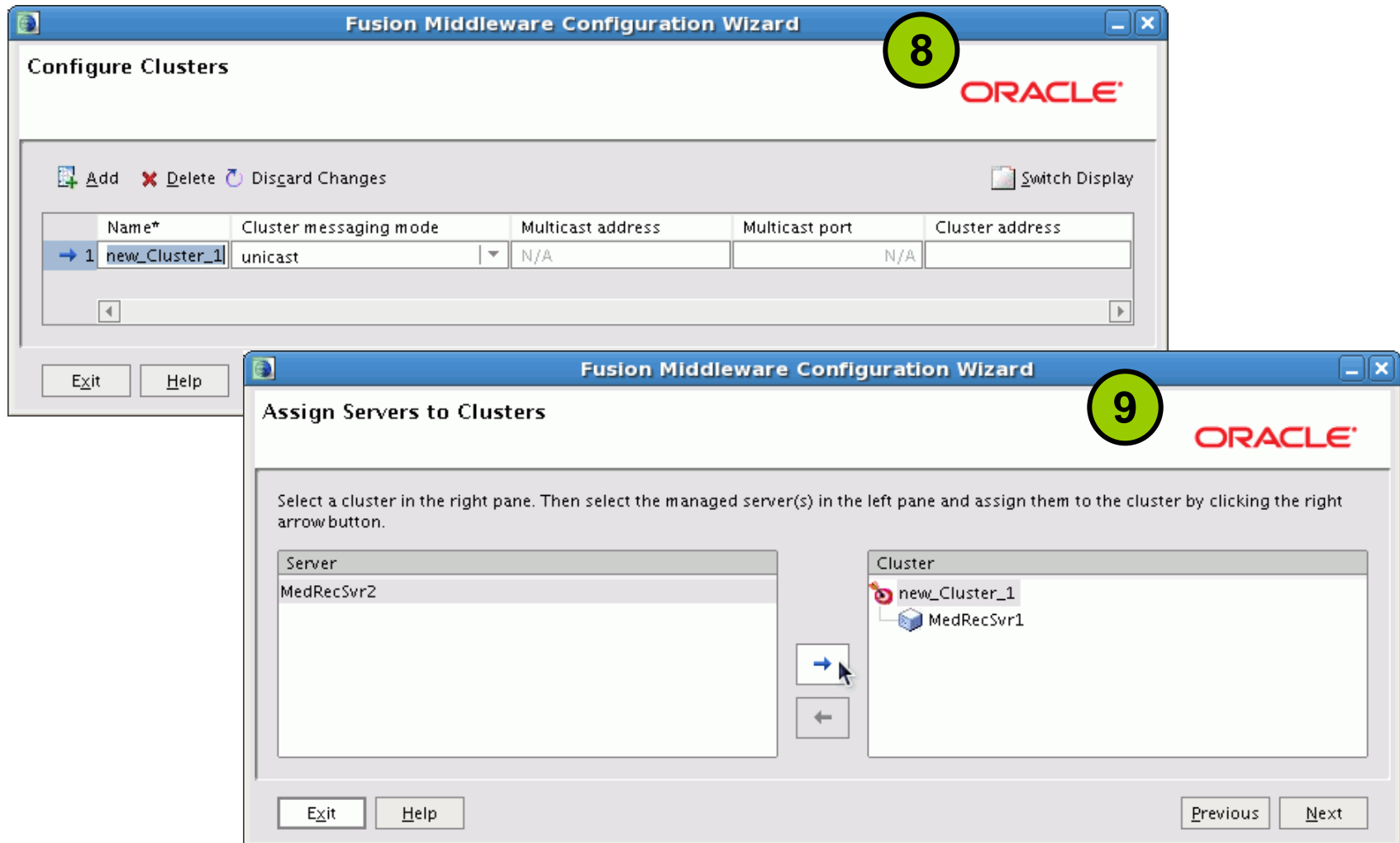
Add or delete configuration information for Managed Servers. A typical production environment has one or more Managed Servers. Each Managed Server is an instance of WebLogic Server used to host enterprise applications.

Add Delete Discard Changes Switch Display

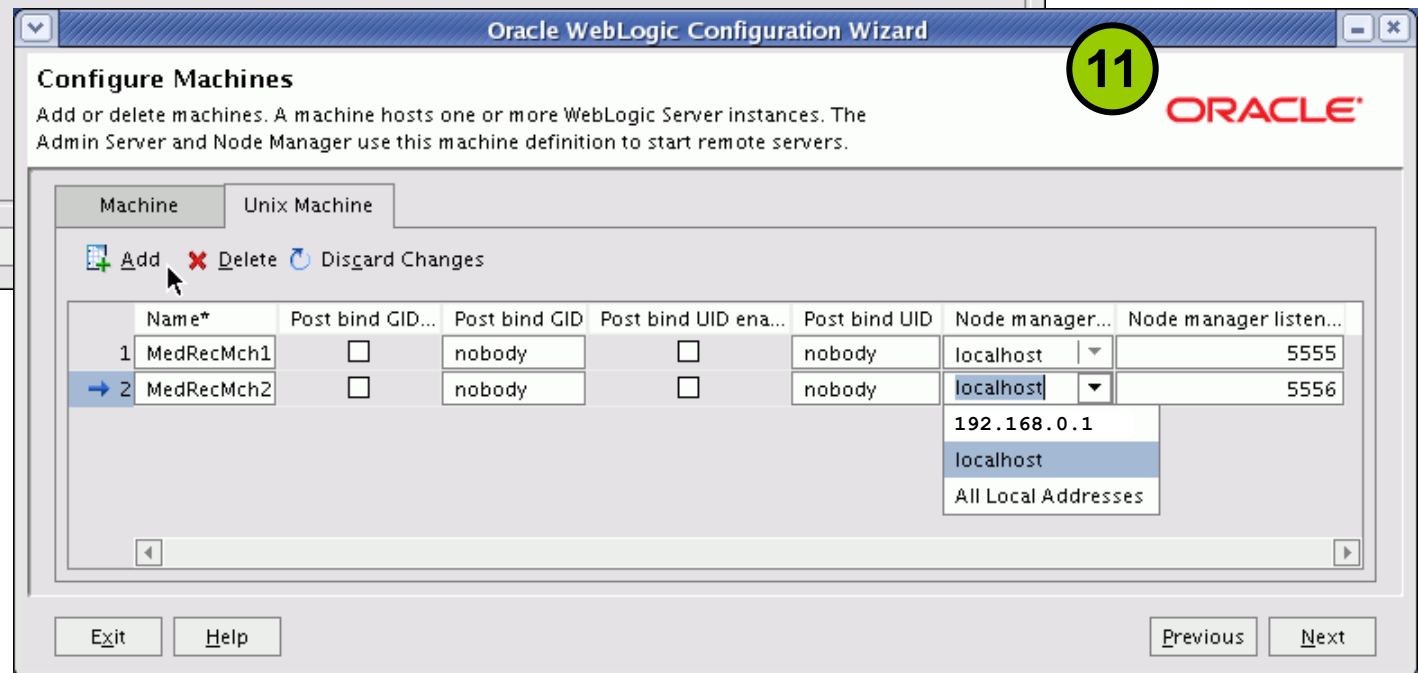
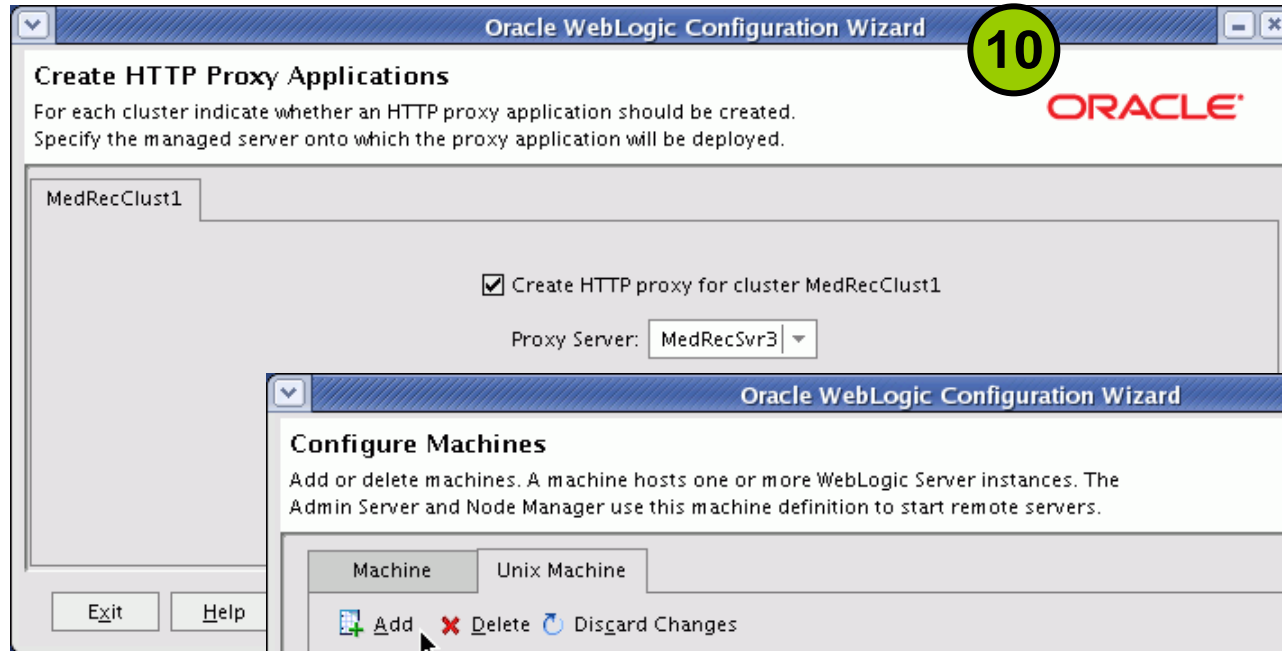
	Name*	Listen address*	Listen port	SSL listen port	SSL enabled
1	MedRecSvr1	All Local Addresses	7021	N/A	<input type="checkbox"/>
2	MedRecSvr2	All Local Addresses	7023	N/A	<input type="checkbox"/>
→ 3	MedRecSvr3	All Local Addresses	7025	N/A	<input type="checkbox"/>

Exit Help Previous Next

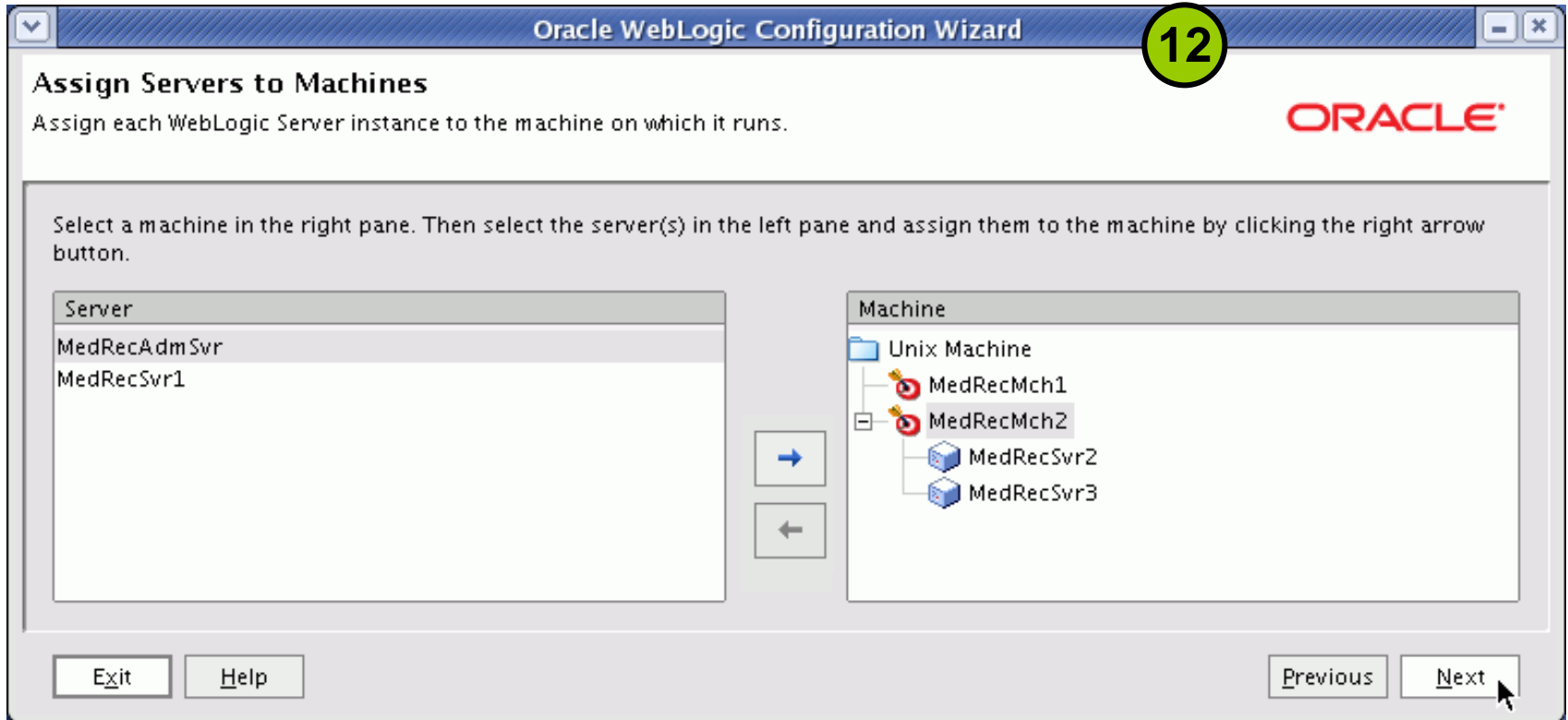
Configuring Clusters and Assigning Servers to Clusters



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

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Configure JDBC Data Sources

Note: Change only the input fields below that you wish to modify and values will be applied to all selected rows.

Vendor: Oracle DBMS/Service: orcl

Driver: *Oracle's Driver (Thin XA) for Instance connections; Versions: Host Name: localhost

Username: medrec Port: 1521

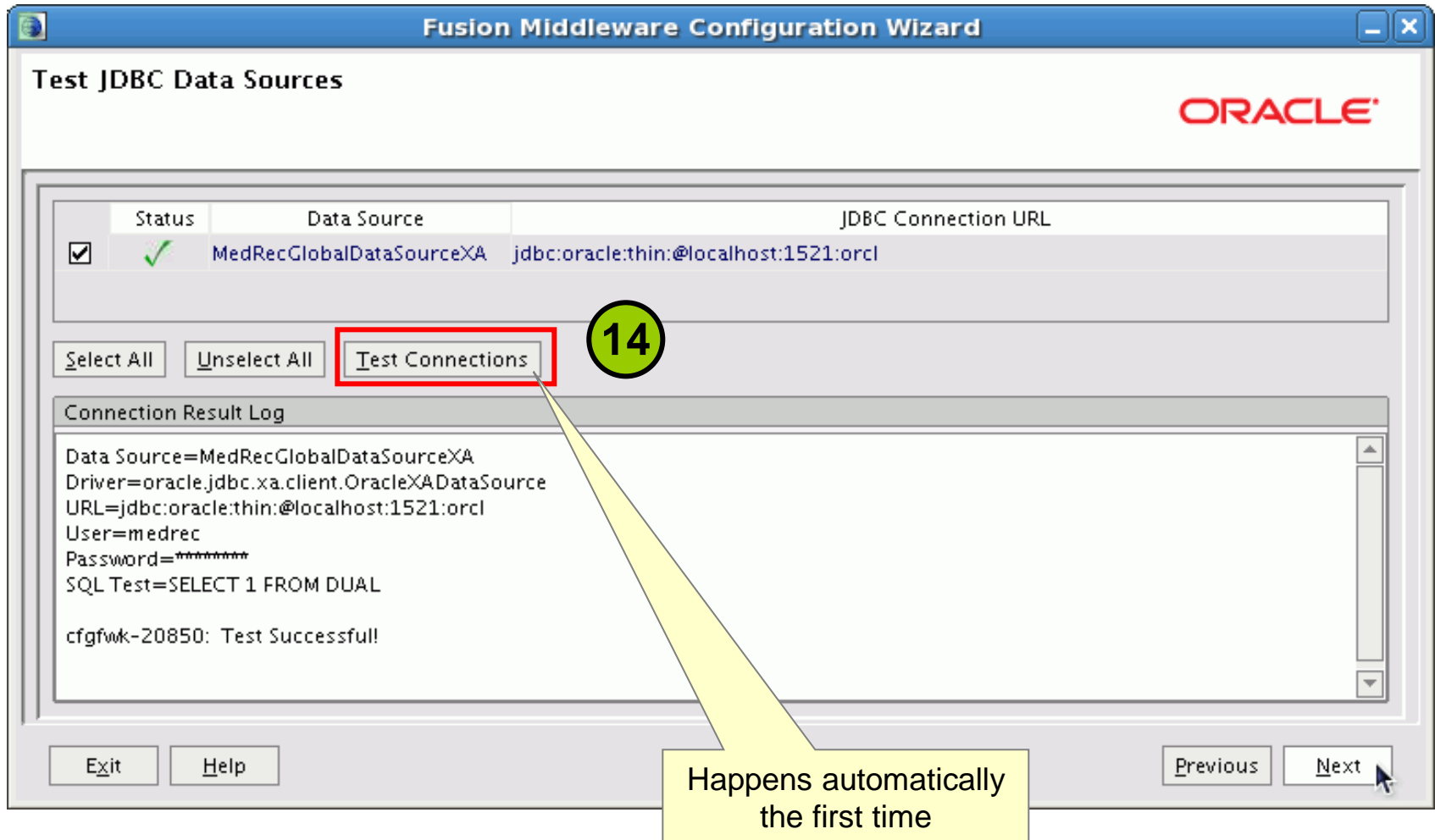
Password: *****

☐ Configure selected data sources as RAC multi data sources in the next panel.

Data Source	DBMS/Service	Host Name	Port	Username	Password
<input checked="" type="checkbox"/> MedRecGlobalDataSourceXA	orcl	localhost	1521	medrec	*****

Exit Help Previous **Next**

Testing Data Source Connections



Running Database Scripts

Run Database Scripts

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If your connections tested OK, you may now run database scripts. For each JDBC data source, select the desired database loading options and database version, and click Run Scripts.

Available JDBC Data Sources

CatalogDataSource

Available SQL Files and Database Loading Options

create_categories.sql
create_discounts.sql

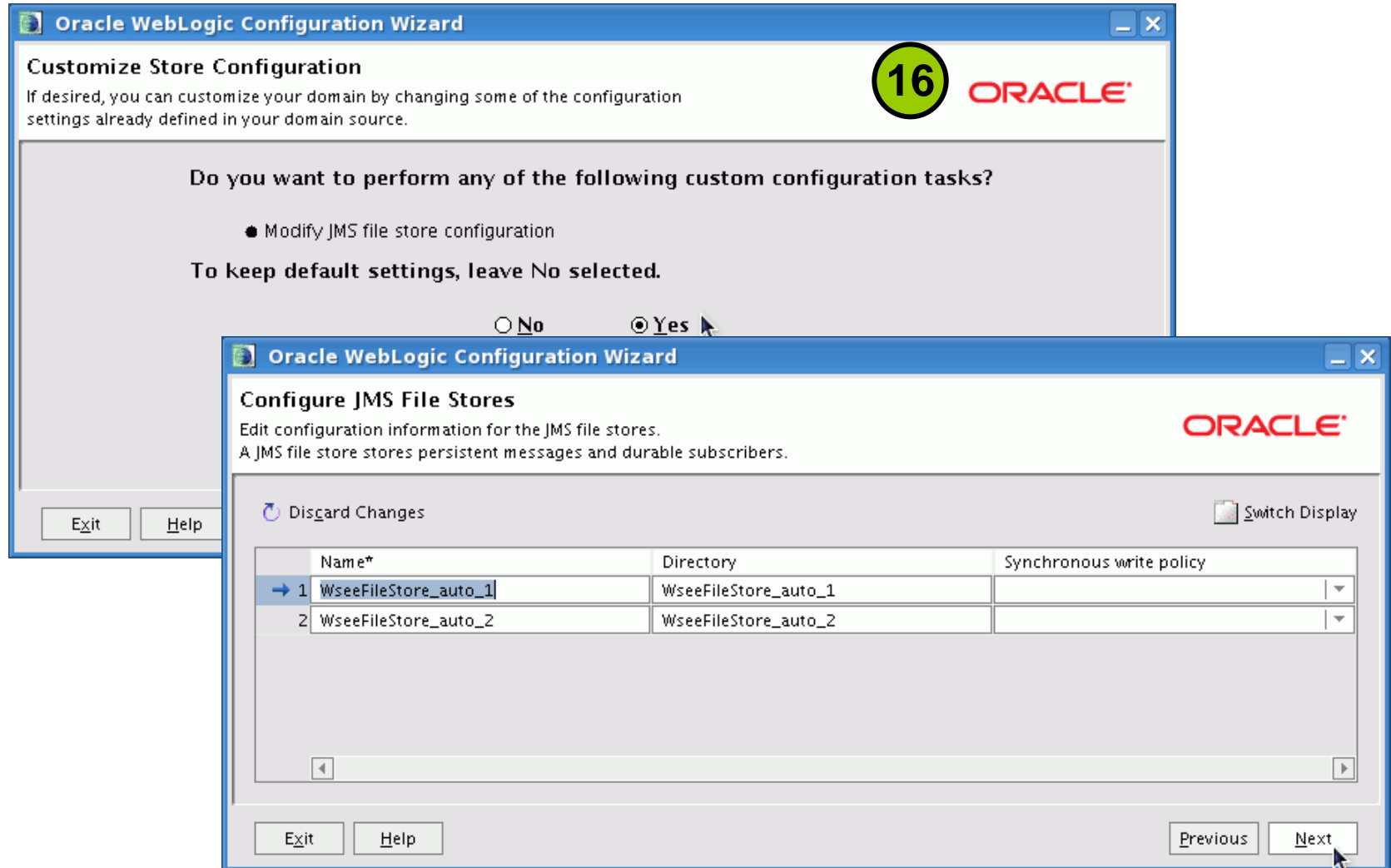
DB Version: Any Run Scripts

Results

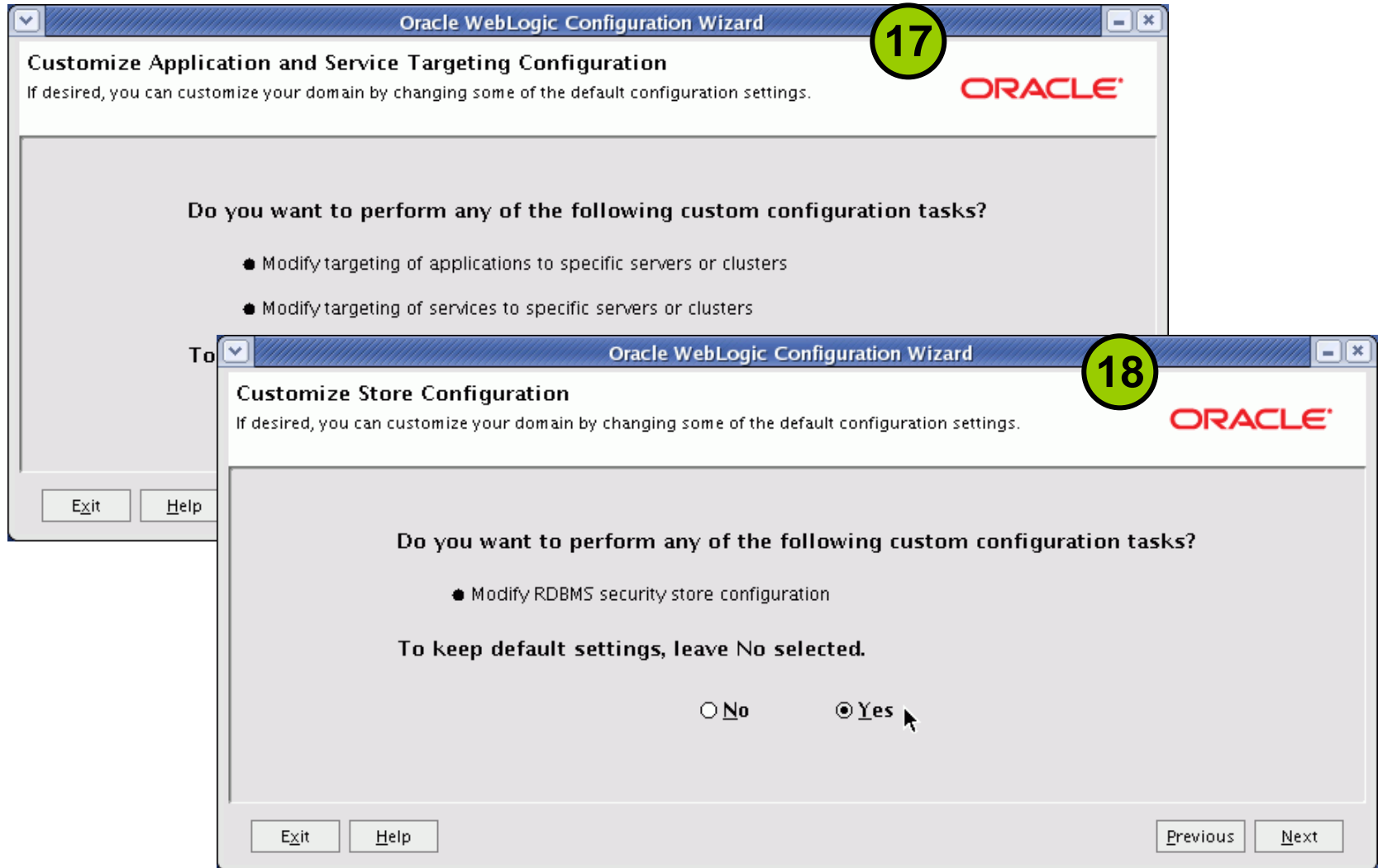
☒ Log File: /home/user/logs/jdbc.log Browse

Exit Previous Next

Configuring the JMS File Store



Customizing Application and Service Targeting Configuration



Configuring RDBMS Security Store Database

Oracle WebLogic Configuration Wizard 19

Configure RDBMS Security Store Database

Create the RDBMS tables in your datastore prior to booting your domain. The scripts for use by your DBA are in WebLogic Server's server/lib directory. Click Next to keep the template settings or bypass RDBMS options.

Discard Changes

☐ I don't want to change anything here. ☒ I want to create, change, or remove RDBMS support.

*Database Type:

*Driver:

*Class Name:

*DBMS SID: *User Name:

*DBMS Host: *User Password:

*DBMS Port: *Confirm User Password:

*URL:

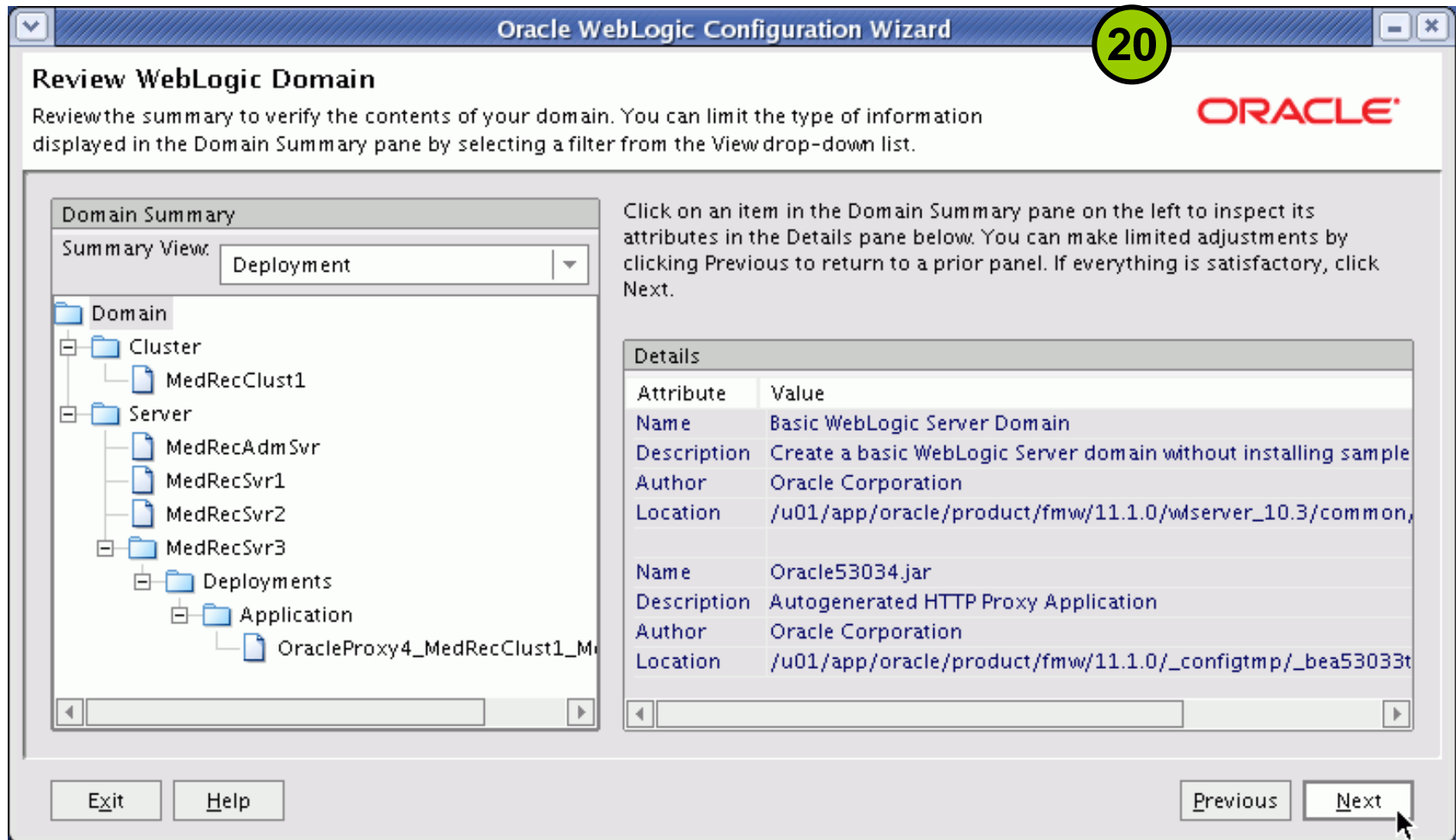
*Known Properties:

Additional Properties:

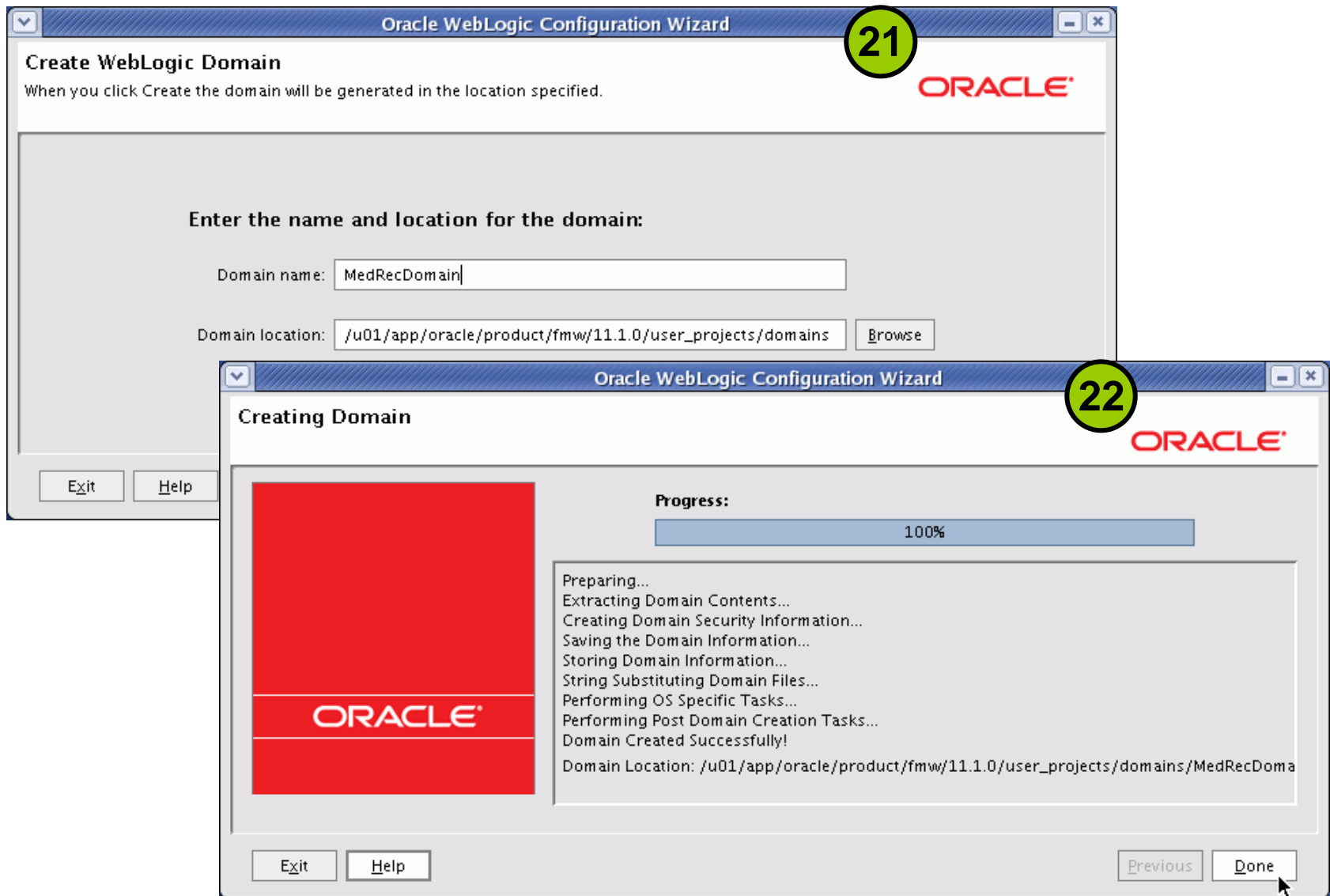
Test Connection

Good idea!












Reviewing the WebLogic Domain



Creating the WebLogic Domain



Domain Directory Structure

Directory	Description
 <i>domain-name</i>	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 <code>CLASSPATH</code> 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
 <i>server-name</i>	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
 - `-Dprop=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.



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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