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Oracle WebLogic Server 12*c*: Administration I

Activity Guide

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There are no practices for this lesson.

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Chapter 3

Practices for Lesson 3: Overview

Practices Overview

In these practices, you install Oracle WebLogic Server 12*c* and apply a patch to it.

Practice 3-1: Installing WebLogic Server

Overview

In this practice, you install the Java Development Kit (JDK) and then WebLogic Server.

Both the JDK and WebLogic Server have already been installed on both hosts. You will rename the installation directory on host01 to gain installation practice. If something goes wrong during the installation on host01, you can revert to the preinstalled version of the products by changing the directories back to their original names.

Assumptions

None

Tasks

1. Connect to host01.

   a. Refer to the instructions in Appendix A: Connecting to the Environment to connect to your machine.

   b. Unless stated otherwise, you will be working within host01 for the remainder of this practice.

2. Rename the installation directories.

   a. Open a Terminal window, and navigate to `/u01/app`.

   Tip: There is a launcher for a Terminal window in the panel at the top of the desktop.

   ```
   $ cd /u01/app
   ```

   b. Rename the FMW installation directory.

   ```
   $ mv fmw fmw-orig
   ```

   c. Create a new, empty `fmw` directory.

   ```
   $ mkdir fmw
   ```

   d. Rename the JDK installation directory.

   ```
   $ mv jdk jdk-orig
   ```

3. Install the JDK.

   a. In the Terminal window, navigate to `/install/java`.

   ```
   $ cd /install/java
   ```

   b. Unzip the tar file by running the `tar` command.

   ```
   $ tar xvf jdk-linux-x64.tar.gz –C /u01/app
   ```

   Command options:

   – `x:` Extract

   – `v:` Verbose output

   – `f:` File to extract

   – `C:` The `tar` command changes the current directory to the one specified before performing any operations. (Note that this is a capital "C.")

   c. Rename the JDK installation directory to something more generic. In a Terminal window, navigate back to `/u01/app`.

   ```
   $ cd /u01/app
   $ mv jdk1.7.0_67 jdk
   ```

Note: The exact name of the directory created by unzipping the tar file may be different, depending upon the version of the JDK. Rename whatever the directory name is to `jdk`.

4. Install WebLogic Server.

    a. In the Terminal window, navigate to `/install/weblogic`.

       `$ cd /install/weblogic`

    b. Set the `JAVA_HOME` variable to where the JDK is installed.

       `$ export JAVA_HOME=/u01/app/jdk`

    c. Set the `PATH` to include the `bin` directory of the JDK.

       `$ export PATH=$JAVA_HOME/bin:$PATH`

    d. Run the Java virtual machine with the `jar` option to run the generic installer.

Note: The exact name of the JAR file may be different. Use the name of the generic installer JAR file in your system. The `-D` option ensures that the WebLogic installer performs a 64-bit product installation.

       `$ java –d64 -jar fmw_12.1.3.0.0_wls.jar`

       `Extracting files.....`

       `...`

Note: If any of the installation requirements fail, continue with the installation anyway by answering **y** when you are asked if you want to continue. There really is not a problem; the installer might get confused because host01 is a virtual machine.

    e. After the files are extracted, the graphical installer appears. Use the guidelines in the following table to install the software:

Step	Window/Page Description	Choices or Values
a.	Specify Oracle Inventory Directory	This screen appears when you install the first Oracle product. If it appears, enter `/u01/app/oraInventory` and click **Next**. If it does not appear, move to the next step.
b.	Welcome	Click **Next**.
c.	Installation Location	Enter `/u01/app/fmw` and click **Next**.
d.	Installation Type	Select **Complete with Examples**. Click **Next**.
e.	Prerequisite Checks	When all prerequisite checks are 100% successful, click **Next**.
f.	Security Updates	Deselect **I wish to receive security updates via My Oracle Support**. (In your training environment, you do not want to associate the installations with a specific user.) Click **Next**. In the dialog box that opens, click **Yes**.
g.	Installation Summary	Click **Install**.
h.	Installation Progress	Note the progress and successful completion of the installation. (This step may take several minutes.) Click **Next**.

Practices for Lesson 3: Installing and Patching WebLogic Server

Step	Window/Page Description	Choices or Values
i.	Installation Complete	Deselect **Automatically Launch the Quickstart Configuration Wizard**. Click **Finish**.

f.   Close the Terminal window.

Practice Solution: Installing WebLogic Server

There is no scripted solution for this practice. If you did not do the practice, there is nothing for you to do, the products are already installed.

If you started the practice, but did not complete it, you revert to the preinstalled version of the products by deleting any new directories you created and renaming the original installation directories back to their previous names.

Assumptions

You started the practice but did not complete it.

Solution Tasks

Important: Do these tasks only if you started the practice but did not complete it.

1. Connect to host01.

   a. Refer to the instructions in Appendix A: Connecting to the Environment to connect to your machine.

   b. Unless stated otherwise, you will be working within host01 for the remainder of this practice.

2. Check that the preinstalled FMW directory is there. Delete the new FMW installation directory that you created. Rename the preinstalled directory back to its original name.

   a. Open a Terminal window, and navigate to `/u01/app`. Then, list the directories to ensure that the `fmw-orig` directory is present. Check that this preinstalled directory has valid contents.

   ```
   $ cd /u01/app
   $ ls
   fmw ... fmw-orig ...
   $ ls fmw-orig
   cfgtoollogs  coherence ...
   ```

   b. Ensure that you are in the proper directory. Remove the new installation directory that you created.

   ```
   $ pwd
   /u01/app
   $ rm –rf fmw
   ```

   Warning: This command permanently deletes the directory, all its subdirectories, and files. Use with caution.

   c. Rename the preinstalled directory back to its original name.

   ```
   $ mv fmw-orig fmw
   ```

3. Check that the preinstalled JDK directory is there. Delete the new JDK directory that you created. Rename the preinstalled directory back to its original name.

   a. In a Terminal window, navigate to `/u01/app`. Then list the directories to ensure that the `jdk-orig` directory is present.

   ```
   $ cd /u01/app
   $ ls
   jdk ... jdk-orig ...
   ```

   b. Ensure that you are in the proper directory. Remove the new installation directory that you created.

```
$ pwd
/u01/app
$ rm –rf jdk
```

Warning: This command permanently deletes the directory, all its subdirectories, and files. Use with caution.

c. Rename the preinstalled directory back to its original name.

```
$ mv jdk-orig jdk
```

4. Close the Terminal window.

Practices for Lesson 3: Installing and Patching WebLogic Server

Practice 3-2: Patching WebLogic Server

Overview

In this practice, you apply a WebLogic patch to the WebLogic Server environment installed in the previous practice. Optionally, you can also roll back the patch at the end of this practice.

Assumptions

You completed "Practice 3-1: Installing WebLogic Server" and WebLogic Server has been successfully installed.

No instances of WebLogic Server are running.

Tasks

1. Connect to host01.

   Note: If a connection for host01 is already available, you can continue to use it.

2. Access the patch zip file (`p19234430_121300_Generic.zip`).

   a. Open a Terminal window, and navigate to `/install/weblogicpatch`.

   $ **cd /install/weblogicpatch**

3. Define the PATCH_TOP environment variable.

   a. Define the PATCH_TOP variable and assign it the value `/install/weblogicpatch`.

   $ **export PATCH_TOP=/install/weblogicpatch**

   b. Print the variable to the screen to make sure you set up PATCH_TOP correctly.

   $ **echo $PATCH_TOP**

   `/install/weblogicpatch`

4. Define (or redefine) the ORACLE_HOME environment variable.

   a. In a Fusion Middleware environment, the ORACLE_HOME variable should point to the top directory where WebLogic Server has been installed (`/u01/app/fmw`).

   $ **export ORACLE_HOME=/u01/app/fmw**

   b. Print the variable to the screen to make sure you set up ORACLE_HOME correctly.

   $ **echo $ORACLE_HOME**

   `/u01/app/fmw`

5. Define (or redefine) the JAVA_HOME environment variable.

   a. The JDK used to run OPatch must be the JDK installed in $ORACLE_HOME.

   $ **export JAVA_HOME=/u01/app/jdk**

   b. Print the variable to the screen to make sure you set up JAVA_HOME correctly.

   $ **echo $JAVA_HOME**

   `/u01/app/jdk`

6. Add the directory where the OPatch utility resides to the Linux PATH.

   a. The executable shell file `opatch` resides in the OPatch directory. The OPatch directory must be added to the PATH so that the shell will be able to invoke it.

   $ **export PATH=$ORACLE_HOME/OPatch:$PATH**

   Note: Notice that the "O" and "P" in the "OPatch" directory name are capitalized.

   b. Confirm the `opatch` executable appears in your system PATH.

   $ **which opatch**

```
                /u01/app/fmw/OPatch/opatch
```

7. Unzip the patch zip file into the PATCH_TOP directory.

   a. Use the unzip utility to expand the zip file p19234430_121300_Generic.zip.

   Note: If asked to replace an existing file, enter **A** for "All."

```
$ unzip -d $PATCH_TOP p19234430_121300_Generic.zip
Archive:  p19234430_121300_Generic.zip
   creating: 19234430/
   creating: 19234430/files/
   creating: . . .
   inflating:
19234430/files/oracle.fmwconfig.common.wls.shared/12.1.3.0.0/fmw
config.common.symbol/modules/com.oracle.cie.config-
wls_8.1.0.0.jar/com/oracle/cie/domain/DomainNodeManagerHelper.cl
ass
   inflating: 19234430/README.txt
    creating: 19234430/etc/
    creating: 19234430/etc/config/
   inflating: 19234430/etc/config/actions.xml
   inflating: 19234430/etc/config/inventory.xml
```

   b. Set your current directory to the directory where the patch is located.

```
$ cd $PATCH_TOP/19234430
```

   c. Make sure that your default directory is correct.

```
$ pwd
/install/weblogicpatch/19234430
```

8. Before applying the patch, view the patch README file.

   a. In the patch directory, find the README file.

```
$ ls README*
README.txt
```

   b. Open the file in the editor. Briefly look at the instructions. The directions in this practice are based on the directions in this file.

```
$ gedit README.txt
```

   c. Close the editor without making any changes to the file.

9. Run the OPatch utility with the lsinventory parameter, which finds the Oracle WebLogic inventory and prints out all the components found.

   a. Run opatch with the lsinventory parameter.

```
$ opatch lsinventory -jdk $JAVA_HOME
Oracle Interim Patch Installer version...
. . .
Oracle Home       : /u01/app/fmw
Central Inventory : /u01/app/oraInventory
   from           : /u01/app/fmw/oraInst.loc
. . .
---------------------------------------------
```

```
There are no Interim patches installed in this Oracle Home.

---------------------------------------------
OPatch succeeded.
$
```

Note: As expected, the `lsinventory` output states that no interim patches are currently installed.

10. Apply the patch.

    a. Run the OPatch utility to apply the patch. When you are asked if the local system is ready for patching, enter **y**.

Note: This can take a while to complete.

```
$ opatch apply -jdk $JAVA_HOME
Oracle Interim Patch Installer version ...
...

Oracle Home        : /u01/app/fmw
Central Inventory : /u01/app/oraInventory
   from            : /u01/app/fmw/oraInst.loc


...

Applying interim patch '19234430' to OH '/u01/app/fmw'
Verifying environment and performing prerequisite checks...
All checks passed.

Please shutdown Oracle instances running out of this ORACLE_HOME
on the local system.
(Oracle Home = '/u01/app/fmw')

Is the local system ready for patching? [y|n]
Y
User Responded with: Y
Backing up files...
...
Verifying the update...
Patch 19234430 successfully applied
...
OPatch succeeded.
$
```

11. Rerun the OPatch utility with the `lsinventory` parameter. This time `opatch` should find the interim patch you just applied, and print its information to the screen.

    a. Run `opatch` with `lsinventory`.

    ```
    $ opatch lsinventory -jdk $JAVA_HOME
    ```

```
Oracle Interim Patch Installer version ...
...
Oracle Home        : /u01/app/fmw
Central Inventory : /u01/app/oraInventory
   from            : /u01/app/fmw/oraInst.loc
...
---------------------------------------------
Interim patches (1) :

Patch  19234430     : applied on ...
Unique Patch ID:  17945590
Patch description:  "One-off"
   Created on 14 Aug 2014, 13:47:02 hrs Asia/Calcutta
   Bugs fixed:
     19234430
------------------------------------------------------
OPatch succeeded.
$
```

Note: This time the `lsinventory` output states that there is one interim patch, the one you just applied, 19234430.

12. (Optional) Roll back the applied patch. If an issue occurred while applying a patch, your system could be left in an unstable state, with a few files already uploaded and other files missing. In this case, the best course of action is to roll back the patch.

Note: This can take a while to complete.

a. Use OPatch to roll back the patch. When you are asked whether the local system is ready for patching, enter **y**.

```
$ opatch rollback -id 19234430 -jdk $JAVA_HOME
Oracle Interim Patch Installer version ...
...
RollbackSession rolling back interim patch '19234430' from OH
'/u01/app/fmw'

Please shutdown Oracle instances running out of this ORACLE_HOME
on the local system.
(Oracle Home = '/u01/app/fmw')

Is the local system ready for patching? [y|n]
Y
User Responded with: Y
...
RollbackSession removing interim patch '19234430' from inventory
...
OPatch succeeded.
```

```
    $
```

13. (Optional) Make sure that the patch has been removed.

    a.   Run the OPatch utility with the `lsinventory` parameter one more time to show that no interim patches are found.

```
$ opatch lsinventory -jdk $JAVA_HOME

...

---------------------------------------------


There are no Interim patches installed in this Oracle Home.


---------------------------------------------


OPatch succeeded.
$
```

Note: As expected, the `lsinventory` output states that no interim patches are installed. The interim patch installed and subsequently rolled back is no longer there.

14. Close the Terminal window.

Practice Solution: Patching WebLogic Server

There is no solution for this practice. This practice is not required and can be skipped.

Practices for Lesson 3: Installing and Patching WebLogic Server

Practices for Lesson 4: Creating Domains

Chapter 4

Practices for Lesson 4: Overview

Practices Overview

In these practices, you create a new WebLogic Server domain. You then move the domain to a second machine by using the pack and unpack utilities.

The following is a diagram of the domain:
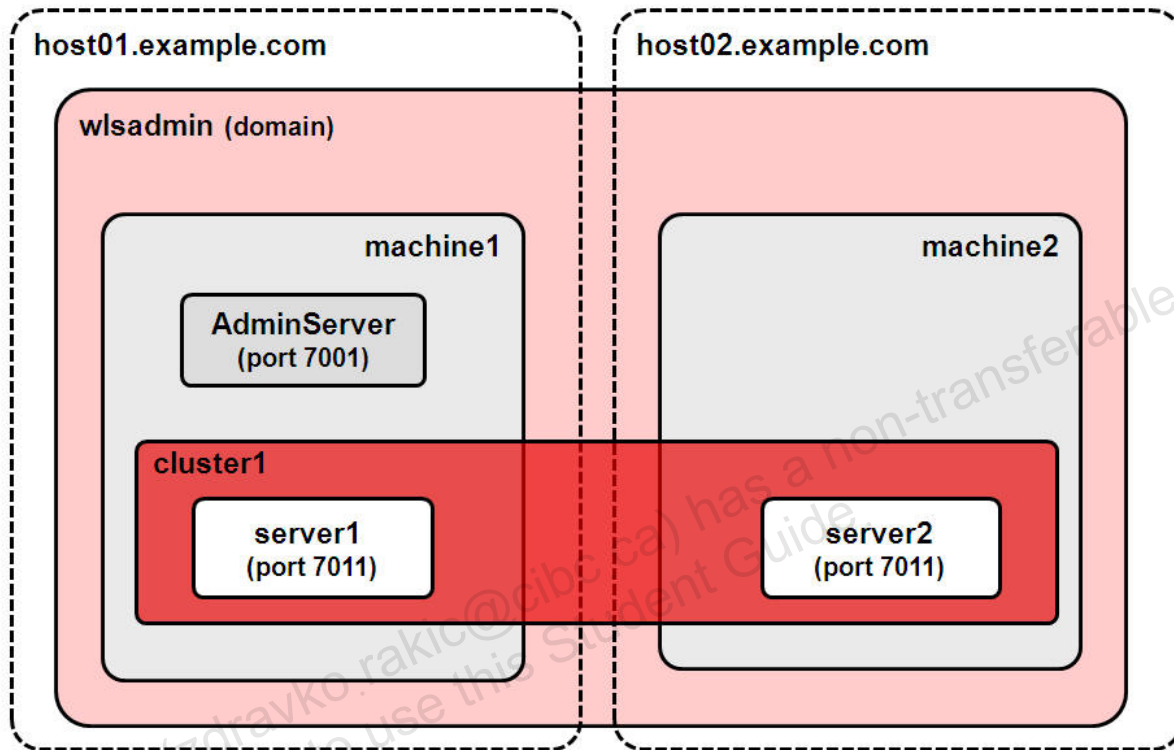
Practice 4-1: Creating a New Domain

Overview

In this practice, you create a new WebLogic Server domain by using the Configuration Wizard. As you create the domain, you create and configure some domain resources.

Assumptions

You completed "Practice 3-1: Installing WebLogic Server" and the installation was successful.

Completing "Practice 3-2: Patching WebLogic Server" is not required for this practice, but it is OK if you did it.

Tasks

1. Connect to host01.

   a. Unless stated otherwise, you will be working within host01 for the remainder of this practice.

2. Run the Configuration Wizard in graphical mode.

   a. Open a new Terminal window. Navigate to the location of the Configuration Wizard script, the `common/bin` directory under the Oracle Common directory: `/u01/app/fmw/oracle_common/common/bin`.

   $ **cd /u01/app/fmw/oracle_common/common/bin**

   Note: Remember that you can use the Tab key to auto-complete directory and file names as you type them.

   b. Run the Configuration Wizard.

   $ **./config.sh**

   c. After the graphical wizard opens, use the guidelines in the following table to create the domain:

Step	Window/Page Description	Choices or Values
a.	Create Domain	Select **Create a new domain**. Enter the Domain Location: **/u01/domains/part1/wlsadmin** Click **Next**.
b.	Templates	Ensure that **Create Domain Using Product Templates** is selected. Click **Next**. **Note: Basic WebLogic Server Domain** is selected automatically and cannot be deselected.
c.	Administrator Account	Enter these values for the following fields: • Name: **weblogic** • Password: **Welcome1** • Confirm Password: **Welcome1** **Note:** The password displays as ●●●●●●●●. Click **Next**.
d.	Domain Mode and JDK	Under Domain Mode, select **Production**.

Step	Window/Page Description	Choices or Values
		Under JDK, ensure that **Oracle HotSpot** is selected (whatever version you have). Click **Next**.
e.	Advanced Configuration	Select **Administration Server** and **Managed Servers, Clusters, and Coherence**. Click **Next**. **Note:** Although Node Manager can be set up at this time, you will wait to configure it after it has been discussed.
f.	Administration Server	Enter or select these values for the following fields: • Server Name: **AdminServer** • Listen Address: **host01.example.com** • Listen Port: **7001** • Enable SSL: Deselected • SSL Listen Port: (Disabled) Click **Next**.
g.	Managed Servers	Click the **Add** button. Then, in the row, enter or select these values for the following fields: • Server Name: **server1** • Listen Address: **host01.example.com** • Listen Port: **7011** • Enable SSL: Deselected • SSL Listen Port: (Disabled) Click the **Add** button again. Then, in the row, enter or select these values for the following fields: • Server Name: **server2** • Listen Address: **host02.example.com** • Listen Port: **7011** • Enable SSL: Deselected • SSL Listen Port: (Disabled) Click **Next**.
h.	Clusters	Click the **Add** button. Then, in the row, enter or select these values for the following fields: • Cluster Name: **cluster1** • Cluster Address: (leave blank) Click **Next**.
i.	Assign Servers to Clusters	Under Servers, select **server1**. Then, under Clusters, ensure **cluster1** is selected and click the right arrow button. Do the same thing to move **server2** under

Step	Window/Page Description	Choices or Values
		`cluster1`. The Clusters column should look like this: Click **Next**.
j.	Machines	Click the **Machine** tab. Click the **Add** button. Then, in the row, enter or select these values for the following fields: • Name: `machine1` • Node Manager Listen Address: `host01.example.com` • Node manager listen port: `5556` Click the **Add** button again. Then, in the row, enter or select these values for the following fields: • Name: `machine2` • Node Manager Listen Address: `host02.example.com` • Node manager listen port: `5556` Click **Next**.
k.	Assign Servers to Machines	Under Machines, select `machine1`. Then under Servers, select `AdminServer` and click the right arrow button. Under Machines, ensure `machine1` is still selected. Then under Servers, select `server1` and click the right arrow button. Under Machines, select `machine2`. Then under Servers, select `server2` and click the right arrow button. The Machines column should look like this: Click **Next**.
l.	Configuration Summary	Review the domain. Click **Create**.

Practices for Lesson 4: Creating Domains

Step	Window/Page Description	Choices or Values
m.	Configuration Progress	When the progress bar reaches 100%, click **Next**.
n.	Configuration Success	Click **Finish**.

    d.   The Configuration Wizard closes. Close the terminal window.

Practices for Lesson 4: Creating Domains

Practice Solution: Creating a new Domain

Perform the following tasks if you did not complete this practice and want to use the finished solution.

Assumptions

You completed "Practice 3-1: Installing WebLogic Server" and the installation was successful or you did not do Practice 3-1at all (the products are pre-installed).

Solution Tasks

1. Connect to host01. If you partially completed the practice, delete the domain directory you created.

   a. Open a Terminal window and navigate to the parent directory of the domain directory. Then remove the domain directory.

      ```
      $ cd /u01/domains/part1
      $ rm –rf wlsadmin
      ```

   Warning: This command permanently deletes the directory, all its subdirectories, and files. Use with caution.

   Note: If you did not start the practice, there is no domain directory to delete.

2. Run the solution script.

   a. In a Terminal window, navigate to the practice directory.

      ```
      $ cd /practices/part1/practice04-01
      ```

   b. Run the solution script.

      ```
      $ ./solution.sh
      ```

   Note: This script starts the WebLogic Scripting Tool (WLST) passing it the WLST script create_domain.py, which creates the new domain for you. The WLST script prints out messages. When it writes the domain, it can take some time, so be patient and do not close the Terminal window until you see the message:

   ```
   >>>Domain created successfully at /u01/domains/part1/wlsadmin
   ```

3. Close the Terminal window.

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

Overview

In this practice, you use the pack and unpack utilities to copy the domain to another machine, so a managed server of the domain can run there.

Assumptions

You completed "Practice 4-1: Creating a New Domain" successfully.

Tasks

1. Connect to host01.

    a. Unless stated otherwise, you will be working within host01 for the remainder of this practice.

2. Create a managed server template by using the pack utility and the domain you just created.

    a. Open a Terminal window and navigate to the location of the `pack.sh` script.

        $ **cd /u01/app/fmw/oracle_common/common/bin**

    b. Run the `pack.sh` script with the options to use your domain and create a managed server template in your home directory:

    Note: Enter the command on one line. It is on multiple lines here due to space limitations.

    ```
    $ ./pack.sh –domain=/u01/domains/part1/wlsadmin
                   -template=/home/oracle/managedserver.jar
                   -template_name=wlsadmin_managed
                   -managed=true
    << read domain from "/u01/domains/part1/wlsadmin"
    >>  succeed: read domain from "/u01/domains/part1/wlsadmin"
    ...............................................
    >>  succeed: write template to "/home/oracle/managedserver.jar"
    << close template
    >>  succeed: close template
    $
    ```

3. Send the template JAR file over to host02.

    a. In the Terminal window, navigate to the location of the new JAR file.

        $ **cd /home/oracle**

    b. Use SFTP to put the JAR file on host02. You use the username `oracle`. If you are warned about the authenticity of host02 and asked if you want to continue, enter **yes**. If asked for the password of the user, it is also **oracle**.

    ```
    $ sftp oracle@host02.example.com
    Connecting to host02.example.com...
    The authenticity of host...
    ...
    Are you sure you want to continue connecting (yes/no) ? yes
    ...
    sftp> cd /home/oracle
    ```

```
sftp> pwd
Remote working directory: /home/oracle
sftp> put managedserver.jar
Uploading managedserver.jar to /home/oracle/managedserver.jar
managedserver.jar              100% ...
sftp>
```

c. Exit SFTP.

```
sftp> bye
$
```

d. Close the Terminal window.

4. Connect to host02.

a. Unless stated otherwise, you will be working within host02 for the remainder of this practice.

5. Create a copy of the domain on host02 by using the unpack utility.

a. Open a Terminal window. Verify that the domain does not already exist on this host.

```
$ ls /u01/domains/part1
$
```

Note: Nothing displays because there are currently no files or directories there.

b. Navigate to the location of the unpack.sh script.

```
$ cd /u01/app/fmw/oracle_common/common/bin
```

c. Run the unpack.sh script with the options to use the managed server template to create your domain on this host.

Note: Enter the command on one line. It is on multiple lines here due to space limitations.

```
$ ./unpack.sh –domain=/u01/domains/part1/wlsadmin
                  -template=/home/oracle/managedserver.jar
<< read template from "/home/oracle/managedserver.jar"
>>  succeed: read template from "/home/oracle/managedserver.jar"
<< set config option DomainName to "wlsadmin"
>>  succeed: set config option DomainName to "wlsadmin"
<< write Domain to "/u01/domains/part1/wlsadmin"
..............................................
>>  succeed: write Domain to "/u01/domains/part1/wlsadmin"
<< close template
>>  succeed: close template
$
```

Note: Notice that the domain on host02 is placed in the same location as it is on host01. This is the recommended practice.

6. Check out the domain directories on host02.

a. In the same Terminal window, navigate to the domain directory and look around by using the cd and ls commands.

```
$ cd /u01/domains/part1/wlsadmin
$ ls
```

```
            bin fileRealm.properties  lib  security  startWebLogic.sh
            ...
            $ cd bin
            $ ls
            nodemanager  setDomainEnv.sh ...
            ...
```

7. Close the Terminal window.

Practices for Lesson 4: Creating Domains

Practice Solution: Copying a Domain to a New Machine

Perform the following tasks if you did not complete this practice and want to use the finished solution.

Assumptions

You completed "Practice 4-1: Creating a New Domain" successfully.

Solution Tasks

1. Connect to host02.

   Note: Notice you are going to host02 (not host01).

2. If you partially completed the practice, delete the domain directory on host02. (If you did not start the practice, skip this task.)

   Note: Do *not* delete the domain directory on host01.

   a. Open a Terminal window and navigate to the parent directory of the domain directory. Then remove the domain directory.

      ```
      $ cd /u01/domains/part1
      ```

      ```
      $ rm -rf wlsadmin
      ```

   Warning: This command permanently deletes the directory, all its subdirectories, and files. Use with caution.

   Note: If you did not start the practice, there is no domain directory to delete.

3. Run the solution script.

   a. In a Terminal window, navigate to the practice directory.

      ```
      $ cd /practices/part1/practice04-02
      ```

   b. Run the solution script.

      ```
      $ ./solution.sh
      ```

   Note: This script runs the unpack utility, which uses a previously created managed server template, to create the domain on host02. The command can take a little while, so wait for the messages that unpack succeeded in writing the domain and that the template file was closed, before you close the Terminal window.

4. Close the Terminal window.

Practices for Lesson 4: Creating Domains

Practices for Lesson 4: Creating Domains

Practices for Lesson 5: Starting Servers

Chapter 5

Practices for Lesson 5: Overview

Practices Overview

In this practice, you start and stop instances of WebLogic Server by using the scripts supplied with the domain. You also update a start script to modify the `CLASSPATH` of the servers.

Practice 5-1: Starting and Stopping Servers

Overview

In this practice, you start the administration server by using the domain start script. You create a boot identity file for the administration server so you do not have to enter a username and password each time you start and stop the server. You start a managed server by using the domain start script. You also stop servers by using domain stop scripts. Finally, you update a script to add to the servers' CLASSPATH.

Assumptions

You completed "Practice 4-1: Creating a New Domain" and "Practice 4-2: Copying a Domain to a New Machine" so that the domain is created and installed on both hosts.

Tasks

1. Connect to host01.

    a. Unless stated otherwise, you will be working within host01 for the remainder of this practice.

2. Start the administration server by using the script supplied with the domain.

    a. Open a Terminal window and navigate to the domain directory. Then run the startWebLogic.sh script.

        ```
        $ cd /u01/domains/part1/wlsadmin
        $ ./startWebLogic.sh
        ```

    Note: Remember that you can use the Tab key to auto-complete directory and file names as you type them.

    b. When prompted for the username, enter **weblogic**. When prompted for the password, enter **Welcome1**:

        ```
        ...
        Enter username to boot WebLogic server: weblogic
        Enter password to boot WebLogic server: Welcome1

        ...
        ```

    Note: The password does not display.

    c. Messages will appear in the window. When the server successfully completes its startup process, it writes the following message to the window:

        ```
        <The server started in RUNNING mode>
        ```

    Note

    – To remember that this is the window in which the administration server is running, you might want to change the title of the Terminal window. In the window's menu, select **Terminal**, and then **Set Title**. Enter the title of **AdminServer** and click **OK**.

    – If you close the window in which a server is running, you kill the server. Minimize the window, if you want.

3. Create a boot identity file for the administration server.

    a. Open a new Terminal window and navigate to the AdminServer directory in the domain:

        ```
        $ cd /u01/domains/part1/wlsadmin
        $ cd servers/AdminServer
        ```

b. Create the `security` subdirectory under the `AdminServer` directory:

   `$ `**`mkdir security`**

c. Create a text file in this security directory called `boot.properties` and edit it. In this example, the gedit text editor is used.

   `$ `**`cd security`**

   `$ `**`gedit boot.properties`**

d. Add the following two lines to the file:

   `username=weblogic`

   `password=Welcome1`
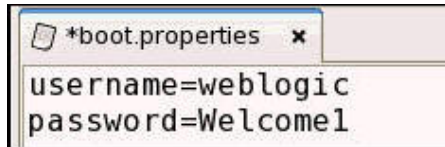
e. Save the file (select **File** > **Save**, or click **Ctrl + S**). Close the text editor.

f. Leave the terminal window open for the next task.

4. Stop the administration server and restart it. Observe the server's use of the boot identity file.

a. In the Terminal window, navigate to the `bin` directory under the domain directory, and run the script to stop the administration server:

   `$ `**`cd /u01/domains/part1/wlsadmin/bin`**

   `$ `**`./stopWebLogic.sh`**

Note

  – Notice that the script uses the WebLogic Scripting Tool (WLST).

  – You can also stop a server by pressing **Ctrl + C** in the window in which it is running.

b. When the stop script finishes, find the Terminal window in which the administration server was running. You can see that it has been shut down. Close this window.

c. Return to the other Terminal window, navigate to the domain directory, and once again run the script to start the administration server:

   `$ `**`cd /u01/domains/part1/wlsadmin`**

   `$ `**`./startWebLogic.sh`**

   `...`

Note: This time you are *not* prompted for the username and password.

d. Messages will appear in the window. When the server successfully completes its startup process, it writes the following message to the window:

   `<The server started in RUNNING mode>`

Note

  – If you look through the messages in the window, you can see the message about storing the boot identity: `<Storing boot identity in the file: ...>`. It was at this point that the server found the `boot.properties` file, used the credentials in it, and because those credentials were valid, encrypted the credentials and copied over the plain text in the file.

  – You may have noticed that the stop script you used earlier did not prompt you for the username and password. That script normally does, but it too can use the

---

Practices for Lesson 5: Starting Servers

boot.properties file. It, however, does not encrypt the username and password, as the start script does.

    e.   Leave the administration server running. Give the Terminal window the title of `AdminServer` and minimize it, if you want.

5.   Start a managed server by using the script supplied with the domain.

    a.   In a new Terminal window, navigate to the `bin` directory under the domain directory, and run the script to start the managed server called `server1`:

    $ **cd /u01/domains/part1/wlsadmin/bin**

    $ **./startManagedWebLogic.sh server1 host01.example.com:7001**

Note: Notice that this script takes two parameters: the name of the managed server and the URL of the domain's administration server.

    b.   When prompted for the username, enter **weblogic**. When prompted for the password, enter **Welcome1**:

    ...

    Enter username to boot WebLogic server: **weblogic**

   Enter password to boot WebLogic server: **Welcome1**

Note: The password does not display.

    c.   Messages will appear in the window. When the server successfully completes its startup process, it writes the following message to the window:

    <The server started in RUNNING mode>

Note

    –   To remember that this is the window in which server1 is running, you might want to change the title of the Terminal window. In the window's menu, select **Terminal**, and then **Set Title**. Enter the title of **server1** and click **OK**.

    –   If you close the window in which a server is running, you kill the server. Minimize the window, if you want.

    –   If you want to skip being prompted for the username and password when starting this server too, create a `boot.properties` file for it as you did for the administration server. (Create the `security` directory under the `server1` directory and create a new `boot.properties` file there.)

    d.   Leave the managed server running.

    e.   Minimize the host01 desktop window to use it later.

6.   Start a managed server on the other host, host02.

    a.   Connect to host02.

    b.   Open a Terminal window, navigate to the `bin` directory under the domain directory, and run the script to start the managed server called `server2`:

    $ **cd /u01/domains/part1/wlsadmin/bin**

    $ **./startManagedWebLogic.sh server2 host01.example.com:7001**

Note: Notice that this script takes two parameters: the name of the managed server and the URL of the domain's administration server.

    c.   When prompted for the username, enter **weblogic**. When prompted for the password, enter **Welcome1**:

    ...

    Enter username to boot WebLogic server: **weblogic**

Practices for Lesson 5: Starting Servers

```
                  Enter password to boot WebLogic server: Welcome1
```
Note: The password does not display.

    d.   Messages will appear in the window. When the server successfully completes its startup process, it writes the following message to the window:

```
                  <The server started in RUNNING mode>
```

Note

     – You might want to set the title of the Terminal window to **server2.**

     – If you close the window in which the server is running, you kill the server. Minimize the window, if you want.

     – If you want to, you could create a `boot.properties` file for this server, too.

    e.   Leave the managed server running.

7.   Add a new JAR file to the `CLASSPATH` of all servers.

    a.   Return to the host01 desktop.

Note: If you closed the window, then you must open it again.

    b.   Open a new Terminal window and copy the JAR file from the current practice directory to the `/home/oracle` directory.

```
                  $ cd
                  $ cp /practices/part1/practice05-01/sample.jar .
```

    c.   Navigate to the `bin` directory of the domain and create the `setUserOverrides.sh` file.

Note: The `setUserOverrides.sh` file is invoked by the `setDomainEnv.sh` script if the file exists. It is a best practice to set environmental changes in the override file instead of making changes directly to WebLogic Server startup scripts. This avoids your changes getting overwritten when new domain templates or Oracle product installations are introduced that affect your domains.

```
                  $ cd /u01/domains/part1/wlsadmin/bin
                  $ gedit setUserOverrides.sh
```

    d.   Add the following line to the file:

```
                  $ export PRE_CLASSPATH=/home/oracle/sample.jar
```

    e.   Save the file and exit the editor.

8.   Use SFTP to copy the updated script and the JAR file to the other host.

    a.   In the same Terminal window, start SFTP and copy the updated script to other host (replacing the script that is there). Also, put the JAR file onto the other host (in the same relative location).

```
                  $ sftp oracle@host02.example.com
                  Connecting to host02.example.com...
                  sftp> cd /u01/domains/part1/wlsadmin/bin
                  sftp> pwd
                  Remote working directory: /u01/domains/part1/wlsadmin/bin
                  sftp> put setDomainEnv.sh
                  Uploading setDomainEnv.sh to ...
                  setDomainEnv.sh                100% ...
                  sftp> cd /home/oracle
```

```
sftp> pwd
Remote working directory: /home/oracle
sftp> put /home/oracle/sample.jar
Uploading /home/oracle/sample.jar to /home/oracle/sample.jar
/home/oracle/sample.jar      100% ...
sftp> bye
$
```

9. Stop and restart a server. These instructions will use `server1`.

    a. In a Terminal window, navigate to the `bin` directory under the domain directory, and run the script to stop the managed server, `server1`. If you created a boot identity file for this server, you will not be prompted for the username and password. If you did not, when prompted for them, enter **weblogic** and **Welcome1**, respectively.

    ```
    $ cd /u01/domains/part1/wlsadmin/bin
    $ ./stopManagedWebLogic.sh server1 host01.example.com:7001
    ...
    ```

    Note: Notice that this script takes two parameters: the name of the managed server and the URL for the domain's administration server.

    b. From a Terminal window, restart `server1`. You can use the window you were in, the window in which the server was previously running, or a new window. Again, if prompted for the username and password, enter **weblogic** and **Welcome1**, respectively.

    ```
    $ cd /u01/domains/part1/wlsadmin/bin
    $ ./startManagedWeblogic.sh server1 host01.example.com:7001
    ...
    <The server started in RUNNING mode>
    ```

    c. Leave the window open in which the server is running.

10. Notice the CLASSPATH update.

    a. Scroll up in the window in which the server is running until you find the print out of the CLASSPATH.

    ```
    ...
    CLASSPATH=/home/oracle/sample.jar:...
    ...
    ```

    Note: Notice the new JAR file at the front of the CLASSPATH.

    b. Minimize the server window, if you want.

    c. Leave all servers running for now.

    Note: Only one server was stopped and restarted, so only that server picked up the addition to the CLASSPATH. The others will pick it up the next time they are stopped and started again. Because the JAR file code is not used by anything, it does not matter that the other servers do not yet have access to it.

Practice Solution: Starting and Stopping Servers

There is no solution for this practice. It primarily involves starting and stopping servers. The modification of the domain script is not required, so not completing this practice has no effect on completing subsequent practices.

Practices for Lesson 6: Using the Administration Console

Chapter 6

Practices for Lesson 6: Overview

Practices Overview

In this practice, you access the WebLogic Server administration console. You then use the console to create and configure some domain resources.

Practice 6-1: Using the Administration Console for Configuration

Overview

In this practice, you access the WebLogic Server administration console. You use the console to create and configure some resources in the domain.

Assumptions

You completed "Practice 5-1: Starting and Stopping Servers."

All servers in the domain are currently running.

> **Note:** If you did not complete "Practice 5-1: Starting and Stopping Servers," but completed "Practice 4-1: Creating a New Domain," and "Practice 4-2: Copying a Domain to a New Machine," and then start the servers in the domain, you can still do this practice.

Tasks

1. Connect to host01.
2. Access the WebLogic Server administration console from the host01 machine.
    a. On the host01 machine, click the Mozilla Firefox web browser icon in the launch bar near the top of the screen.

   Note: You can make Firefox the default browser if you want to.

    b. In the web browser, enter the URL to the administration console:
       http://host01.example.com:7001/console
    c. On the console welcome page, enter the Username as **weblogic** and Password as **Welcome1**. Then click the **Login** button.

   Note: You can have Firefox remember the password if you want to.

    d. Look at the layout of the administration console.
       - At the top left is the Change Center.
       - Below that is the Domain Structure (the hierarchy of domain resources).
       - The large area to the right displays information about the element selected in the Domain Structure.
       - Above that display area are links for the **Home** page, to **Log Out**, to access the **Preferences**, and to access the administration console **Help**.

3. Update an administration console preference.
    a. At the top of the administration console, click the **Preferences** link.

    b. Under Preferences ensure that the **User Preferences** tab is selected.
    c. Scroll down to the **Paths To Remember** field. Change the number to **8**.

   Note: If the check box above this, **Remember Last Used Path**, is selected, the deployment file browser remembers the last path you used to find a deployment. The number of **Recently Used Paths** displayed in the file browser depends upon the **Paths To Remember** field.

    d. Scroll up (or down) to find the **Save** button. Click the **Save** button.
    e. Notice the message at the top: "Settings updated successfully."

4. Update the configuration of an existing domain resource.

a.	Lock the configuration. In the Change Center, click the **Lock & Edit** button.

b.	In the Domain Structure, expand **Environment** (click the "**+**" sign) and then select **Servers**.
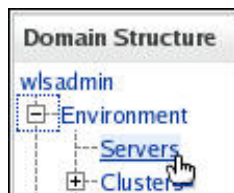
c.	On the right, in the Servers table, select **AdminServer(admin)** in the Name column.

d.	When "Settings for AdminServer" is displayed, click the **Logging** tab. Ensure that the **General** subtab is selected.

e.	Scroll down to find the "Rotation file size" field. Enter 7500.

f.	Click the **Save** button.

Note: Notice the message at the top: "Settings updated successfully." Also notice in the Change Center that the buttons have been modified.

g.	In the Change Center, click **Activate Changes**.
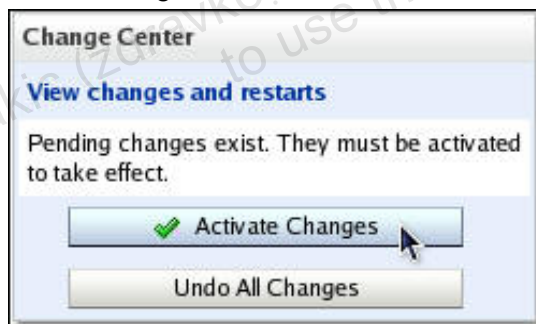
Note

–	Notice the message at the top: "All changes have been activated. No restarts are necessary." This change occurred without having to restart the affected server. Many configuration changes can be completed on a running server without a server restart.

–	Also notice that the configuration is no longer locked.

5.	Create a new domain resource. To illustrate the capabilities of the Change Center, the creation of this new resource will not be activated, so no change will actually take place in the domain configuration.

a.	Lock the configuration. In the Change Center, click the **Lock & Edit** button.

b.	In the Domain Structure, expand **Environment** (click the "**+**" sign) and then select **Servers**.

c. On the right, above the Servers table, click the **New** button.

Note: This allows you to create a new instance of WebLogic Server.

d. The wizard for creating a new server starts. Use the guidelines in the following table to create a new server:

Step	Window/Page Description	Choices or Values
a.	Create a New Server: Server Properties	Enter or select these values for the following fields: • Server Name: `server3` • Server Listen Address: `host02.example.com` • Server Listen Port: `7013` • Should this server belong to a cluster? Select `Yes, make this server a member of an existing cluster.` • Select a cluster: `cluster1` Click **Next**.
b.	Create a New Server: Review Choices	Review the choices made. Click **Finish**.

Note: Although the new server has been saved, the changes have not yet been activated. That means they are pending, and the configuration has not actually been updated. You have decided *not* to update the configuration with this new server at this time.

e. In the Change Center, click **Undo All Changes**.

Change Center

View changes and restarts

Pending changes exist. They must be activated to take effect.

[✔ Activate Changes]

[Undo All Changes]
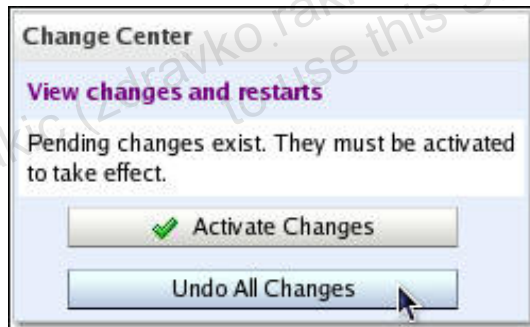
Note: Notice that the new server is no longer in the Servers table and the configuration is no longer locked.

6. (Optional – if you are interested and have time) Access the administration console Help.

a. Return to the **Logging** > **General** page of the admin server. Scroll down to find the "Rotation type" field. It is currently set to: By Size. Notice to the right of this (and every) field there is a short description of the field. At the end of the description of the "Rotation type" field is a link: **More info…** To learn more about how log files can be rotated, click that link.

b. The **More info…** link takes you to the administration console help on the appropriate field. The help opens in a new browser window (or tab).

c. Read a little about log file rotation. Then close the window (or tab).

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Practices for Lesson 6: Using the Administration Console

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d. Back on the administration console, ensure that you are still on the **Logging** > **General** tabs of the admin server. Click the **Help** link (at the top). Notice the help is context sensitive, and you are taken to help about server logging.

e. On the left of the help text, find the **Contents** tab. Ensure that it is selected and look around the help contents. Select some other help topic of interest.

f. Notice the other tab: **Search**. Click the **Search** tab. Enter `gridlink` in the Search field and click the **Go** button. Notice all the topics that display below the field. Select one and you are taken to that help content.

g. Close the help window (or tab).

Practice Solution: Using the Administration Console for Configuration

There is no solution for this practice. Any domain configuration changes made in the practice are not required, so not completing the practice has no effect on subsequent practices.

Practices for Lesson 7: Configuring JDBC

Chapter 7

Practices for Lesson 7: Overview

Practices Overview

In this practice, you create and configure a JDBC data source.

Practice 7-1: Configuring a JDBC Data Source

Overview

In this practice, you create and configure a generic JDBC data source by using the administration console.

Assumptions

You completed "Practice 5-1: Starting and Stopping Servers."

All servers in the domain are currently running.

Note: If you did not complete "Practice 5-1: Starting and Stopping Servers," but completed "Practice 4-1: Creating a New Domain," and "Practice 4-2: Copying a Domain to a New Machine," and then start the servers in the domain, you can still do this practice.

Tasks

1. Connect to host01.
2. Open the WebLogic Server administration console.
3. Create a generic JDBC data source.
   a. Lock the configuration. In the Change Center, click the **Lock & Edit** button.
   b. In the Domain Structure, expand **Services** (click the "**+**" sign) and then select **Data Sources**.
   c. On the right, above the Data Sources table, click the **New** button and select **Generic Data Source**.
   d. The "create a data source" wizard starts. Use the guidelines in the following table to create a new generic data source:

Step	Window/Page Description	Choices or Values
a.	Create a New JDBC Data Source: JDBC Data Source Properties (page 1)	Enter or select these values for the following fields: • Name: `datasource1` • JNDI Name: `datasource1` • Database Type: `Oracle` **Note:** The name and the JNDI name do not have to match, that is just the choice made in this example. Click **Next**.
b.	Create a New JDBC Data Source: JDBC Data Source Properties (page 2)	Select this value for the following field: • Database Driver: `*Oracle's Driver (Thin XA) for Instance connections; Versions:Any` Click **Next**.
c.	Create a New JDBC Data Source: Transaction Options	Click **Next**. **Note:** Because an XA driver was selected, there are no transaction options to choose.
d.	Create a New JDBC Data Source: Connection	Enter or select these values for the following fields: • Database Name: `orcl`

Practices for Lesson 7: Configuring JDBC

Step	Window/Page Description	Choices or Values
	Properties	**Note:** That is a lowercase "L" on the end. • Host Name: **host02.example.com** • Port: **1521** • Database User Name: **oracle** • Password: **Welcome1** • Confirm Password: **Welcome1** • oracle.jdbc.DRCPConnectionClass: (leave blank) Click **Next**.
e.	Create a New JDBC Data Source: Test Database Connection	Click the **Test Configuration** button. When the message "Connection test succeeded." displays, click **Next**. **Note:** If the test fails, click the **Back** button and check your entries. Correct any mistakes and come back to this page and try the test again.
f.	Create a New JDBC Data Source: Select Targets	Under Clusters, select **cluster1**. Ensure that **All servers in the cluster** is selected. Click **Finish**.

e. In the Change Center, click **Activate Changes**.

Note: Notice the message at the top: "All changes have been activated. No restarts are necessary." This data source was created and targeted without having to restart the affected servers.

f. Verify the JNDI name is set on the servers in the cluster. Expand **Environments**, click **Servers**, click **server1**, and click **View JNDI Tree**. You should see **datasource1** as an entry in the list. Repeat for **server2**.

4. Tune the new generic data source.

Note: The scenario for the database is this:

– The database has intermittent peak usage and the database should be allowed to shrink every five minutes.

– The DBA has determined that each connection pool should start with one connection and grow to a maximum of five connections.

– Prepared and callable statements are used. The DBA has calculated that each connection pool should cache 15 statements.

– The DBA wants connections to be tested before they are given to applications.

– The DBA wants to test unused connections every four minutes.

– Even though connections are tested, performance impact is to be minimized by trusting idle connections for one minute.

a. Lock the configuration again by clicking **Lock & Edit** in the Change Center.

b. In the Domain Structure, expand **Services** and then select **Data Sources**. In the Data Sources table, select the new data source, **datasource1**.

c. Click the **Configuration** tab and then the **Connection Pool** subtab.

d. Use the guidelines in the following table to set some of the connection pool attributes:

Practices for Lesson 7: Configuring JDBC

Step	Field and Value	Reason
a.	Initial Capacity: `1`	The initial value from the DBA **Note:** With intermittent peak usage, the initial capacity should be smaller than the maximum.
b.	Maximum Capacity: `5`	The maximum value from the DBA **Note:** Remember when setting this value that the actual maximum number of connections that can be retrieved from the database is this maximum times the number of target servers.
c.	Minimum Capacity: `1`	The same as the initial capacity **Note:** This number is used in pool shrinking calculations.
d.	Statement Cache Type: `LRU`	This algorithm keeps statements used frequently in the cache.
e.	Statement Cache Size: `15`	The cache size value from the DBA

e. Click **Save**.

f. Click **Advanced**. Use the guidelines in the following table to set the rest of the connection pool attributes:

Step	Field and Value	Reason
a.	Test Connections On Reserve: Selected	Test connections before they are distributed
b.	Test Frequency: `240`	Test unused connections every four minutes
c.	Seconds to Trust an Idle Pool Connection: `60`	Trust idle connections for one minute
d.	Shrink Frequency: `300`	Allow the database to shrink every five minutes

g. Click **Save**.

h. In the Change Center, click **Activate Changes**.

Note: Notice the message at the top: "All changes have been activated. No restarts are necessary."

5. Log out of the administration console.

   a. Click the **Log Out** link.

   b. Close the web browser.

Practice Solution: Configuring a JDBC Data Source

Perform the following tasks if you did not complete this practice and want to use the finished solution.

Note: If you started creating the data source, saved and activated the changes, this script will not work. To run the script in that case: access the administration console, lock the configuration, select the check box next to `datasource1`, click the **Delete** button, click **Yes**, and activate the changes.

Assumptions

You completed "Practice 5-1: Starting and Stopping Servers."

All servers in the domain are currently running.

Note: If you did not complete "Practice 5-1: Starting and Stopping Servers," but completed "Practice 4-1: Creating a New Domain," and "Practice 4-2: Copying a Domain to a New Machine," and then start the servers in the domain, you can still run this solution.

Solution Tasks

1. Connect to host01.
2. Run the solution script.
   a. Open a Terminal window and navigate to the practice directory.

      $ **cd /practices/part1/practice07-01**

   b. Run the solution script.

      $ **./solution.sh**

   Note: This script starts the WebLogic Scripting Tool (WLST) passing it the WLST script `create_data_source.py`, which creates the new generic data source for you. The WLST script prints out messages. Be patient and do not close the Terminal window until you see these messages:

      ...
      >>>Data source created successfully!

      Exiting WebLogic Scripting Tool.

3. Close the Terminal window.

Practices for Lesson 8:
Monitoring a Domain

Chapter 8

Practices for Lesson 8: Overview

Practices Overview

In these practices, you use the administration console to access and configure WebLogic Server log files. You also use the monitoring capabilities of the admin console and the Monitoring Dashboard to monitor various aspects of WebLogic Server.

Practice 8-1: Working with WebLogic Server Logs

Overview

In this practice, you access a WebLogic Server log file by using the administration console. You search the server log file by using an editor. You create a log filter and apply it to one of the logging outputs.

Assumptions

You completed "Practice 7-1: Configuring a JDBC Data Source."

All servers in the domain are currently running.

Tasks

1. Connect to host01.
2. Open the WebLogic Server administration console.
3. In the admin console, locate the server log file for `server1`.

   a. In the Domain Structure, expand **Diagnostics** (click the "**+**" sign), and then select **Log Files**.

   b. In the Log Files table, select the **ServerLog** option for server1. Then click the **View** button.

   Note: If you do not see this log on the first page of the table, click the **Next** link.

   c. The Server Log Entries table displays.

   Note: There may be no rows in the table. The table settings determine what to display.

   d. Click the **Customize this table** link.

   e. Use the drop-down list to update **Time Interval**. Choose **Last 2 day(s)** or some other interval that will display quite a few messages. Also, use the drop-down list to change the **Number of rows displayed per page** to **25** (or a number of your choice).

   f. Click the **Apply** button.

   g. Select the option button next to a message and click the **View** button to see the details of one of the messages.

   h. Use the breadcrumbs at the top of the page to go back to the log by clicking **Server Log**.
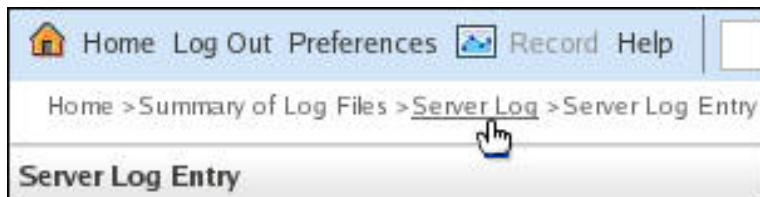
   i. Scroll up and down and look at the log messages. Click the **Next** and **Previous** links.

   Note: You may notice that the administration console does not provide a log search capability. Because it does not, next you will open the log file in an editor.

4. In a Terminal window, navigate to the location of the log file and edit it. Use the editor to search the log file.

   a. Open a Terminal window and navigate to the `logs` directory under the `server1` directory. List the directory contents.

   ```
   $ cd /u01/domains/part1/wlsadmin/servers/server1/logs
   ```

```
$ ls
access.log diagnostic_images server1.log
```

Note: There may be more files and directories in your `logs` directory than listed here.

    b. Open the `server1.log` file in an editor.

```
$ gedit server1.log
```

    c. Use the search capabilities of the gedit editor to find messages placed in the log by the JDBC subsystem. Press **Ctrl + F** to use the editor's search capabilities. Enter `<jdbc>` in the search field and click the **Find** button.

    d. Read the first found message. Continue to click the **Find** button and look at other from the JDBC subsystem. Can you find a message that gives which JDBC driver is being used for the data source?

Hint: You can do find again, this time find: `jdbc driver`.

    e. Close the Find window. Close the editor. Close the Terminal window.

5. Use the admin console to create a log filter.

Note: Here is the scenario: Let us say that you are having issues with server2 and clustering. You want to temporarily have server2 only publish messages from the Cluster subsystem into its log, so it is easier to look through the log and find the problem. You create and apply a log filter that accomplishes this.

    a. In the Change Center, click **Lock & Edit**.

    b. In the Domain Structure, select the domain, `wlsadmin`.

    c. Click the **Configuration** tab and then the **Log Filters** subtab.

    d. Above the Log Filters table, click the **New** button.

    e. For the name of the filter, enter `clusterfilter`. Click **OK**.

    f. In the Log Filters table, click the name of the new filter, `clusterfilter`.

    g. On the **Configuration** tab of the filter, click the **Add Expressions** button.

    h. Enter or select these values for the following fields, and then click **OK**:

       – Message Attribute: `SUBSYSTEM`

       – Operator: `LIKE`

       – Value: `Cluster`

    i. Click **OK**.

    j. In the Change Center, click **Activate Changes**.

6. Apply the new log filter to the server log of server2.

    a. In the Change Center, click **Lock & Edit**.

    b. In the Domain Structure, expand **Environment** and then select **Servers**.

    c. In the servers table, select **server2**.

    d. Click the **Logging** tab. Ensure that the **General** subtab is selected.

    e. Scroll down to find the **Advanced** link. Right above this link is the **Rotate log file on startup** check box. Select this check box to enable this feature.

Note

       – In production systems, this is disabled by default. You enable it here so it is easier to see the log filter at work.

       – Notice that this attribute change does not take effect until the server is restarted.

    f. Click **Save**.

g. Click **Advanced**.

h. Scroll down to the "Message destination(s)" area. Under "Log file" use the **Filter** drop-down list to select `clusterfilter`.

i. Also under "Log file," change the value of **Log File Buffer** to `2`.

Note

–   This will ensure that the log file is written to more often. This is probably too small for the buffer in a real production system.

–   Notice that this attribute change also does not take effect until the server is restarted.

j. Click the **Save** button.

k. In the Change Center, click **Activate Changes**.

7. Check that the filter is working. First, stop and restart server2, then go look at the server2 log file.

a. In the admin console, in the Domain Structure, expand **Environment**, then select **Servers**. Click the **Control** tab.

b. Select the check box next to **server2**. Then click the **Shutdown** button and select **Force Shutdown Now**.

c. When asked to confirm the shutdown, click **Yes**.

d. Connect to host02.

e. Find the Terminal window on host02 that was running server2. You should see that server2 has shut down. Start it again by pressing the up arrow key to retrieve the command you used to previously start it, and pressing **Enter**.

Note

–   Remember to enter the username and password if you do not have a boot identity file for server2.

–   If you closed the previous Terminal Window, open a new window and start server2 there:

```
$ cd /u01/domains/part1/wlsadmin/bin
$ ./startManagedWebLogic.sh server2 host01.example.com:7001
```

f. When you see the message `<The server started in RUNNING mode.>`, minimize the Terminal window.

g. Open a new Terminal window and navigate to the location of server2's log file. List the server2 log files.

```
$ cd /u01/domains/part1/wlsadmin/servers/server2/logs
$ ls server2.*
```

```
                    server2.log   server2.log00001
```
Note: You may have more than one older server2 log file. The newest server log file has no digits in its extension.

h. Edit the newest log file.
```
$ gedit server2.log
```
i. Look at the log file in the editor. The subsystem is after the timestamp and severity level. When server2 first comes up, the log filter has not yet been engaged. But soon it is, and from that point on, you notice that all messages are from the Cluster subsystem.

```
...
####<Feb 22, 2013 11:57:06 AM UTC> <Info> <WebLogicServer>...
####<Feb 22, 2013 11:57:27 AM UTC> <Notice> <Cluster>...
####<Feb 22, 2013 11:57:36 AM UTC> <Info> <Cluster>...
...
####<Feb 22, 2013 11:57:37 AM UTC> <Info> <Cluster>...
```

Note: The timestamps in your log file will be different. The severity levels may be different.

j. Exit the editor.

k. Close the Terminal window.

8. Remove the filter from server2.

Note: A filter like this would only be used temporarily. After you remedied whatever the cluster issue was, you would remove the filter. Without the usual messages going to the server log, it would be difficult to debug new problems as they arise.

a. Return to the web browser with the admin console.

b. In the Change Center, click **Lock & Edit**.

c. In the Domain Structure, expand **Environment** and then select **Servers**.

d. In the servers table, select **server2**.

e. Click the **Logging** tab. Ensure that the **General** subtab is selected.

f. Click **Advanced**.

g. Scroll down to the "Message destination(s)" area. Under "Log file" use the **Filter** drop-down list to select **None**.

h. Click the **Save** button.

i. In the Change Center, click **Activate Changes**.

j. If you are not proceeding to the next practice, log out of the admin console, and close the web browser.

Practice Solution: Working with WebLogic Server Logs

Perform the following tasks if you did not complete this practice and want to use the finished solution.

Assumptions

You completed "Practice 7-1: Configuring a JDBC Data Source."

All servers in the domain are currently running.

Solution Tasks

1. Connect to host01.
2. Run the solution script.
   a. In a Terminal window, navigate to the practice directory.

      $ **cd /practices/part1/practice08-01**

   b. Run the solution script.

      $ **./solution.sh**

   Note: This script starts the WebLogic Scripting Tool (WLST) passing it the WLST script create_logfilter.py, which creates the log filter. It does not apply the filter, because this filter is removed at the end of the practice. Also note that the WLST script does not change any server2 log settings that would require a server restart, nor are those settings necessary.
3. Close the Terminal window.

Practice 8-2: Monitoring WebLogic Server

Overview

In this practice, you use the monitoring capabilities of the admin console and the Monitoring Dashboard to monitor various aspects of WebLogic Server.

Assumptions

You completed "Practice 7-1: Configuring a JDBC Data Source." ("Practice 8-1: Working with WebLogic Server Logs" is not required for this or any other practice.)

All servers in the domain are currently running.

Tasks

1. Connect to host01.

2. Access the WebLogic Server administration console.

3. Use the admin console to monitor server health.

   a. In the Domain Structure, expand **Environment** (click the "**+**" sign), and then select **Servers**.

   b. Before doing anything else, notice the Servers table. By default it displays each server's state and health. Other columns of information can be added to the table by using the **Customize this table** link.

   c. In the Servers table, select **server2**.

   d. Click the **Monitoring** tab. Ensure that the **General** subtab is selected. Notice the information available, such as when the server started, the version of WebLogic Server, which JVM and version WebLogic Server is running under, the operating system and version, and so on.

   e. Click the **Health** subtab under the **Monitoring** tab. Some of the WebLogic Server subsystems are listed along with their health.

   f. Stay on the **Monitoring** tab of the server for the next task.

4. Modify the information displayed by a monitoring table. You will use this table later.

   a. Click the **JDBC** subtab under the server's **Monitoring** tab.

   b. Click the **Customize this table** link. In the Chosen column, select **Active Connections Average Count** and **Active Connections High Count**. Click the left arrow (◀) to move these attributes to the Available column. In the Available column, select **Current Capacity** and **Num Available**, and click the right arrow (▶) to move them to the Chosen column. Click the **Apply** button.

5. Before monitoring a data source, check on some of its settings.

   a. In the admin console, select the data source (in the Domain Structure, expand **Services**, select **Data Sources**, and select **datasource1**).

   b. Select **Configuration** > **Connection Pool**. Make note of the Maximum Capacity.

   Note: It should be set to 5. But if it is something different, that is OK. Just remember it.

   c. Still on this data source, click the **Monitoring** > **Statistics** tabs. Ensure that the data source is enabled and running on both servers.

   Note: If not, then perhaps one of the servers has not been started. Start it now.

   d. Minimize the web browser. You will be using it later.

6. Connect to host02. From there, run the script that sets up the database with a table and loads it with some data. Then, run the script that calls a Java client. This client uses the

data source to retrieve a connection to the database, accesses the database, and loops to do it again.

Note: Notice that this is host<u>02</u>, not host01.

a. Open a Terminal window and navigate to the practice directory. Set a couple of environment variables and run the script that sets up the database.

Note: The ORACLE_HOME variable needs to point to where the database is installed. ORACLE_SID (Oracle System ID) is the unique name of this particular database.

```
$ cd /practices/part1/practice08-02
$ export ORACLE_HOME=/u01/app/db11g/product/11.2.0/dbhome_1
$ export ORACLE_SID=orcl
$ ./setup.sh
...
1 row created


Commit complete.
...
$
```

Note: The SQL script drops the table (and sequence) it creates, so you can run it multiple times. Therefore, the first time the script is run, it produces messages that no such table or sequence exist. Ignore those messages if you see them.

b. Now, run the script that calls the Java client. When you run the script, you pass it the number of times you want it to access the database. The first time it accesses the database, it prints out some data it retrieves. It then loops, accessing the database, in total, the number of times you entered. The client then pauses. You let the client wait, still running, and go see what is happening with the data source.

Important: The number you enter when you run the script should be TWO TIMES the Maximum Capacity you made note of earlier. Why double it? Because the data source is targeted to the cluster, and there are two servers in the cluster, there are two instances of the data source. Therefore, the number of available connections is twice the data source connection pool **Maximum Capacity**.

Note: This Java client is written poorly on purpose. Each time the client code wants to access the database, it asks for a connection from the data source. When the code is finished with the connection, the code does not close that connection. Therefore, that connection is not returned to the connection pool.

```
$ ./runclient.sh 10
...
Your environment has been set.
>>>Obtained initial context
>>>Data source named datasource1 retrieved
>>>Querying data source...
Contacts from database:
1 Homer Simpson 742...
...
This client is still running...
When you are ready to stop it, press Enter.
```

Practices for Lesson 8: Monitoring a Domain

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    c.   Go back to the admin console on host01.

    d.   Navigate to the **Monitoring** > **JDBC** tab of **server2** (in the Domain Structure expand **Environment** and select **Servers**. Select **server2**. Click the **Monitoring** > **JDBC** tabs). Refresh the web browser (you can press **F5**).

    e.   Notice that **Active Connections Current Count** is equal to the **Maximum Capacity** you noted earlier. The **Current Capacity** value is also the **Maximum Capacity**. And **Num Available** is 0. The bad code in the client has used up each one of the database connections.

    f.   In the Terminal window on host02 where the Java client is running, press the **Enter** key. The client code completes.

7.   View the kinds of messages that the JDBC subsystem places in a server log.

    a.   Open a Terminal window and navigate to the `logs` directory under the `server2` directory. Edit the server log.

```
$ cd /u01/domains/part1/wlsadmin/servers/server2/logs
$ gedit server2.log
```

    b.   In the editor, scroll all the way to the bottom of the log file. Then use the search capabilities of the gedit editor to find messages placed in the log by the JDBC subsystem. Press **Ctrl + F** to use the editor's search capabilities. Because you are at the end of the file, select **Search backwards**. Enter `<jdbc>` in the search field and click the **Find** button.

    c.   You should see some messages that connections have been closed. This happened when the client stopped running earlier.

```
####...<JDBC>...<Connection for pool "datasource1" has been
closed.>
```

    d.   Close the Find window. Close the editor.

8.   Use the admin console to enable JDBC debugging. This increases the number of messages about JDBC sent to the server log.

    a.   Go back to the admin console on host01.

    b.   In the Change Center, click **Lock & Edit**.

    c.   Select **server2**. (In the Domain Structure, click **Environment** > **Servers** and then select **server2** in the table).

    d.   Click the **Debug** tab.

    e.   In the table, expand **weblogic**. Then, select the box next to **jdbc**. Click the **Enable** button. Notice that jdbc is now "Enabled," as well as all of its children.

    f.   In the Change Center, click **Activate Changes**. Notice that no restarts are necessary.

9.   Run the Java database client again on host02.

    a.   In a Terminal window on host02, once again navigate to the practice directory and run the script to call the Java database client. This time you can press Enter right away to stop the client.

```
$ cd /practices/part1/practice08-02
$ ./runclient.sh 10

...
>>>Obtained initial context
>>>Data source named datasource1 retrieved
```

```
            >>>Querying data source...
            Contacts from database:
            1 Homer Simpson 742...
            ...
            This client is still running...
            When you are ready to stop it, press Enter.


            $
```

10. View the server2 log to see the debug messages.

   a. In a Terminal window, navigate to the `logs` directory under the `server2` directory and edit the server log.

      ```
      $ cd /u01/domains/part1/wlsadmin/servers/server2/logs
      $ gedit server2.log
      ```

   b. In the editor, scroll all the way to the bottom of the log file. Then use the search capabilities of the gedit editor to find debug messages placed in the log by the JDBC subsystem. Press **Ctrl + F** to use the editor's search capabilities. Because you are at the end of the file, select **Search backwards**. Type `<debug>` in the search field and click the **Find** button.

   Note

   – Notice that there are many messages of the "debug" severity level. They are from various JDBC-related subsystems.

   – The "info" level messages you found before from the JDBC subsystem, about connections closing, are still there. In addition, there are quite a few debug messages around each one of those.

   – As you are editing this file, the editor may interrupt you with a message that the file has "changed on disk" and ask if you want to reload the file. You can reload it if you want to. Because many debug messages are being sent to the log, it is possible that the file changes as you are viewing it.

   c. See whether you can find debug messages that show connection testing. Scroll to the bottom of the file, use the find, and search backwards for the word **dual**.

   Note: The default Test Table Name setting for a data source connection pool using an Oracle database is `SQL SELECT 1 FROM DUAL`.

   d. Close the Find window. Close the editor.

   e. Close the Terminal window.

11. Turn off debugging.

   a. Return to the admin console.

   b. In the Change Center, click **Lock & Edit**.

   c. Select **server2**. (In the Domain Structure, click **Environment** > **Servers** and then select **server2** in the table).

   d. Click the **Debug** tab.

   e. In the table, expand **weblogic**. Then, select the box next to **jdbc**. Click the **Disable** button.

   f. In the Change Center, click **Activate Changes**. Notice that no restarts are necessary.

12. Monitor a data source by using the Monitoring Dashboard. You will run the database client one more time.

a. Go to the home page of the admin console. (You can use the 🏠 Home link.)

b. Under "Charts and Graphs," click the **Monitoring Dashboard** link. The dashboard opens in a new window (or tab).

c. In the Monitoring Dashboard View List, expand **server2**. Select the view **JDBC Data Sources on server2**.

d. Above the view list, press the Start button (▶).

e. In a Terminal window on host02, navigate to the practice directory and run the script to call the Java database client. When the client is waiting, do *not* press Enter, let it continue to run.

```
$ cd /practices/part1/practice08-02
$ ./runclient.sh 10

...
This client is still running...
When you are ready to stop it, press Enter.
```

f. Return to the Monitoring Dashboard. You should notice changes in the "datasource1 Capacity" chart (top left). Your chart may not look exactly like this one, but the "Number Available" should go to 0.
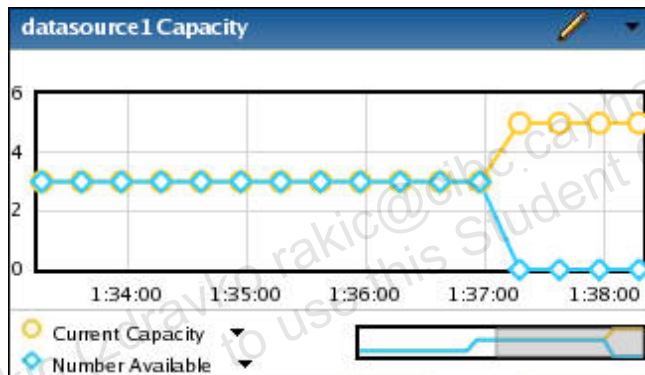
g. In the "datasource1 Connections" chart, you should also notice that the "Active Connections Current Count" goes up.

h. Above the View List, click the Stop button (■).

i. Close the Monitoring Dashboard window (or tab). When asked whether you are sure, click the **Leave Page** button.

j. Log out of the admin console.

k. Close the web browser.

l. In the Terminal window on host02 that is running the Java client, press Enter. Once the client stops, close the Terminal window.

Practice Solution: Monitoring WebLogic Server

There is no solution for this practice.

Practices for Lesson 8: Monitoring a Domain

Practices for Lesson 9: Node Manager

Chapter 9

Practices for Lesson 9: Node Manager

Practices for Lesson 9: Overview

Practices Overview

In this practice, you configure Node Manager and start it on both machines. You then start managed servers through it by using the administration console.

Practice 9-1: Configuring and Using Node Manager

Overview

In this practice, you configure the Java-based Node Manager on one of the machines. You start that Node Manager. Once it is running, you use the administration console to start the managed server that runs on that machine. Then you perform the same tasks on the other machine.

Assumptions

You completed "Practice 7-1: Configuring a JDBC Data Source."

The administration server is currently running.

Tasks

1. Connect to host01.
2. Access the WebLogic Server administration console on host01.
3. Stop the managed servers that are running.
   a. In the Domain Structure, expand **Environment** and then select **Servers**.
   b. On the right, click the **Control** tab.
   c. Select the check box next to any managed servers that are running. Click the **Shutdown** button and select **Force Shutdown Now**. When asked to confirm, click **Yes**.
   d. Wait a moment and refresh the screen. Ensure that the State column in the table confirms that all managed servers are shut down.
4. Update the configuration of the machines.
   a. In the Change Center, click **Lock & Edit**.
   b. In the Domain Structure, under **Environment**, select **Machines**.
   c. Select **machine1**.
   d. Click the **Configuration** tab and the **Node Manager** subtab.
   e. Use the drop-down list to change the **Type** to `Plain`.
   f. Ensure that **Listen Address** is `host01.example.com` and the **Listen Port** is `5556`.
   g. Click **Save**.
   h. Click the **Configuration** > **Servers** tab. Ensure that server1 is assigned to machine1.
   i. Return to the Machines table and select **machine2**.
   j. Once again, click the **Configuration** tab and the **Node Manager** subtab. Use the drop-down list to change the **Type** to `Plain`. Ensure the **Listen Address** is `host02.example.com` and the **Listen Port** is `5556`.
   k. Click **Save** again.
   l. Click the **Configuration** > **Servers** tab. Ensure that server2 is assigned to machine2.
   m. In Change Center, click **Activate Changes**.
   Note: You will note that one restart is required. Because the admin server is assigned to machine1, it must be restarted for the machine's configuration changes to take effect.
5. Stop and restart the administration server running on host01.
   a. Find the Terminal window in which server1 was running and close it.

Note: Even if you do not have the Terminal window titles set, you can tell in which window server1 was running, because you stopped server1. You can see "shut down" messages, and the window shows the prompt again. Close the server1 window.

    b.   Find the Terminal window in which the admin server is running.

    c.   Press **Ctrl + C** in the admin server window.

Note: This is not as bad as it seems. It has the same effect as Force Shutdown Now.

    d.   Use the up arrow to bring back the command issued to start the admin server, and start it again.

```
$ ./startWebLogic.sh
```

6.   View the files needed by Node Manager on host01. Update one of them.

    a.   Open a new Terminal window on host01. Navigate to the domain's Node Manager directory. List the files there.

```
$ cd /u01/domains/part1/wlsadmin/nodemanager
$ ls
nodemanager.domains   nodemanager.properties
```

    b.   List the contents of the nodemanager.domains file. Notice that the only entry is the name of your domain and its location. This Node Manager is for the wlsadmin domain.

```
$ cat nodemanager.domains

...
wlsadmin=/u01/domains/part1/wlsadmin
```

Note: The comments at the top of the file are not shown here.

    c.   Edit the nodemanager.properties file.

```
$ gedit nodemanager.properties
```

    d.   Look at the file following properties and their values:

      – ListenAddress=host01.example.com

      – ListenPort=5556

      – StartScriptEnabled=true

      – StartScriptName=startWebLogic.sh

Note

      – This Node Manager runs at the listen address and listen port listed.

      – Using a start script to start servers is recommended, and it is the default.

      – Notice that the start script listed is startWebLogic.sh. Even though the script startManagedWeblogic.sh is the one you used to start managed servers, it is there as a convenience. It calls startWebLogic.sh, which does the real work of starting a server.

    e.   Find the property SecureListener and change its value to **false**.

      SecureListener=**false**

    f.   Save the file and close the editor.

    g.   Leave the Terminal window open.

7.   Start the Node Manager on host01.

    a.   Run the Node Manager start script in the bin directory of the domain:

```
$ cd /u01/domains/part1/wlsadmin/bin
```

Practices for Lesson 9: Node Manager

```
$ ./startNodeManager.sh

...

... <INFO> Plain socket listener started on port 5556, host
host01.example.com>
```

   b.   Do not close this window. This is where the Node Manager is running. Minimize the window, if you want. You may want to change the title of the Terminal window to **Node Manager**.

8.   Start server1 through Node Manager by using the administration console.

   a.   In the Domain Structure, expand **Environment**, then select **Servers**. Click the **Control** tab. Select the check box next to server1 and click the **Start** button. When asked whether you are sure, click **Yes**.

   b.   Wait a moment, and refresh the browser. Wait until server1's State is RUNNING.

9.   View the files needed by Node Manager on host02. Update one of them. Then start Node Manager on host02.

   a.   Connect to host02.

   b.   Find the Terminal window in which server2 was running and close it.

   c.   Open a new Terminal window. Navigate to the domain's Node Manager directory. Edit the `nodemanager.properties` file.

```
$ cd /u01/domains/part1/wlsadmin/nodemanager
$ gedit nodemanager.properties
```

   d.   Find the property `SecureListener` and change its value to **false**.

```
SecureListener=false
```

   e.   Save the file and close the editor.

   f.   Run the Node Manager start script in the `bin` directory of the domain:

```
$ cd /u01/domains/part1/wlsadmin/bin
$ ./startNodeManager.sh
...

...<INFO> <Plain socket listener started on port 5556, host
host02.example.com>
```

   g.   Do not close this window. This is where the Node Manager is running. Minimize the window, if you want. You may want to change the title of the Terminal window to **Node Manager**.

10.   Start server2 through Node Manager by using the administration console.

   a.   Open the web browser running the administration console.

   b.   In the Domain Structure, expand **Environment**, then select **Servers**. Click the **Control** tab. Select the check box next to server2 and click the **Start** button. When asked whether you are sure, click **Yes**.

   c.   Wait a moment, and refresh the browser. Wait until server2's State is RUNNING.

   d.   Log out of the admin console and close the web browser.

Practices for Lesson 9: Node Manager

Practice Solution: Configuring and Using Node Manager

Perform the following tasks if you did not complete this practice and want to use the finished solution.

Assumptions

You completed "Practice 7-1: Configuring a JDBC Data Source."

The administration server is currently running.

Solution Tasks

1. Connect to host01.
2. Run the solution script for host01.

   a. Open a Terminal window and navigate to the practice directory.

   ```
   $ cd /practices/part1/practice09-01
   ```

   b. Run the host01 solution script.

   ```
   $ ./solution-host01.sh
   ```

   Note: This script copies the correct `nodemanager.properties` file to the domain's `nodemanager` directory. It then starts the WebLogic Scripting Tool (WLST) passing it the WLST script `update_machines.py`, which updates the two machines for you.

   c. Close the Terminal window.

3. Stop the admin server and the managed server on host01.

   Note: You want to stop the admin server so that Node Manager is running when it comes up again. You want to stop the managed server because from this point forward you will start it through Node Manager by using the admin console.

   a. Find the Terminal window in which the admin server is running. Press **Ctrl + C**.

   b. Minimize this Terminal window. You will use it later.

   c. Find the Terminal window in which server1 is running. Press **Ctrl + C**.

   d. Close this Terminal window.

4. Start the Node Manager on host01.

   a. Open a new Terminal window.

   b. Navigate to the `bin` directory of the domain and run the Node Manager start script:

   ```
   $ cd /u01/domains/part1/wlsadmin/bin
   $ ./startNodeManager.sh
   ...
   ... <INFO> Plain socket listener started on port 5556, host
   host01.example.com>
   ```

   c. Do not close this window. This is where the Node Manager is running.

   d. If you want to, set the title of the window to "Node Manager" by using the window's **Terminal** > **Set Title** option.

   e. Minimize this Terminal window.

5. Restart the administration server.

   a. Find the Terminal window in which the admin server was running.

   b. Press the up arrow to bring up the last command (`startWebLogic.sh`). Press Enter to run it again.

   ```
   $ ./startWebLogic.sh
   ```

c. If you do not have a boot identity file, when you are prompted, enter the username and password (**weblogic** and **Welcome1**). Wait for the server to indicate it is in RUNNING mode.

d. Minimize this Terminal window.

6. Connect to host02.

7. Stop the managed server on host02.

Note: You want to stop the managed server because from this point forward you will start it through Node Manager by using the admin console.

a. Find the Terminal window in which server2 is running. Press **Ctrl + C**.

b. Close this Terminal window.

8. Run the solution script for host02.

a. Open a new Terminal window and navigate to the practice directory.

   $ **cd /practices/part1/practice09-01**

b. Run the host02 solution script.

   $ **./solution-host02.sh**

Note: This script copies the correct nodemanager.properties file to the domain's nodemanager directory.

c. Close the Terminal window.

9. Start the Node Manager on host02.

a. Open a new Terminal window and navigate to the bin directory of the domain. Run the Node Manager start script:

   $ **cd /u01/domains/part1/wlsadmin/bin**

   $ **./startNodeManager.sh**

   ...

   ... <INFO> Plain socket listener started on port 5556, host host02.example.com>

b. Do not close this window. This is where the Node Manager is running. If you want to, set the title of the window to "Node Manager" by using the window's **Terminal** > **Set Title** option.

c. Minimize this Terminal window.

10. Restart the managed servers through Node Manager by using the admin console.

a. In the Domain Structure, expand **Environment** and then select **Servers**. Click the **Control** tab. Select the check boxes next to **server1** and **server2**. Click the **Start** button. When asked whether you are sure, click **Yes**.

b. Wait a little while, and refresh the browser. Ensure that the state of both managed servers is RUNNING.

c. Close the web browser.

Practices for Lesson 9: Node Manager

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Practices for Lesson 9: Node Manager

Practices for Lesson 10: Deploying Applications

Chapter 10

Practices for Lesson 10: Deploying Applications

Practices for Lesson 10: Overview

Practices Overview

In these practices, you deploy, redeploy, and undeploy an application. You also load test an application by using The Grinder.

Practice 10-1: Deploying an Application

Overview

In this practice, you deploy, redeploy, and undeploy an application by using the administration console.

Assumptions

You completed "Practice 9-1: Configuring and Using Node Manager."

All servers are currently running.

Tasks

1. Create a new directory from which to deploy applications. Copy the application from the practice directory to this new directory.

    a. Connect to host01.

    b. Open a new Terminal window and navigate to the domain directory. Create a new subdirectory called `apps` from which you will deploy applications.

        $ **cd /u01/domains/part1/wlsadmin**

        $ **mkdir apps**

    c. Copy the application from the current practice directory to this directory.

        $ **cd apps**

        $ **cp /practices/part1/practice10-01/benefits.war .**

    d. Leave the Terminal window open.

2. Open the WebLogic Server administration console.

3. Deploy the application.

    a. In the Change Center, click **Lock & Edit**.

    b. In the Domain Structure, select **Deployments**.

    c. Above the Deployments table, click the **Install** button.

    d. Use the links next to and below Current Location to navigate to:

        host01.example.com/u01/domains/part1/wlsadmin/apps

    Note: This fills in the **Path** field as you click links.

    e. When the path is correct, select the option button next to **benefits.war**.

    f. Click the **Next** button.

    g. Select **Install this deployment as an application** and click **Next**.

    h. Select the check box next to **cluster1**. Ensure that the **All servers in the cluster** option button is selected. Click **Next**.

    i. Leave all the Optional Settings at their default values. Click **Next**.

    j. Select **No, I will review the configuration later**. Click **Finish**.

Practices for Lesson 10: Deploying Applications

k. In the Change Center, click **Activate Changes**.

Note: Notice the message that the changes have been activated and no restarts are necessary.

4. Start the application.

   a. In the Deployments table, select the check box next to the benefits application.

   b. Click the **Start** button and select **Servicing all requests**.

   c. When asked to confirm, click **Yes**.

   Note: Notice that the State of the benefits application is now "Active."

5. Test the application.

   a. In the Deployments table, click the link that is the name of the newly deployed application, **benefits**.

   b. Click the **Testing** tab.

   c. Click any of the test links.

   d. The benefits application opens in a new window or tab.

   e. Try the application by selecting things and clicking buttons or links.

   Welcome to your company benefits!

   Select which benefits you would like to see:

   ☐ View Holiday Schedule
   ☑ View Health Care Options
   ☐ View Vision Options
   ☐ View Dental Options

   Get Information

   f. When you are finished trying the application, close the Benefits window or tab.

6. Obtain an updated version of the application.

   a. Open a Terminal window on host01 and navigate to the current practice directory. List the contents of the directory. Then list the contents of the update subdirectory.

   ```
   $ cd /practices/part1/practice10-01
   $ ls
   ... benefits.war ... update
   $ ls update
   benefits.war
   ```

   Note: The update directory has an updated version of the benefits application.

   b. Navigate to the apps directory. Rename the current benefits archive. Copy the updated version to its location.

   ```
   $ cd /u01/domains/part1/wlsadmin/apps
   $ mv benefits.war benefits.old
   $ cp /practices/part1/practice10-01/update/benefits.war .
   ```

   c. Close the Terminal window.

7. Redeploy the application.

   a. Return to the administration console.

   b. In the Change Center, click **Lock & Edit**.

    c.   In the Domain Structure, select **Deployments**.

    d.   Select the check box next to the **benefits** application.

    e.   Click the **Update** button.

    f.   Leave the "Source path" as it is. There is no deployment plan, so the empty "Deployment plan path" is correct. Click **Next**.

    g.   On the next page, click **Finish**.

    h.   In the Change Center, click **Activate Changes**.

    Note: Notice the message that the changes have been activated and no restarts are necessary. Also notice that the State of the benefits application is "Active," even though you did not explicitly start it.

    i.   Follow the earlier steps to test the application again. When you are finished, close the Benefits window or tab.

8.   Stop the application, so you can undeploy it.

    a.   Return to the administration console.

    b.   In the Domain Structure, select **Deployments**.

    c.   Select the check box next to the **benefits** application.

    d.   Click the **Stop** button and select **Force Stop Now**.

    e.   When asked to confirm, click **Yes**.

    Note: Notice the State of the benefits application is no longer "Active."

9.   Undeploy the application.

    a.   In the Change Center, click **Lock & Edit**.

    Note: If it is already locked, skip this step.

    b.   In the Domain Structure, select **Deployments**.

    c.   Select the check box next to the **benefits** application.

    d.   Click the **Delete** button.

    e.   When asked to confirm, click **Yes**.

    f.   In the Change Center, click **Activate Changes**.

    Note: Notice the message that the changes have been activated and no restarts are necessary. Also notice that the benefits application is no longer in the Deployments table.

Practice Solution: Deploying an Application

Perform the following tasks if you did not complete this practice and want to use the finished solution. Note that this solution leaves the application deployed, so you can use the application if you want to. To have your domain in the same state as if you did this practice, do nothing. (The final task of the practice is to undeploy the new application.)

Assumptions

You completed "Practice 9-1: Configuring and Using Node Manager."

All servers are currently running.

Solution Tasks

1. Connect to host01.
2. Run the solution script.

   a. Open a Terminal window and navigate to the practice directory.

      $ **cd /practices/part1/practice10-01**

   b. Run the solution script.

      $ **./solution.sh**

   Note

   – This script creates the apps directory under the domain directory. It copies the original benefits.war file there, calling it benefits.old. It then copies the updated benefits.war into the apps directory from the practice's update subdirectory. The script then starts the WebLogic Scripting Tool (WLST) passing it the WLST script deploy_app.py, which deploys the benefits application, targets it to cluster1, and starts it.

   – If you get a warning about closing in a different thread, ignore it (WLContext.close() was called in a different thread...). It is a known issue with WLST deployment and does no harm.

   c. Do not close the Terminal window.

   d. If you want to access the newly deployed application, enter the following URL in the web browser:

   http://host01.example.com:7011/benefits

   e. Close the web browser when you are finished.

3. If you want to undeploy the application after you have looked at it, as the practice does, run the undeploy.sh script.

   a. In the same terminal window, run the undeploy script.

      $ **./undeploy.sh**

   Note

   – The script starts the WebLogic Scripting Tool (WLST) passing it the WLST script undeploy_app.py, which undeploys the benefits application.

   b. Close the Terminal window.

Practice 10-2: Load Testing an Application

Overview

In this practice, you use The Grinder to load test an application running on WebLogic Server. You then view the results in The Grinder console.

Assumptions

You completed "Practice 9-1: Configuring and Using Node Manager."

"Practice 10-1: Deploying an Application" is not necessary for this practice.

All servers are currently running.

Tasks

1. Connect to host01. Run a script to deploy the application from which The Grinder script was created.

   a. Open a Terminal window and navigate to the practice directory. Then, run the `deploy.sh` script.

   ```
   $ cd /practices/part1/practice10-02
   $ ./deploy.sh
   ...
   >>>Deploying application contacts. Please wait.
   ...
   >>>Application contacts deployed.
   ...
   $
   ```

2. Connect to host02. Run the database setup script. It initializes (or reinitializes) the database to create a table and put some data in it that the application requires.

   Note: Notice that this is host<u>02</u>, not host01.

   a. Open a Terminal window and navigate to the practice directory. Set some environment variables. Then run the `setup.sh` script.

   Note: The `ORACLE_HOME` variable points to where the database is installed. `ORACLE_SID` (Oracle System ID) is the unique name of this particular database.

   ```
   $ cd /practices/part1/practice10-02
   $ export ORACLE_HOME=/u01/app/db11g/product/11.2.0/dbhome_1
   $ export ORACLE_SID=orcl
   $ ./setup.sh

   SQL*Plus: Release 11.2...
   ...
   1 row created.

   Commit complete.
   ...
   ```

Note: The SQL script drops the table (and sequence) it creates, so you can run it multiple times. Therefore, the first time the script is run, it produces messages that no such table or sequence exist. Ignore those messages if you see them.

3. Access the newly deployed application from the web browser. You will use the application in the same way that it was used to create the `grinder.py` script. This script was recorded for you by using The Grinder TCPProxy utility and using the contacts application in a web browser.

   Note: To record the script, the web browser first had to be configured. It was set to communicate with the TCPProxy utility by setting a manual proxy configuration. The HTTP Proxy field was set to `localhost`, and the Port field set to `8001`. (That is the port on which the TCPProxy utility runs.)

   a. In the web browser, enter the URL for the application:

   ```
   http://host01.example.com:7011/contacts
   ```

   Note: This is the first request in The Grinder script (which will display in The Grinder console as "Page 1").

   b. On the home page, click the **browse all contacts** link.

   Note: This is the second request in the script (which will display in The Grinder console as "Page 2").

   c. Click the **[edit]** link in the first row.

   Note: This is the third request in the script (which will display in The Grinder console as "Page 3").

   d. View the data on the edit screen.

   Note: This is the fourth request in the script (which will display in The Grinder console as "Page 4").

4. Install The Grinder on host02.

   a. Open a Terminal window on host02 and navigate to `/install/grinder`. Then, list the contents of the directory.

   ```
   $ cd /install/grinder
   $ ls
   grinder-3.11-binary.zip
   ```

   b. Unzip the zip file to `/home/oracle`.

   ```
   $ unzip grinder-3.11-binary.zip –d /home/oracle
   Archive:  grinder-3.11-binary.zip
     creating: /home/oracle/grinder-3.11/
    inflating: /home/oracle/grinder-3.11/CHANGES
   ...
   ```

   c. Leave the Terminal window open for later.

5. Install The Grinder on host01.

   a. Open a Terminal window on host01 and navigate to `/install/grinder`.

   ```
   $ cd /install/grinder
   ```

   b. Unzip the zip file to `/home/oracle`.

   ```
   $ unzip grinder-3.11-binary.zip –d /home/oracle
   Archive:  grinder-3.11-binary.zip
     creating: /home/oracle/grinder-3.11/
   ```

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```
                inflating: /home/oracle/grinder-3.11/CHANGES
        ...
```

6. Examine the `grinder.properties` file and start The Grinder console.

    a. In the Terminal window on host02, navigate to the practice directory.

       $ **cd /practices/part1/practice10-02**

    b. View the `grinder.properties` file in the editor.

       $ **gedit grinder.properties**

    c. Scroll down past the comments and notice the following attributes and their values:

      – `grinder.script = grinder.py`

      – `grinder.processes = 2`

      – `grinder.threads = 200`

      – `grinder.runs = 0`

Note: What this means is that the agent starts two worker processes with 200 threads each. It runs the script called `grinder.py`. It continues running until the console tells it to stop.

    d. Exit the editor without making any changes.

    e. View the `setgrinderenv.sh` script.

       $ **cat setgrinderenv.sh**

```
GRINDERPATH=/home/oracle/grinder-3.11
GRINDERPROPS=/practices/part1/practice10-02/grinder.properties
CLASSPATH=$GRINDERPATH/lib/grinder.jar:$CLASSPATH
JAVA_HOME=/u01/app/jdk
PATH=$JAVA_HOME/bin:$PATH
export CLASSPATH PATH GRINDERPROPS
```

Note: Notice this script sets various environment variables that The Grinder needs: where The Grinder is, the location of its properties file, the `CLASSPATH`, and the `PATH`.

    f. View the `startconsole.sh` script.

       $ **cat startconsole.sh**

```
source setgrinderenv.sh
java –classpath $CLASSPATH net.grinder.Console
```

Note: Notice this script calls the one that sets environment variables, and then it starts the JVM with the `net.grinder.Console` class.

    g. Start The Grinder console.

       $ **./startconsole.sh**

    h. Leave the console open.

Note: Now that the console is running, when an agent is started, it waits for signals from the console.

7. Start a Grinder agent on host01.

    a. In the Terminal window on host01, navigate to the practice directory.

       $ **cd /practices/part1/practice10-02**

    b. Run the `startagent.sh` script to start a Grinder agent.

       $ **./startagent.sh**

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```
... INFO  agent: The Grinder 3.11
... INFO  agent: connected to console at host02.example.com/...
... INFO  agent: waiting for console signal
```

Note: The agent is running in this window and waiting for communication from the console.

   c.   Leave the Terminal window open.

8. From The Grinder console on host02, signal the agent (worker processes) to start working. Then view the data that comes back. After a while, stop collecting data and reset the agent (worker processes).

   a.   Access The Grinder console on host02.

   b.   Click the button to "Start the worker processes" (the first button on the left).

   c.   When the dialog box warns that you have not selected a properties file, click **OK**.

   d.   Click the **Graphs** tab. Watch the graphs go by for a while.
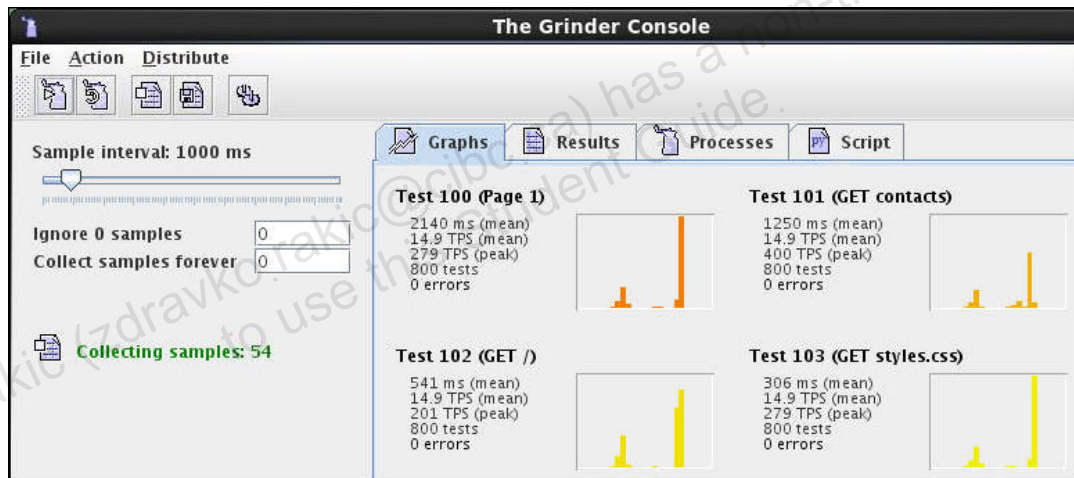
e.   Click the **Results** tab. Watch the numbers update for a while.
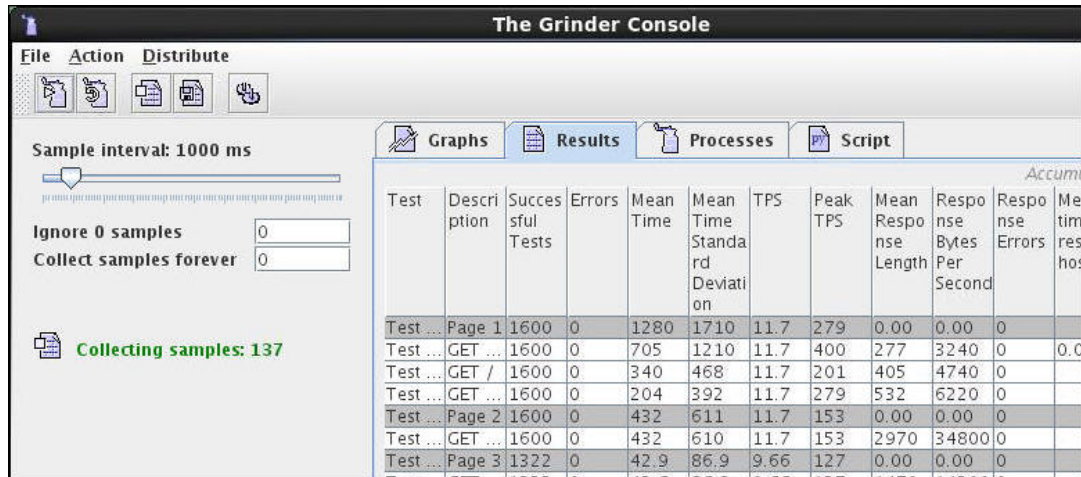
f.   Click the "Stop collecting statistics" button.

g.   Look at the numbers in the console on the **Results** tab. The "Mean Time" is the number of milliseconds a request takes. Although the script has "think time" in it for each web page accessed (like a real user would have), that is not included in the Mean Time, which is just the time the HTTP request takes.

Note: Remember, this time is in milliseconds. You probably will see much lower than sub-second response time for all the "pages."

h.   Next, click the "Reset the worker processes" button. When asked whether you also want to reset the console, click **No**. (You did not reset the console in case you want to continue to look at the numbers.)
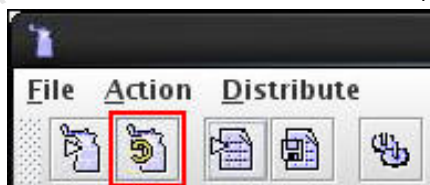
i.   When you have finished investigating the numbers, close The Grinder console.

Note: If you are interested, the raw data has been saved in files in a newly created `log` directory in the practices directory.

j.   Close the host02 Terminal window.

9. Return to host01 and view the agent window.

   a. The Terminal window in which the agent was running has various messages in it. You should notice that the agent is no longer running. It stopped when it could no longer communicate with the console, which you closed.

   ```
   ...
   ... INFO  agent: finished
   $
   ```

   b. Close the Terminal window.

Practice Solution: Load Testing an Application

Perform the following tasks if you did not complete this practice and want to use the finished solution. Note that this solution does not install The Grinder or run its load test. The solution just deploys the application that was used in the load test.

Assumptions

You completed "Practice 9-1: Configuring and Using Node Manager."

"Practice 10-1: Deploying an Application" is not necessary for this solution.

All servers are currently running.

Solution Tasks

1. Connect to host02 and run the practice setup script which initializes (or reinitializes) the database to create a table and put some data in it that the application requires.

   Note: Notice that this is host<u>02</u>, not host01.

   a. Open a Terminal window and navigate to the practice directory. Set up some environment variables, and then run the script.

      ```
      $ export ORACLE_HOME=/u01/app/db11g/product/11.2.0/dbhome_1
      $ export ORACLE_SID=orcl
      $ cd /practices/part1/practice10-02
      $ ./setup.sh
      ```

   Note: The SQL script drops the table (and sequence) it creates, so you can run it multiple times. Therefore, the first time the script is run, it produces messages that no such table or sequence exist. Ignore those messages if you see them.

   b. Close the Terminal window.

2. Connect to host01 and run the script to deploy the application from which The Grinder script was created.

   a. Open a new Terminal window, navigate to the practice directory, and run the deploy script.

      ```
      $ cd /practices/part1/practice10-02
      $ ./deploy.sh
      ```

   Note: If you get a warning from WLST about closing in a different thread, ignore it (WLContext.close() was called in a different thread…). It is a known issue with WLST deployment and does no harm.

   b. Close the terminal window.

Practices for Lesson 10: Deploying Applications

Practices for Lesson 10: Deploying Applications

Practices for Lesson 11: Network Channels and Virtual Hosts

Chapter 11

Practices for Lesson 11: Network Channels and Virtual Hosts

Practices for Lesson 11: Overview

Practices Overview

In these practices, you configure network channels, a domain-wide admin port, and a virtual host.

Practice 11-1: Configuring a Network Channel

Overview

By default, WebLogic Server uses a single network listening port for non-SSL traffic. The combination of the IP addresses and the regular listening port is referred to as the default channel. WebLogic Server receives requests on this channel and performs protocol discrimination to determine which protocol the request is using.

WebLogic Server also allows you to separate network traffic for greater control. This is useful when you want to separate traffic for high priority applications on faster networking hardware or to separate internal server communication from user communication.

Assumptions

You completed "Practice 10-1: Deploying an Application."

All servers are currently running.

Tasks

1. Open the WebLogic Server administration console.

2. Deploy the `benefits` application again.

   Note: The application was undeployed in a previous practice. You can either deploy it again by using the admin console, or run the solution to the practice titled "Deploying an Application." To deploy the application by using the admin console, perform the following tasks:

   a. In the Change Center, click **Lock & Edit**.

   b. In the Domain Structure, select **Deployments**.

   c. Above the Deployments table, click the **Install** button.

   d. Use the links next to and below Current Location to navigate to:

      host01.example.com/u01/domains/part1/wlsadmin/apps

   e. When the path is correct, select the option button next to **benefits.war**.

   f. Click the **Next** button.

   g. Select **Install this deployment as an application** and click **Next**.

   h. Select the check box next to **cluster1**. Ensure that the **All servers in the cluster** option button is selected. Click **Next**.

   i. Leave all the Optional Setting at their default values. Click **Next**.

   j. Select **No, I will review the configuration later**. Click **Finish**.

   k. In the Change Center, click **Activate Changes**.

   l. In the Deployments table, select the check box next to the benefits application.

   m. Click the **Start** button and select **Servicing all requests**.

   n. When asked to confirm, click **Yes**.

   Note: Do not close the web browser.

3. Test the `benefits` application.

   a. Access the application to ensure it is working as expected. Open a new tab or window in the web browser and enter a URL to bring up the application:

      http://host01.example.com:7011/benefits

   Note: Or: `http://host02.example.com:7011/benefits`

b. Try the application to see if it is working.

4. Configure a custom network channel by using the admin console.

   a. Back in the admin console, in the Domain Structure, select **Environment** > **Servers**.

   b. In the Server table, select **server1**.

   c. Select the **Protocols** > **Channels** tabs.

   d. In the Change Center, click **Lock & Edit**.

   e. Click the **New** button.

   f. Enter or select the following values for these fields, then click **Next**.

Field	Value
Name	`httpchannel-1`
Protocol	`http`

   g. Enter or select the following values for these fields, then click **Next**.

Field	Value
Listen Address	`host01.example.com`
Listen Port	`4000`
External Listen Address	(blank)
External Listen Port	(blank)

   Note: You are not working with external addresses so those should be blank.

   h. When the next page is displayed, leave the defaults (**Enabled** and **HTTP Enabled for This Protocol** are selected). Click **Next**.

   i. When the next page is displayed, leave the defaults (**Two Way SSL Enabled** and **Client Certificate Enforced** both are deselected). Click **Finish**.

   j. Activate your changes and verify that the channel is created.

	Name ⌃	Protocol	Enabled	Listen Address	Listen Port
☐	httpchannel-1	http	true	host01.example.com	4000

5. Follow the same procedure to create a network channel for **server2**. Everything will be the same except the channel will have the **Name** of **httpchannel-2**, and the **Listen Address** of **host02.example.com**.

   Note: Don't forget to activate your changes.

6. Test the application by using one of the new network channels.

   a. In a new web browser window or tab, test the application again. This time use the port number of `4000` instead of `7011` in the URL. The application should work on the new custom network channel.

   http://host01.example.com:4000/benefits

   Note: Or: http://host02.example.com:4000/benefits.

   b. Try the application to see if it works through a new network channel.

Practice Solution: Configuring a Network Channel

Perform the following tasks if you did not complete this practice and want to use the finished solution.

Assumptions

You completed "Practice 10-1: Deploying an Application."

All servers are currently running.

Solution Tasks

1. Connect to host01.
2. Run the solution script.
    a. Open a Terminal window and navigate to the practice directory.
       ```
       $ cd /practices/part1/practice11-01
       ```
    b. Run the solution script.
       ```
       $ ./solution.sh
       ```

    Note

    – This script calls two WLST scripts. The first creates a network channel on server1 and another on server2. The second deploys the benefits application to the cluster to which these servers belong.

    c. Close the Terminal window.

Practice 11-2: Configuring the Administration Port

Overview

WebLogic Server allows you to create a separate administration channel (called the admin port) that is dedicated to serving only administrative requests. The admin port allows you to start servers in STANDBY mode, which allows administrators to work with them while not allowing user requests. You can also start applications in Admin mode so you can test them prior to giving users access to them. You should note that enabling the admin port of the domain also requires enabling SSL for all servers in the domain.

Assumptions

No other practices are prerequisites for this practice. This practice uses a completely different domain, so you do not have to access the admin console through a secure port in later practices.

Tasks

1. Connect to host01.

2. Run the setup script.

   a. Open a Terminal window and navigate to the practice directory.

      $ **cd /practices/part1/practice11-02**

   b. Run the setup script.

      $ **./setup.sh**

   Note: This script creates a new domain called `wlsadmin2`. It has an admin server named `AdminServer` (port `8001` on `host01.example.com`) and a managed server called `server1a` (port `8011` on `host01.example.com`) and `server2a` (port `8011` on `host02.example.com`). These managed servers are in a cluster called `cluster1a`.

3. Start the admin server of the new domain.

   a. In a terminal window, navigate to the new domain directory and run the script to start the admin server of the domain.

      $ **cd /u01/domains/part1/wlsadmin2**

      $ **./startWebLogic.sh**

   Note: When prompted for the username and password, enter **weblogic** and **Welcome1**, respectively.

   b. Wait for the server to show it is in RUNNING mode.

   c. To remember that this is the window in which the admin server of the new domain is running, you might want to change the title of the Terminal window. In the window's menu, select **Terminal**, and then **Set Title**. Enter the title of **AdminServer-domain2** and click **OK**. Minimize the window.

4. Open the WebLogic Server administration console of the new domain.

   a. In the web browser, enter the URL to the administration console:

      http://host01.example.com:8001/console

   Note: Notice that the port is `8001`.

5. Enable the domain-wide administration port.

   a. In the Change Center, click **Lock & Edit**.

   b. In the Domain Structure, click the domain name, **wlsadmin2**.

c. Ensure that the **Configuration** > **General** tabs are selected.

d. Enter or select the following values and then click the **Save** button:

Field	Value
Enable Administration Port	Selected
Administration Port	`9002`

e. In the Change Center, click **Activate Changes**.

Note: Notice that now you have been forced out of the admin console. That is because once the domain-wide admin port is enabled, you must use SSL and the admin port to access the admin console.

f. Close the web browser.

6. Access the WebLogic Server administration console of the new domain using SSL and the admin port.

a. Open a new web browser, enter the URL to access the administration console via the admin port:

`https://host01.example.com:9002/console`

Note: Notice the use of `https` and the admin port of `9002`.

b. When you get the warning about the "connection is untrusted," click the link: **I Understand the Risks**.

Note: Because you are using the demo certificates, the host name inside of them do not match the host on which they are used.

c. Click the **Add Exception** button.

d. In the "Add Security Exception" pop-up window, click **Get Certificate**.

e. Ensure **Permanently store this exception** is selected and click **Confirm Security Exception**.

f. On the console welcome page, enter the username as **`weblogic`** and the password as **`Welcome1`**. Then click the **Login** button.

7. Override the admin port number of the managed server on the same machine as the admin server.

a. In the Change Center, click **Lock & Edit**.

b. In the Domain Structure, select **Environment** > **Servers**.

c. In the Server table, select **server1a**.

d. Ensure that the **Configuration** > **General** tabs are selected.

e. Scroll down and click the **Advanced** link.

f. For **Local Administration Port Override** enter **`9003`**.

Note: Because the admin server and `server1a` are on the same machine, they cannot both use the port number of `9002` for their admin port.

g. Click **Save**.

h. In the Change Center, click **Activate Changes**.

8. Start the managed server, `server1a`.

a. Open a new Terminal window on host01.

b. Navigate to the `bin` directory under the new domain directory, and run the script to start the managed server called `server1a`:

Note: Enter all commands on one line. Some are on multiple lines here due to space limitations.

```
$ cd /u01/domains/part1/wlsadmin2/bin
$ ./startManagedWebLogic.sh server1a
                      https://host01.example.com:9002
```

Note

- When prompted for the username and password, enter **weblogic** and **Welcome1**, respectively.
- Notice that this script takes two parameters: the name of the managed server and the URL of the domain's administration server.
- Notice that the URL of the admin server is `https` and uses the admin port of `9002`. Now that there is an admin port, the managed servers must use it to communicate with the admin server.
- Change the title of the Terminal window. In the window's menu, select **Terminal**, and then **Set Title**. Enter the title of **server1a** and click **OK**. Minimize the window.
- Because this domain is only used temporarily, rather than set up Node Manager, you start servers by running start scripts.

9. Deploy an application to the managed servers in the new domain.

Note: Although there are two managed servers in the domain and the deployment is targeted to the cluster (and therefore both of the managed servers), you will never start the server on host02. That is because you would first have to move the new domain over to that host.

a. In a new Terminal window create a directory for applications in the new domain, and copy an application there.

```
$ cd /u01/domains/part1/wlsadmin2
$ mkdir apps
$ cd apps
$ cp /practices/part1/practice10-01/benefits.war .
```

b. Close this Terminal window.

c. Access the WebLogic Server administration console of the new domain by entering the following URL:

https://host01.example.com:9002/console

Note: Log in with the username as **weblogic** and the password as **Welcome1**.

d. In the Change Center, click **Lock & Edit**.

e. In the Domain Structure, select **Deployments**.

f. Above the Deployments table, click the **Install** button.

g. Use the links next to and below Current Location to navigate to:

host01.example.com/u01/domains/part1/wlsadmin2/apps

h. When the path is correct, select the option button next to **benefits.war**.

i. Click the **Next** button.

j. Select **Install this deployment as an application** and click **Next**.

k. Select the check box next to **cluster1a**. Ensure that the **All servers in the cluster** option button is selected. Click **Next**.

l. Leave all the Optional Settings at their default values. Click **Next**.

m.　Select **No, I will review the configuration later.** Click **Finish**.

n.　In the Change Center, click **Activate Changes**.

10.　Start the application in "Admin" mode and test it through the admin port.

　　a.　Select the check box next to the **benefits** application.

　　b.　Click the **Start** button and select **Servicing only administration requests**.

　　c.　When asked to confirm, click **Yes**.

　　d.　Notice that the state of the application is "Admin."

　　e.　Open a new web browser window or tab and try to access the application on
　　　　`server1a` using its default channel:

　　　　http://host01.example.com:8011/benefits

Note: Notice you receive a **404** error. This application is not available to regular users
through the server's normal host and port.

　　f.　Now try to access the application on `server1a` using its admin port:

　　　　https://host01.example.com:9003/benefits

　　　　Note: Notice the use of `https` and the admin port override port number of `9003`.
　　　　(Remember, this server runs on the same machine as the admin server, so it had to
　　　　use a different port number for its admin port.)

　　g.　Perform the same procedure as before to create a security exception for this demo
　　　　certificate.

Note: Because the URL is different, the browser needs another exception.

　　h.　When asked to log in, use **weblogic** and **Welcome1** as the username and password,
　　　　respectively.

Note: Why does this application require us to log in? It is only accessible to administrators
through the admin port. To prove you are an administrator, you must log in.

　　i.　You can now use the application while no regular clients have access. Try it. This is
　　　　sometimes done as a final check before an application is opened up to general users.

　　j.　Close the application browser window or tab.

11.　As an administrator, you have seen that the application works through the admin port, so
　　　open it up for everyone to use.

　　a.　Return to the admin console.

　　b.　In the Domain Structure, select **Deployments**.

　　c.　Select the check box next to the **benefits** application.

　　d.　Click the **Start** button and select **Servicing all requests**.

　　e.　When asked to confirm, click **Yes**.

　　f.　Notice the state of the application is "Active."

　　g.　Open a new web browser window or tab and try to access the application on
　　　　`server1a` using its default channel:

　　　　http://host01.example.com:8011/benefits

　　h.　The application comes up because it is now available to all users. Also notice you are
　　　　not asked to log in.

　　i.　Close the web browser.

12.　Shut down everything in the new domain and remove it.

　　a.　Find the Terminal Window on host01 in which you started `server1a` of the new
　　　　domain.

b. Press **Ctrl + C** to stop the server. Close the Terminal window.

c. Find the Terminal window in which you started the admin server of the new domain.

d. Press **Ctrl + C** to stop the server. Close the Terminal window.

e. Open a new Terminal window and navigate to the parent directory of the new domain directory. List its contents.

```
$ cd /u01/domains/part1
$ ls
wlsadmin  wlsadmin2
```

f. Delete the <u>new</u> domain directory. (<u>Not</u> the regular domain.)

```
$ rm -rf wlsadmin2
```

Warning: This command permanently deletes the directory, all its subdirectories, and files. Use with caution. **DO NOT DELETE THE REGULAR DOMAIN!**

g. Close the Terminal window.

Practice Solution: Configuring the Administration Port

There is no solution to this practice. The new domain is only used in this one practice.

Practice 11-3: Creating a Virtual Host

Overview
In this practice, you will configure a virtual host and deploy an application to it.

Assumptions
You completed "Practice 11-1: Configuring a Network Channel."
All servers are currently running.

Tasks
1. Open the WebLogic Server administration console.
2. Create a new virtual host.
   a. In the Change Center, click **Lock & Edit**.
   b. In the Domain Structure, expand **Environment** and select **Virtual Hosts**.
   c. Click the **New** button.
   d. Enter the **Name** of **benefits.com**. Click **OK**.
   e. Select the name of the new virtual host, **benefits.com**.
   f. Under **Virtual Hosts Names** enter:
      benefits.com
   g. Click **Save**.
   h. Click the **Targets** tab.
   i. Select **cluster1**. Select **Part of the cluster**. Select **server1**.
   j. Click **Save**.
   k. In the Change Center, click **Activate Changes**.
3. Undeploy the benefits application.
   a. In the Domain Structure, select **Deployments**.
   b. Select the check box in front of the **benefits** application. Click the **Stop** button and select **Force Stop Now**. When asked to confirm, click **Yes**.
   c. In the Change Center, click **Lock & Edit**.
   d. Select the check box in front of the **benefits** application.
   e. Click the **Delete** button. When asked to confirm, click **Yes**.
   f. Activate the changes.
4. Deploy the benefits application to the new virtual host and start it.
   a. In the Change Center, click **Lock & Edit**.
   b. In the Domain Structure, select **Deployments**.
   c. Click the **Install** button.
   d. Navigate to **host01.example.com/u01/domains/part1/wlsadmin/apps**.
   e. Select the option button next to **benefits.war** and click **Next**.
   f. Select **Install this deployment as an application** and click **Next**.
   g. For the target, select the new virtual host, **benefits.com**. Click **Next**.
   h. Leave all optional settings at their defaults. Click **Next**.
   i. Select **No, I will review the configuration later** and click **Finish**.
   j. Activate the changes.

k. Select the check box in front of the **benefits** application.

l. Click **Start**. Select **Servicing all requests**. When asked to confirm, click **Yes**.

5. Add **benefits.com** to the hosts file on the host01 machine.

a. Open a new Terminal window on host01.

b. Navigate to the /etc directory.

```
$ cd /etc
```

c. List the hosts file.

```
$ ls hosts -l
-rw-r—r-- 1 root root ... hosts
```

Note: Notice that the file belongs to the root user.

d. Edit the hosts file.

```
$ sudo vi hosts
```

Note: The root user is not properly configured to use the **gedit** text editor because the desktop GUI is rendered as the oracle user.

e. Find the line with host01.example.com. Move the cursor to the end of that line with the arrow keys. Click the **a** key for "append" mode. Add some spaces and then benefits.com to the end of that line. Press **Esc**. When you are finished, it will look like this:

```
198.168.100.1   host01.example.com   host01   benefits.com
...
```

f. Save the file and exit the editor by entering the characters **:wq** and then press **Enter**.

g. View the file to ensure that line is what you want it to be:

```
$ cat hosts
...
198.168.100.1   host01.example.com   host01   benefits.com
...
$
```

h. Close the Terminal window.

6. Access the application through the virtual host.

a. Open the web browser again.

b. Enter this URL to access the application:

http://benefits.com:7011/benefits

c. Try the application.

7. Use the admin console to remove the application from the virtual host. Deploy it to the cluster.

Note: You will have no need for the virtual host later, but will be using the cluster.

a. Open the WebLogic administration console.

b. In the Change Center, click **Lock & Edit**.

c. In the Domain Structure, select **Deployments**.

d. Select the check box in front of the **benefits** application. Click the **Stop** button and select **Force Stop Now**. When asked to confirm, click **Yes**.

e. Select the check box in front of the **benefits** application. Click the **Delete** button. When asked to confirm, click **Yes**.

f. Activate the changes.

g. Lock the configuration again.

h. Click the **Install** button.

i. Select the **benefits.war** application (under
    `host01.example.com/u01/domains/part1/wlsadmin/apps`). Click **Next**.

j. Click **Next** again.

k. Select **cluster1**. Ensure that **All servers in the cluster** is selected. Click **Next**.

l. Click **Finish**.

m. Activate the changes.

n. Select the check box in front of the **benefits** application. Click **Start** and select
    Servicing all requests. When asked to confirm, click **Yes**.

Practice Solution: Creating a Virtual Host

There is no solution to this practice. The virtual host is not needed in any subsequent practice.

Practices for Lesson 11: Network Channels and Virtual Hosts

Practices for Lesson 12: Clusters

Chapter 12

Practices for Lesson 12: Overview

Practices Overview

In these practices, you create a "regular" cluster and a dynamic cluster. You also deploy an application to the dynamic cluster.

Practice 12-1: Configuring a Cluster

Overview

In this practice, you create and configure a cluster. You start the servers in the cluster.

Assumptions

You completed "Practice 9-1: Configuring and Using Node Manager."
The administration server is currently running.

Tasks

1. Open the WebLogic Server administration console.
2. Create and configure a cluster.
   a. In the Change Center, click **Lock & Edit**.
   b. In the Domain Structure, expand **Environment** and select **Clusters**.
   c. Above the Clusters table, click the **New** button and select **Cluster**.
   d. Enter or select the following values for these fields and then click **OK**.
      - **Name: cluster3** (You are saving the name cluster2 for the dynamic cluster.)
      - **Messaging Mode:** Unicast.
   e. Click **OK**.
   f. Select the new cluster in the Clusters table.
   g. Select the **Configuration** > **Servers** tabs.
   h. Scroll down to the Servers table and click the **Add** button.
   i. Select **Create a new server and add it to this cluster**. Click **Next**.
   j. Enter or select the following values for these fields, then click **Finish**.
      - **Server Name: server3**
      - **Server Listen Address:** host01.example.com
      - **Server Listen Port:** 7013
   k. Click the **Add** button again.
   l. Select **Create a new server and add it to this cluster**. Click **Next**.
   m. Enter or select the following values for these fields and then click **Finish**.
      - **Server Name: server4**
      - **Server Listen Address:** host02.example.com
      - **Server Listen Port:** 7013
   n. Click the **Add** button again.
   o. Select **Create a new server and add it to this cluster**. Click **Next**.
   p. Enter or select the following values for these fields and then click **Finish**.
      - **Server Name: server5**
      - **Server Listen Address:** host01.example.com
      - **Server Listen Port:** 7015
   q. Click the **Add** button again.
   r. Select **Create a new server and add it to this cluster**. Click **Next**.

Practices for Lesson 12: Clusters

s. Enter or select the following values for these fields and then click **Finish**.

  – **Server Name: server6**
  – **Server Listen Address:** host02.example.com
  – **Server Listen Port:** 7015

t. In the Change Center, click **Activate Changes**.

3. Assign the new servers to the proper machines.

  a. In the Change Center, click **Lock & Edit**.

  b. In the Domain Structure, expand **Environment** and select **Servers**.

  c. Ensure the **Configuration** tab is selected.

  d. Click **server3**.

  e. Ensure that the **Configuration** > **General** tabs are selected.

  f. Use the Machine drop-down list to select **machine1**.

  g. Click the **Save** button.

  h. Use the breadcrumbs and select **Summary of Servers**. Click **server4**. Ensure that the **Configuration** > **General** tabs are selected. Use the Machine drop-down list to select **machine2**. Click the **Save** button.

  i. Use the breadcrumbs and select **Summary of Servers**. Click **server5**. Ensure that the **Configuration** > **General** tabs are selected. Use the Machine drop-down list to select **machine1**. Click the **Save** button.

  j. Use the breadcrumbs and select **Summary of Servers**. Click **server6**. Ensure that the **Configuration** > **General** tabs are selected. Use the Machine drop-down list to select **machine2**. Click the **Save** button.

  k. In the Change Center, click **Activate Changes**.

4. Start the new servers in the new cluster.

  a. In the Domain Structure, expand **Environment** and select **Servers**.

  b. Select the **Control** tab.

  c. Select the check boxes next to server3, server4, server5, and server6. Then click **Start**. When asked to confirm, click **Yes**.

  d. Wait for a little while and refresh the web browser. Ensure that the state of the new managed servers is "RUNNING."

Practices for Lesson 12: Clusters

Practice Solution: Configuring a Cluster

Perform the following tasks if you did not do this practice and want to use the finished solution.

Assumptions

You completed "Practice 9-1: Configuring and Using Node Manager."

The administration server is currently running.

Tasks

1. Connect to host01.
2. Run the solution script.

    a. Open a Terminal window and navigate to the practice directory. Run the solution script.

    ```
    $ cd /practices/part1/practice12-01
    $ ./solution.sh
    ```

    Note

    – This script calls a WLST script that creates the new servers, the new cluster, and adds the servers to the cluster. It then calls another WLST script to start all the servers in the new cluster.

    – The WLST script that starts the servers can take a while to run, so be patient.

    b. Close the Terminal window.

Practice 12-2: Configuring a Dynamic Cluster

Overview

In this practice, you create and configure a dynamic cluster. You start the servers in the cluster. You also deploy an application to all the servers in the dynamic cluster.

Assumptions

You completed "Practice 9-1: Configuring and Using Node Manager." ("Practice 12-1: Configuring a Cluster" is not a prerequisite for this practice.)

The administration server is currently running.

Tasks

1. Connect to host02. From there, run a script that sets up the database with a table and loads it with some data. This is required by the application you will deploy later in this practice.

   Note: Notice that this is host<u>02</u>, not host01.

   a. Open a Terminal window and navigate to the practice directory. Set a couple of environment variables and run the script that sets up the database.

   Note: The ORACLE_HOME variable points to where the database is installed. ORACLE_SID (Oracle System ID) is the unique name of this particular database.

   ```
   $ cd /practices/part1/practice12-02
   $ export ORACLE_HOME=/u01/app/db11g/product/11.2.0/dbhome_1
   $ export ORACLE_SID=orcl
   $ ./setup.sh
   ...
   1 row created

   1 row created

   Commit complete.
   ...
   $
   ```

   Note: The SQL script drops the table (and sequence) it creates, so you can run it multiple times. Therefore, the first time the script is run, it produces messages that no such table or sequence exist. Ignore those messages if you see them.

   b. Close the Terminal window.

2. Connect to host01 and copy the application to the domain's application directory.

   a. Open a Terminal window and navigate to the practice directory. Copy the application to the domain's application directory.

   ```
   $ cd /practices/part1/practice12-02
   $ cp supplies.war /u01/domains/part1/wlsadmin/apps
   ```

   b. Close the Terminal window.

3. Open the WebLogic Server administration console.

4. Create and configure a dynamic cluster.

   a. In the Change Center, click **Lock & Edit**.

b. In the Domain Structure, expand **Environment** and select **Clusters**.

c. Above the Clusters table, click the **New** button and select **Dynamic Cluster**.
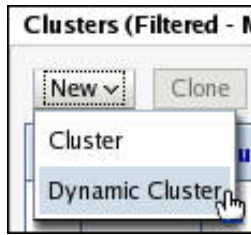
d. Enter or select the following values for these fields and then click **Next**.

  – **Name: cluster2**

  – **Messaging Mode: Unicast.**

e. Enter or select the following values for these fields and then click **Next**.

  – **Number of Dynamic Servers: 4**

  – **Server Name Prefix: cluster2server-**

Note: That is a "dash" on the end of the prefix name.

f. Select **Use any machine configured in this domain**. Click **Next**.

g. Enter or select the following values for these fields, then click **Next**:

  – **Assign each dynamic server unique listen ports:** Selected

  – **Listen Port for First Server: 7099**

  – **SSL Listen Port for First Server: 8099**

h. Notice the details of this new dynamic cluster, including the name of the new server template that will be created. Click **Finish**.

i. In the Change Center, click **Activate Changes**.

5. View the new servers generated for the dynamic cluster. Start those servers.

a. In the Domain Structure, expand **Environment** and select **Servers**. Ensure that the **Configuration** tab is selected.

b. Notice the four new servers. Their names all start with "cluster2server-" and end in an index.

c. Notice their type is "Dynamic," as opposed to the other servers, which are "Configured."

d. Also notice that the servers alternate between machine1 and machine2.

e. Click the **Control** tab.

f. First, so not many servers are running at one time, stop all other managed servers. Select the check boxes next to all managed servers not in the new dynamic cluster. Click **Shutdown** and select **Force Shutdown Now**. When asked to confirm, click **Yes**.

Note: You may have to click the **Next** link and do this more than once if not all servers are displayed on the first page.

g. Next, start the new dynamic servers. Select the check boxes next to all the dynamic servers: cluster2server-1, cluster2server-2, cluster2server-3, and cluster2server-4. Then click **Start**. When asked to confirm, click **Yes**.

h. Wait for a little while and refresh the web browser. Ensure that the state of all the new managed servers is "RUNNING," and the state of the other managed servers is "SHUTDOWN."

6. Change the data source target to include the new cluster.
    a. In the Change Center, click **Lock & Edit**.
    b. In the Domain Structure, expand **Services** and select **Data Sources**.
    c. In the Data Sources table, click the name of **datasource1**.
    d. Click the **Targets** tab.
    e. Select the check box for **cluster2**. Ensure that **All servers in the cluster** is selected.
    f. Click **Save**.
    g. In the Change Center, click **Activate Changes**.
7. Deploy an application to the new cluster.
    a. In the Change Center, click **Lock & Edit**.
    b. In the Domain Structure, select **Deployments**.
    c. Above the Deployments table, click the **Install** button.
    d. Use the links next to and below **Current Location** to navigate to:
       host01.example.com/u01/domains/part1/wlsadmin/apps

    Note: This fills in the **Path** field as you click links.
    e. When the path is correct, select the option button next to **supplies.war**. Click **Next**.
    f. Select **Install this deployment as an application** and click **Next**.
    g. Select the check box next to **cluster2**. Ensure that the **All servers in the cluster** option button is selected. Click **Next**.
    h. Leave all the Optional Setting at their default values. Click **Next**.
    i. Select **No, I will review the configuration later**. Click **Finish**.
    j. In the Change Center, click **Activate Changes**.

    Note: Notice the message that the changes have been activated and no restarts are necessary.
8. Start the application.
    a. In the Deployments table, select the check box next to the **supplies** application.
    b. Click the **Start** button and select **Servicing all requests**.
    c. When asked to confirm, click **Yes**.

    Note: Notice that the State of the supplies application is now "Active."

Practice Solution: Configuring a Dynamic Cluster

Perform the following tasks if you did not do this practice and want to use the finished solution.

Note: If you started the practice and created the dynamic cluster or the server template, you must delete them before running this solution. Use the administration console. If any of the dynamic servers were created and started, first stop them (**Environment** > **Servers** > **Control**; select the servers and click **Shutdown** > **Force Shutdown Now**). Then delete the dynamic cluster (**Lock & Edit**; **Environment** > **Clusters**; select **cluster2** and click **Delete**, then **Yes**; **Activate Changes**). Then delete the server template (**Lock & Edit**; **Environment** > **Clusters** > **Server Templates**; select **cluster2server-Template** and click **Delete**, then **Yes**; **Activate Changes**).

Assumptions

You completed "Practice 9-1: Configuring and Using Node Manager." ("Practice 12-1: Configuring a Cluster" is not a prerequisite for running this solution.)

The administration server is currently running.

Solution Tasks

1. Connect to host02 and run the database setup script.

   Note: Notice that this is host<u>02</u>, not host01.

   a. Open a Terminal window and navigate to the practice directory. Set a couple of environment variables and run the script that sets up the database.

   ```
   $ cd /practices/part1/practice12-02
   $ export ORACLE_HOME=/u01/app/db11g/product/11.2.0/dbhome_1
   $ export ORACLE_SID=orcl
   $ ./setup.sh
   ```

   b. Close the Terminal window.

2. Connect to host01 and run the solution script.

   a. Open a Terminal window, navigate to the practice directory, and run the solution script.

   ```
   $ cd /practices/part1/practice12-02
   $ ./solution.sh
   ```

   Note

   – This script calls a WLST script that creates the server template and the dynamic cluster based on it. It then calls another WLST script to deploy the application to the new cluster. It then calls a WLST script to stop all servers in the other two clusters. Next, it calls a WLST script to start all the servers in the new cluster. Finally, it calls a WLST script to target the data source to the new cluster.

   – The WLST script that starts servers can take a while to run, so be patient.

   b. Close the Terminal window.

Practices for Lesson 12: Clusters

Practices for Lesson 13: Clusters

Chapter 13

Practices for Lesson 13: Clusters

Practices for Lesson 13: Overview

Practices Overview

In these practices, you install and create an instance of Oracle HTTP Server. You then configure Oracle HTTP Server as the proxy to the dynamic cluster. You test the application deployed to that cluster. You also configure replication groups in another cluster.

Practice 13-1: Installing OHS (Optional)

Overview

In this practice, you install the Oracle HTTP Server (OHS) portion of Oracle Web Tier on host01. You also create an instance of OHS on that host.

OHS is already installed and a Web Tier instance with an OHS process has been created on host01. You will rename the installation directory (that also contains the instance) to gain OHS installation practice. If something goes wrong during the installation, you can revert to the preinstalled version of the product by changing the directory back to its original name.

Assumptions

You completed "Practice 12-2: Configuring a Dynamic Cluster."

Tasks

1. Connect to host01.
2. Rename the OHS installation directory and create a new, empty directory.

   a. Open a Terminal window, and navigate to `/u01/app`. Then rename the OHS installation directory (that also contains the OHS instance).

      ```
      $ cd /u01/app
      $ mv ohs ohs-orig
      $ mkdir ohs
      ```

3. Install the OHS part of Web Tier.

   a. Navigate to the directory that holds the Web Tier installer and execute it.

      ```
      $ cd /install/webtier
      $ ./fmw_12.1.3.0.0_ohs_linux64.bin
      0%.............................
      ```

   Note

   − If the installer file name is different (a different version of OHS), use that file name instead.

   − Wait for all the files to extract before the installer starts. It can take a while.

   b. Use the guidelines in the following table to install the software by using the graphical installer:

Step	Window/Page Description	Directions
a.	Welcome	Click **Next**.
b.	Installation Location	Oracle Middleware Home: **/u01/app/ohs** Click **Next**.
c.	Installation Type	Select **Standalone HTTP Server** and click **Next**. **Note:** The environment intentionally uses separate OHS and WebLogic installation locations so they can be maintained separately.
d.	Prerequisite Checks	Wait for the progress bar to reach 100% and all checks to pass.

Practices for Lesson 13: Clusters

Step	Window/Page Description	Directions
		Click **Next**.
e.	Security Updates	Deselect **I wish to receive security updates via My Oracle Support**. Click **Next**.
f.	Pop-up window	Click **Yes**.
g.	Installation Summary	Click **Install**.
h.	Installation Progress	Wait for the progress bar to reach 100%. Click **Next**. **Note:** This can take a few minutes.
i.	Installation Complete	Click **Finish**.

4. Configure an OHS instance.
   a. Rename the current OHS domain directory.
   ```
   $ cd /u01/domains
   $ mv ohs ohs-orig
   ```
   b. Navigate to the common Configuration Wizard for OHS.
   ```
   $ cd /u01/app/ohs/oracle_common/common/bin
   ```
   c. Run the Domain Configuration Wizard to create an OHS domain.
   ```
   $ ./config.sh
   ```
   Note: The OHS 12*c* release provides a WebLogic domain template for FMW system components.
   d. Use the guidelines in the following table to configure the OHS domain by using the Configuration Wizard:

Step	Window/Page Description	Directions
a.	Create Domain	Select **Create a new domain**. Enter /u01/domains/ohs as the domain location. Click **Next**.
b.	Templates	Select **Oracle HTTP Server (Standalone) – 12.1.3.0 [ohs]**. Click **Next**. **Note:** The Basic Standalone System... template is selected by default.
c.	JDK Selection	Select **Oracle HotSpot 1.7.0_xx /u01/app/ohs/oracle_common/jdk**. Click **Next**.
d.	System Components	Leave all default values and click **Next**. Note the system component name, ohs1.
e.	OHS Server	System Component: ohs1 Admin Host: host01.example.com

Step	Window/Page Description	Directions
		Admin Port: 9999
		Listen Address: host01.example.com
		Listen Port: 7777
		SSL Listen Port: 7778
		Server Name: http://host01.example.com:7777
		Click **Next**.
f.	Node Manager	Node Manager Type: Per Domain Default Location
		Node Manager Credentials: Username: **weblogic**, Password: **Welcome1**
		Click **Next**.
g.	Configuration Summary	Review and click **Create**.
h.	Configuration Progress	Wait for the progress bar to reach 100%.
		Click **Next**.
		Note: This can take a few minutes.
i.	Success	Click **Finish**.

e. Verify that the domain files are in place.

```
$ ls -l /u01/domains/ohs
drwxr-x--- 2 oracle oinstall 4096 Sep 23 09:52 bin
drwxr-x--- 4 oracle oinstall 4096 Sep 23 09:52 config
drwxr-x--- 2 oracle oinstall 4096 Sep 23 09:52 init-info
drwxr-x--- 2 oracle oinstall 4096 Sep 23 09:52 nodemanager
drwxr-x--- 2 oracle oinstall 4096 Sep 23 09:52 security
...
```

5. Install patch file for OHS.

```
$ /install/webtier/patch/patch.sh
If no errors are shown, then the patch file successfully
installed.
```

Practices for Lesson 13: Clusters

Practice Solution: Installing OHS (Optional)

There is no scripted solution for this practice. If you did not do the practice, there is nothing for you to do, the product is already installed and the OHS instance is created.

If you started the practice, but did not complete it, you revert to the preinstalled version of the products by deleting any new directories you created and renaming the original installation directory back to its previous name.

Solution Tasks

Important: Only do these tasks if you started the practice but did not complete it.

1. Connect to host01.

2. Check that the preinstalled directory is there. Delete the new installation directory that you created. Rename the preinstalled directory back to its original name.

   a. Open a Terminal window, and navigate to `/u01/app`. Then list the directories to ensure the `ohs-orig` directory is present. Check that this preinstalled directory has valid contents.

   ```
   $ cd /u01/app

   $ ls

   ohs ... ohs-orig ...

   $ ls ohs-orig

   bin   domain-registry.xml   inventory   lib      nls
   oracle_common   oui      precomp   sqlplus   wlserver
   ...   oraInst.loc    plsql   slax      webgate
   ```

   b. Ensure you are in the proper directory. Remove the new installation directory that you created.

   ```
   $ pwd

   /u01/app

   $ rm -rf ohs
   ```

   Warning: This command permanently deletes the directory, all its subdirectories, and files. Use with caution.

   c. Rename the preinstalled directory back to its original name.

   ```
   $ mv ohs-orig ohs
   ```

3. Restore the original OHS domain folder.

   a. In a Terminal window on host01, navigate to the `/u01/domains` folder. Then list the directories to ensure the `ohs-orig` directory is present. Check that this preinstalled directory has valid contents.

   ```
   $ cd /u01/domains

   $ ls

   ohs ... ohs-orig ...

   $ ls ohs-orig

   auditlogs  bin config     init-info nodemanager     security
   servers  system_components
   ```

   b. Ensure you are in the proper directory. Remove the new installation directory that you created.

   ```
   $ pwd
   ```

Practices for Lesson 13: Clusters

```
/u01/domains
$ rm -rf ohs
```

Warning: This command permanently deletes the directory, all its subdirectories, and files. Use with caution.

c. Rename the preinstalled directory back to its original name.

```
$ mv ohs-orig ohs
```

Practices for Lesson 13: Clusters

Practice 13-2: Configuring a Cluster Proxy

Overview

In this practice, you configure Oracle HTTP Server (OHS) to act as the proxy to the cluster created in the previous practice. You access the application deployed to the cluster via the proxy, and verify that in-memory session replication works.

Assumptions

You completed "Practice 12-2: Configuring a Dynamic Cluster."

"Practice 13-1: Installing OHS" was completed successfully, or not done at all (OHS is already installed and ready on host01).

The administration server and all managed servers in the new dynamic cluster are currently running.

Tasks

1. Connect to host01.
2. Edit the WebLogic plug-in configuration file for OHS.

   a. Open a Terminal window and navigate to the configuration directory of the OHS instance. Edit both `httpd.conf` and `mod_wl_ohs.conf`.

   ```
   $ cd /u01/domains/ohs/config/fmwconfig/components/OHS/instances/
   ohs1
   $ gedit httpd.conf mod_wl_ohs.conf
   ```

   b. Check that `httpd.conf` includes the plug-in configuration file. Make sure the **httpd.conf** tab in the editor is selected. Press **Ctrl + F** and in the pop-up window enter **mod_wl_ohs.conf** and click the **Find** button. Notice the `include` directive that includes this configuration file.

   c. Close the Find pop-up window. Close the `httpd.conf` file (click the "X" in the tab) without making any changes to it.

   d. Edit the plug-in configuration file, `mod_wl_ohs.conf`. Notice that most lines are commented out (they start with a "#"). Also notice the `LoadModule` line, which loads the WebLogic plug-in.

   e. In between `<IfModule weblogic_module>` and `</IfModule>` enter following lines:

   ```
   <Location />
     WLSRequest On
     WebLogicCluster
               host01.example.com:7100,host02.example.com:7101
   </Location>
   ```

   Note

   – Enter the `WebLogicCluster` line on a single line in the file.
   – This initial list does not include all servers in the cluster, nor does it have to. The plug-in will be updated with the other servers in the cluster when the cluster servers it uses return the "dynamic cluster list" to it.

- The / parameter set in `Location` tells the proxy that requests for all locations ("slash") should go to the cluster, no matter what the context root of the web applications

Tip: Make sure there is no space between the "/" and the ">" or the line will not work.

f. When finished editing this file, it should look like this:

```
LoadModule weblogic_module
                        "${PRODUCT_HOME}/modules/mod_wl_ohs.so"
<IfModule weblogic_module>
#  WebLogicHost <WEBLOGIC_HOST>
#  WebLogicPort <WEBLOGIC_PORT>
<Location />
    WLSRequest On
    WebLogicCluster
            host01.example.com:7100,host02.example.com:7101
</Location>
</IfModule>


#<Location /weblogic>
#  SetHandler weblogic-handler
#  PathTrim /weblogic
#  ErrorPage  http:/WEBLOGIC_HOME:WEBLOGIC_PORT/
#</Location>
```

Note: The file is shown with some of the comment lines removed. You can keep them, if you prefer. Also, due to space limitations, the `LoadModule` line is shown here on two lines, but in the file it is on one line.

g. When you are satisfied that the file is correct, save it and exit the editor.

3. Configure OHS Node Manager to use a non-SSL connection.

You have to modify two configuration settings to make Node Manager use a non-SSL connection. Add one setting in the domain's `config.xml` file and the other setting in the `nodemanager.properties` file.

a. Open the domain's `config.xml` file for editing.

```
$ gedit /u01/domains/ohs/config/config.xml
```

b. Add the `<nm-type>` line to the machine's `node-manager` element, and then save and close the file.

```
<machine>
    <name>localmachine</name>
    <node-manager>
      <name>localmachine</name>
      <nm-type>Plain</nm-type>
      <listen-address>localhost</listen-address>
      ...
```

c. Open the `nodemanager.properties` file for editing.

```
$ gedit /u01/domains/ohs/nodemanager.properties
```

d. Set the `SecureListener` property to `false`, and then save and close the file.

```
SecureListener=false
```

4. Start OHS.

a. Open a new Terminal window, name the window **OHS NM**, and navigate to the OHS domain's `bin` folder.

```
$ cd /u01/domains/ohs/bin
```

b. Execute the following commands to explore the `bin` folder and start the OHS Node Manager.

```
$ ls

startComponent.sh      startRSDaemon.sh   stopNodeManager.sh
startNodeManager.sh  stopComponent.sh   stopRSDaemon.sh
$ ./startNodeManager.sh

...
ohs -> /u01/domains/ohs


<Sep 24, 2014 4:40:35 AM PDT> <INFO> <Node manager v12.1.3
#1604337>
<Sep 24, 2014 4:40:36 AM PDT> <INFO> <Secure socket listener
started on port 5556, host localhost/127.0.0.1>
```

Note: Wait for the command to finish.

c. Open a new Terminal window, name the window **OHS**, and navigate to the OHS domain's `bin` folder.

```
$ cd /u01/domains/ohs/bin
```

d. Execute the following command to start OHS.

```
$ ./startComponent.sh ohs1

Starting system Component ohs1 ...

...
Reading domain from /u01/domains/ohs

Please enter Node Manager password:
```

e. Enter **Welcome1** as the Node Manager password.

```
Connecting to Node Manager ...

Successfully Connected to Node Manager.

Starting server ohs1 ...

Successfully started server ohs1 ...

Successfully disconnected from Node Manager.

...
```

f. Execute the following command to check the status of OHS.

```
$ /u01/app/fmw/wlserver/common/bin/wlst.sh
/install/webtier/config/status.py

Connecting to Node Manager ...

Successfully Connected to Node Manager.


RUNNING
```

Note

- Make sure that the "status" is "RUNNING."

5. Access the application deployed to the cluster through the OHS cluster proxy. Use the application to ensure it creates a session for you.

   a. Open your web browser and enter the OHS URL, followed by **/supplies**:

      http://host01.example.com:7777/supplies

   b. When the application home page displays, click the **browse the catalog** link.

   c. Click the **[add]** link next to a few items.

   d. Scroll down and view the items in your shopping cart.

   Note: Remember what items are in your shopping cart.

   e. Do not close the web browser window. For the admin console, use a different browser window. You will come back to this web browser window later.

6. Open the WebLogic Server administration console in a new tab or window.

7. Use the administration console to see which cluster server is servicing your requests. Stop that server.

   a. Under Domain Structure, expand **Environment** and select **Clusters**.

   b. In the Clusters table, click **cluster2**.

   c. Click the **Monitoring** tab.

   d. Use the **Primary** column to determine which of the clustered servers is hosting your current shopping cart session (the value should be greater than 0). Remember which server it is.

   Note: You can also see which server holds the backup copy of the session. Look at the **Secondary Distribution Names** column. For example, if cluster2server-1 is the primary, another server will have a value in this column of: cluster2server-1:1. What this means is that this server has 1 secondary session for cluster2server-1.

   Tip: If you cannot tell which server is the primary, write down the Primary session count number for all the servers. Close all browsers. Open a new browser and access and use the application again. In the admin console, come back to this table and see which Primary number has increased. That is the server that currently holds your session and is servicing your requests.

   e. Stop the server that has your session. In the Domain Structure, expand **Environment** and select **Servers**. Click the **Control** tab. Select the check box next to the server that is hosting your session. Click the **Shutdown** button and select **Force Shutdown Now**. When asked whether you are sure, click **Yes**.

   f. Wait a little while and refresh the web browser. Ensure that the state of the server is SHUTDOWN.

8. Ensure your shopping cart still has your items to show that in-memory session replication is working.

   a. Go back to the web browser in which you were using the application. Remember the items that were in your shopping cart. Click the **[add]** link next to some new and different item. Scroll down and view your shopping cart. The new item and all the old items should display in the shopping cart.

9. Shut down all of the servers in cluster2.

Practices for Lesson 13: Clusters

Practice Solution: Configuring a Cluster Proxy

Perform the following tasks if you did not complete this practice and want to use the finished solution.

Assumptions

You completed "Practice 12-2: Configuring a Dynamic Cluster."

The administration server and all managed servers in the new dynamic cluster are currently running.

Solution Tasks

1. Connect to host01.
2. Run the script.
   a. Open a Terminal window and navigate to the practice directory. Then run the script.
      ```
      $ cd /practices/part1/practice13-02
      $ ./solution.sh
      ```
   Note:

   This script performs the following tasks:

   – Copies a completed WebLogic plug-in configuration file for OHS to the right location
   – Configures the OHS Node Manager to use a non-SSL connection
   – Starts the OHS Node Manager
   – Starts OHS
   – Checks the status of the OHS server
   – You should see the print out in the Terminal window that ohs1 is RUNNING.

   b. Close the Terminal window.
3. If you want to access the application deployed to the cluster (in a previous practice) through the OHS proxy, use the web browser.
   a. Enter this URL:
      ```
      http://host01.example.com:7777/supplies
      ```

Practice 13-3: Configuring Replication Groups

Overview

In this practice, you configure replication groups in a cluster.
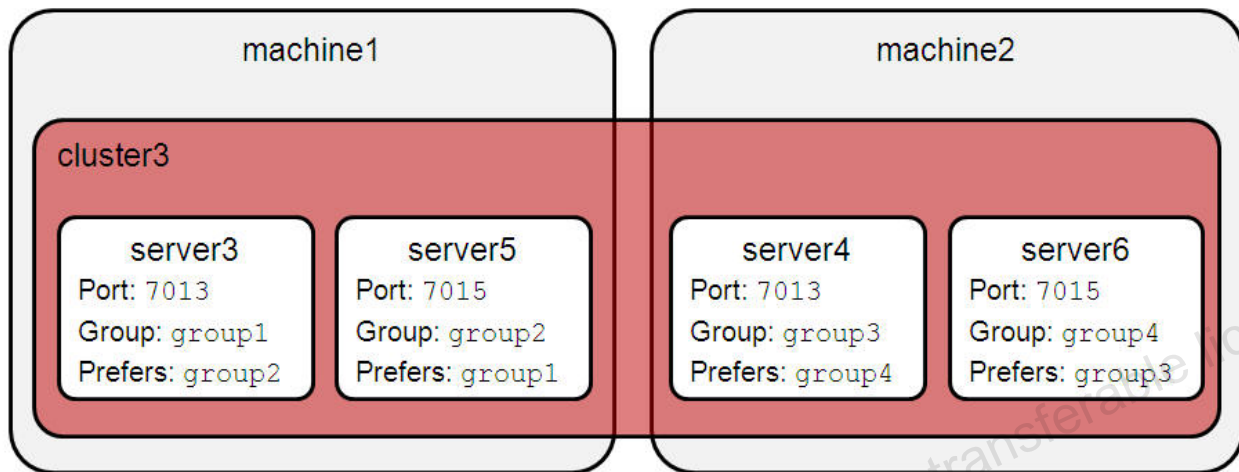
Assumptions

You completed "Practice 12-1: Configuring a Cluster."

The administration server is running.

Tasks

1. Connect to host01.
2. Open the WebLogic Server administration console.
3. Set replication groups and preferred secondary groups.

   Note: This is not a realistic example because you would not want to set up replication groups so that a server's secondary server was on its same machine. It does give you practice in configuring replication groups, however. And, if you do the optional task at the end of this practice, it will prove that replication group settings take precedence over the "choose a different machine" preference when a secondary server is selected.

   a. First, stop all the servers in cluster3, if they are running. In the Domain Structure, expand **Environment** and select **Clusters**. In the Clusters table, select **cluster3**. Click the **Control** tab. Select the check box in front of all the servers in the cluster that are RUNNING. Click **Shutdown** and select **Force Shutdown Now**. When asked to confirm, click **Yes**.

   Why? Changing a server's replication group or preferred secondary group does not take effect until the server restarts. You are shutting down these servers ahead of time and will start them later.

   b. In the Change Center, click **Lock & Edit**.
   c. In the Domain Structure, expand **Environment** and select **Servers**.
   d. In the Servers table, select **server3**.
   e. Click the **Configuration** > **Cluster** tabs.
   f. Enter the following values for these fields, then click **Save**.
      – Replication Group: **group1**

– Preferred Secondary Group: `group2`

g. Use the breadcrumbs to select **Summary of Servers**. In the Servers table, select **server5**. Click the **Configuration** > **Cluster** tabs. Enter the following values for these fields, then click **Save**.

– Replication Group: `group2`

– Preferred Secondary Group: `group1`

Note: Notice that you are putting two servers on the same machine in different groups, each preferring the other's group.

h. Use the breadcrumbs to select **Summary of Servers**. In the Servers table, select **server4**. Click the **Configuration** > **Cluster** tabs. Enter the following values for these fields, then click **Save**.

– Replication Group: `group3`

– Preferred Secondary Group: `group4`

i. Use the breadcrumbs to select **Summary of Servers**. In the Servers table, select **server6** (you may have to click the **Next** link to be able to select this server). Click the **Configuration** > **Cluster** tabs. Enter the following values for these fields and then click **Save**.

– Replication Group: `group4`

– Preferred Secondary Group: `group3`

j. In the Change Center, click **Activate Changes**.

4. Start the servers in this cluster.

a. To cut down on the number of concurrently running servers, stop all other managed servers that are running. In the Domain Structure, expand **Environment** and select **Servers**. Click the **Control** tab. Select the check boxes next to all *managed* servers *not* in cluster3 that are RUNNING. Click **Shutdown** and select **Force Shutdown Now**. When asked to confirm, click **Yes**.

b. In the Domain Structure, expand **Environment** and select **Clusters**.

c. In the Clusters table, select **cluster3**.

d. Click the **Control** tab.

e. Select the check box in front of all four servers. Click **Start**. When asked to confirm, click **Yes**. Wait a while and refresh the page. Ensure that the State of all four servers is RUNNING.

5. (Optional if you have time and are interested) Check to see whether the replication group configuration overrides the "chose a different machine" preference. To do this, you need to target a data source to this cluster, deploy an application that uses in-memory session replication to this cluster, run the application, and then see which server is chosen as the secondary server to the primary server servicing your requests.

a. In the Change Center, click **Lock & Edit**.

b. In the Domain Structure, expand **Services** and select **Data Sources**.

c. In the Data Sources table, click on the name of **datasource1**.

d. Click the **Targets** tab.

e. Select the check box for **cluster3**. Ensure that **All servers in the cluster** is selected.

f. Click **Save**.

g. In the Domain Structure, select **Deployments**.

h. In the Deployments table, click the **contacts** application.

i.   Click the **Targets** tab.

j.   Select the check box next to **cluster3**. Ensure that the **All servers in the cluster** option button is selected.

k.   Click **Save**.

l.   In the Change Center, click **Activate Changes**.

m.   In the Domain Structure, select **Deployments**. Ensure the **contacts** application is Active. If not, start servicing all requests.

n.   Do not close the admin console.

o.   In the web browser, open a new window or tab.

p.   Enter the URL for the application running on server3:

    http://host01.example.com:7013/contacts

Note: A proxy for this cluster is not set up, so you are accessing the application directly on server3.

q.   Click the link <u>**browse all contacts**</u>.

r.   Return to the admin console. In the domain structure, expand **Environment** and select **Clusters**. In the Clusters table, select **cluster3**.

s.   Click the **Monitoring** tab.

t.   In the **server3** row, you should see a `1` in the **Primary** column. Look in the **Secondary Distribution Names** column in all of the rows. If the replication group configuration works as suspected, you should see in the **server5** row this value:

`server3:1`

Note: Remember, server3 has "group1" as its replication group and "group2" as its preferred secondary group. And server5 has "group2" as its replication group. So, even though server5 is on the same machine as server3, it is still chosen as the secondary server because of the replication group configuration.

Practice Solution: Configuring Replication Groups

There is no solution for this practice. Setting the replication groups is not needed in the cluster.

Practices for Lesson 14: Clusters

Chapter 14

Practices for Lesson 14: Overview

Practices Overview

In this practice, you configure a replication channel for a cluster.

Practice 14-1: Configuring a Replication Channel

Overview

In this practice, you configure a replication channel for peer-to-peer communication in a cluster.

Assumptions

You completed "Practice 9-1: Configuring and Using Node Manager."

The administration server is running.

To do the optional task of monitoring the replication channel, you must have also completed "Practice 10-2: Load Testing an Application," or deploy the contacts application manually.

Tasks

1. Connect to host01.
2. Open the WebLogic Server administration console.
3. So unnecessary servers are not running, shut down all managed servers.

    Note: You are also shutting down servers you want to be running, because the changes being made only take effect after a server restart, so you are shutting down these servers ahead of time.

    a. In the Domain Structure, expand **Environment** and select **Servers**.
    b. Click the **Control** tab.
    c. Select the check box in front of all RUNNING managed servers.
    d. Click **Shutdown** > **Force Shutdown Now**. Click **Yes** when asked to confirm. Wait for the State of the servers to be SHUTDOWN.

    Note: You may need to click the **Next** link to access all the servers. Select any running managed servers on the next page and shut them down, too.

4. Configure a replication channel for each server in cluster1.

    a. In the Change Center, click **Lock & Edit**.
    b. In the Domain Structure, expand **Environment** and select **Servers**.
    c. Select **server1** in the Servers table.
    d. Click the **Protocols** > **Channels** tab.
    e. Click the **New** button.
    f. Enter or select the following values for these fields and then click **Next**.

        – **Name: ReplicationChannel**
        – **Protocol: t3**

    Note: Case matters in this name, as you want it to match everywhere you enter it.

    g. Enter or select the following values for these fields, then click **Next**.

        – **Listen Address: host01.example.com**
        – **Listen Port: 6000**
        – **External Listen Address:** (blank)
        – **External Listen Port:** (blank)

    h. Enter or select the following values for these fields and then click **Next**.

        – **Enabled:** Selected
        – **Tunneling Enabled:** Not selected

Practices for Lesson 14: Clusters

– **HTTP Enabled for This Protocol:** Selected
– **Outbound Enabled:** Selected

i. Enter or select the following values for these fields and then click **Finish**.
   – **Two Way SSL Enabled:** Not selected
   – **Client Certificate Enforced:** Not selected

j. Use the breadcrumbs to select **Summary of Servers**. Select **server2**. Click the **Protocols** > **Channels** tab. Click the **New** button. Go through the Create a New Network Channel wizard again, using the following values:

Field	Value
Name	`ReplicationChannel`
Protocol	`t3`
Listen Address	`host02.example.com`
Listen Port	`6000`
External Listen Address	(blank)
External Listen Port	(blank)
Enabled	Selected
Tunneling Enabled	Not selected
HTTP Enabled for This Protocol	Selected
Outbound Enabled	Selected
Two Way SSL Enabled	Not selected
Client Certificate Enforced	Not selected

k. In the Change Center, click **Activate Changes**.

5. Configure the cluster to use the new replication channel.

   a. In the Change Center, click **Lock & Edit**.
   b. In the Domain Structure, expand **Environment** and select **Clusters**.
   c. Select **cluster1** in the Clusters table.
   d. Click the **Configuration** > **Replication** tab.
   e. Ensure that `ReplicationChannel` is in the **Replication Channel** field.
   f. Click the **Save** button.
   g. In the Change Center, click **Activate Changes**.

   Note: If you did not type into the field, then no changes were made and the **Activate Changes** button will still say **Release Configuration**. If that is the case, click **Release Configuration**.

6. Start all cluster1 servers.

   a. In the Domain Structure, expand **Environment** and select **Clusters**.
   b. Select **cluster1** in the Clusters table.
   c. Click the **Control** tab.
   d. Select the check box in front of all cluster1 servers. Click **Start**. Click **Yes** when asked to confirm. Wait for the State of the servers to be RUNNING.
   e. Do not close the web browser.

7. Verify that the replication channel started by looking at server1's output.

   a. Open a new Terminal window on host01 and navigate to the `logs` directory of server1. Then edit the `server1.out` file.

      ```
      $ cd /u01/domains/part1/wlsadmin/servers/server1/logs
      $ gedit server1.out
      ```

   b. Press **Ctrl + F**. In the Find pop-up window, enter **ReplicationChannel** in the **Search for** field and press **Enter**.

   c. You should see the message that this channel is listening on port `6000` for `t3`, `CLUSTER-BROADCAST`, and `http`.

   d. Close the Find window, and exit the editor.

   e. Close the Terminal window.

8. (Optional if you have time and are interested) Monitor the replication channel after session replication has taken place. To do this you need to target a data source to this cluster, deploy an application that uses in-memory session replication to this cluster, and run the application.

   Note: If the data source and application are already targeted to cluster1 you can skip those steps when you get to them.

   a. Return to the admin console.

   b. In the Change Center, click **Lock & Edit**.

   c. In the Domain Structure, expand **Services** and select **Data Sources**.

   d. In the Data Sources table, click the name of **datasource1**.

   e. Click the **Targets** tab.

   f. If the data source is already targeted to cluster1, move on to the next step. If not, select the check box for **cluster1**. Ensure **All servers in the cluster** is selected. Click **Save**.

   g. In the Domain Structure, select **Deployments**.

   h. In the Deployments table, click the **contacts** application.

   i. Click the **Targets** tab.

   j. If the application is already targeted to cluster1, move on to the next step. If not, select the check box next to **cluster1**. Ensure that the **All servers in the cluster** option button is selected. Click **Save**.

   k. In the Change Center, click **Activate Changes**.

   Note: If the data source and the contacts application were both already targeted to cluster1, instead click **Release Configuration**.

   l. Do not close the admin console.

   m. In the web browser, open a new window or tab.

   n. Enter the URL for the application running on server1:

      http://host01.example.com:7011/contacts

   Note: A proxy for this cluster is not set up, so you are accessing the application directly on server1.

   o. Click the **browse all contacts** link.

   p. Return to the admin console. In the Domain Structure, expand **Environment** and select **Servers**. In the Servers table, select **server1**.

   q. Click the **Protocols** > **Channels** tab.

   r. In the Network Channels table, select the **ReplicationChannel** channel.

s. Click the **Monitoring** > **Overview** tab.

t. Review the statistics for the channel. You should see that messages have been sent and received on the replication channel.

u. You can go view the statistics for the replication channel on **server2**, as well.

Practices for Lesson 14: Clusters

Practice Solution: Configuring a Replication Channel

There is no solution for this practice. Setting a replication channel is not needed in this cluster.

Practices for Lesson 14: Clusters

Practices for Lesson 15: Transactions

Chapter 15

Practices for Lesson 15: Transactions

Practices for Lesson 15: Overview

Practices Overview

In this practice, you set up the servers in the dynamic cluster to store their transaction logs in a database.

Practice 15-1: Configuring Transaction Persistence

Overview

In this practice, you create a data source to be used for the transaction log of the servers in the dynamic cluster. You then set the transaction log to use this data source. You also use an application that uses transactions and then monitor those transactions.

Assumptions

You completed "Practice 13-2: Configuring a Cluster Proxy."

The administration server is running.

The dynamic cluster managed servers do not have to be running. Whichever ones are, will be stopped and restarted as part of this practice.

Oracle HTTP Server (OHS) is running.

Tasks

1. Connect to host01.
2. Open the WebLogic Server administration console.
3. Create a new generic JDBC data source for the transaction log.
   a. Lock the configuration. In the Change Center, click the **Lock & Edit** button.
   b. In the Domain Structure, expand **Services** and then select **Data Sources**.
   c. Above the Data Sources table, click the **New** button and select **Generic Data Source**.
   d. The "create a data source" wizard starts. Use the guidelines in the following table to create a new generic data source:

Step	Window/Page Description	Choices or Values
a.	Create a New JDBC Data Source: JDBC Data Source Properties (page 1)	Enter or select these values for the following fields: • Name: `tlogdatasource1` • JNDI Name: `tlogds1` • Database Type: `Oracle` Click **Next**.
b.	Create a New JDBC Data Source: JDBC Data Source Properties (page 2)	For the Database Driver field, select: `*Oracle's Driver (Thin) for Instance connections; Versions:Any` **Note:** Data sources used for TLogs cannot use XA drivers. Click **Next**.
c.	Create a New JDBC Data Source: Transaction Options	Deselect **Supports Global Transactions**. Click **Next**. **Note:** Data sources used for TLogs cannot support global transactions.
d.	Create a New JDBC Data Source:	Enter or select these values for the following fields: • Database Name: `orcl`

Step	Window/Page Description	Choices or Values
	Connection Properties	• Host Name: **host02.example.com** • Port: **1521** • Database User Name: **oracle** • Password: **Welcome1** • Confirm Password: **Welcome1** • oracle.jdbc.DRCPConnectionClass: (leave blank) Click **Next**.
e.	Create a New JDBC Data Source: Test Database Connection	Click the **Test Configuration** button. When the message "Connection test succeeded." displays, click **Next**. **Note:** If the test fails, click the **Back** button and check your entries. Correct and mistakes and come back to this page and try the test again
f.	Create a New JDBC Data Source: Select Targets	Under Clusters, select **cluster2**. Ensure that the **All servers in the cluster** option button is selected. Click **Finish**.

e. In the Change Center, click **Activate Changes**.

Note: Notice the message at the top: "All changes have been activated. No restarts are necessary."

4. Set the Transaction Log Store for each server in the dynamic cluster to be a JDBC store.

   a. In the Change Center, click **Lock & Edit**.

   b. In the Domain Structure, expand **Environment**, expand **Clusters**, and select **Server Templates**.

Note: Because you want to set the transaction log store for the servers that are in the dynamic cluster, you change the template upon which they are based.

   c. In the Server Templates table, click the name of the template, **cluster2server-Template**.

   d. Click the **Configuration** > **Services** tabs.

   e. Scroll down to the Transaction Log Store area. Use the **Type** drop-down list to select **JDBC**.

   f. Use the **Data Source** drop-down list to select **tlogdatasource1**.

   g. The Prefix Name will be filled in for you automatically. Leave that field as it is.

   h. Click **Save**.

   i. In the Change Center, click **Activate Changes**.

Note: If any of the four servers in the dynamic cluster are running, they need to be stopped and restarted. If, after activating changes, the message says that some items must be restarted, then stop and restart any servers running in this cluster. If the message says no restarts are needed, you do not have to stop any servers, just start them.

   j. If any servers in the cluster were running, in the Domain Structure, expand **Environment**, and select **Clusters**. Click on the name of **cluster2**. Click the **Control** tab. Select the check box in front of each of the servers in cluster2 that is RUNNING.

Click the **Shutdown** button and select **Force Shutdown Now**. When asked whether you are sure, click **Yes**. Wait a little while and refresh the browser. Ensure that the state of each of the servers in cluster2 is SHUTDOWN.

k. In the Domain Structure, expand **Environment**, and select **Clusters**. Click on the name of **cluster2**. Click the **Control** tab. Select the check box in front of each of the servers in cluster2. Click the **Start** button. When asked whether you are sure, click **Yes**. Wait a little while and refresh the browser. Ensure the state of each of these servers is RUNNING.

l. Minimize the web browser to use later.

5. Verify the TLog tables have been created.

a. Connect to host02.

Note: Notice that this is host02, not host01.

b. Open a Terminal window. Set a couple of environment variables and access SQL*Plus as the oracle user.

```
$ export ORACLE_HOME=/u01/app/db11g/product/11.2.0/dbhome_1
$ export ORACLE_SID=orcl
$ $ORACLE_HOME/bin/sqlplus oracle/Welcome1
SQL*Plus: Release 11...

...

SQL>
```

c. Within SQL*Plus, list all the oracle user's tables. Notice the tables that end with "WLSTORE." There is one for each server in cluster2. Each instance of WebLogic Server in that cluster, based on the server template you modified, created a table for its TLog.

```
SQL> select table_name from user_tables;


TABLE_NAME
----------------------------

...

TLOG_CLUSTER2SERVER_4_WLSTORE

TLOG_CLUSTER2SERVER_1_WLSTORE

TLOG_CLUSTER2SERVER_2_WLSTORE

TLOG_CLUSTER2SERVER_3_WLSTORE

...
```

Note: Other tables are listed, but they have been omitted here. Also, the order in which your tables are listed may be different.

d. Exit SQL*Plus.

```
SQL> exit
Disconnected from Oracle Database...
$
```

e. Close the Terminal window.

6. Update the contacts application with a new version. Target the application to the dynamic cluster.

Note: This new version of the contacts application sometimes rolls back transactions.

Practices for Lesson 15: Transactions

a. Open a Terminal window on host01. Navigate to the current practice directory and copy the new `contacts.war` file over the old one in the domain's applications directory.

```
$ cd /practices/part1/practice15-01
$ cp contacts.war /u01/domains/part1/wlsadmin/apps
```

b. Return to the web browser running the administration console.

c. In the Change Center, click **Lock & Edit**.

d. In the Domain Structure, select **Deployments**.

e. In the Deployments table, select the check box in front of the **contacts** application. Click **Update**.

f. Click **Next**.

g. Click **Finish**.

h. In the Change Center, click **Activate Changes**.

i. Lock the configuration again.

j. In the Domain Structure, select **Deployments**.

k. Click on the name of the **contacts** application.

l. Click the **Targets** tab.

m. Select **cluster2**. Ensure that **All servers in the cluster** is selected. Click **Save**. Activate changes.
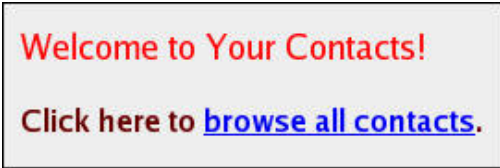
Note: If this application is already targeted to cluster2, you can skip this step.

n. Keep the administration console around, as you will need it shortly.

7. Use the application and edit some contacts.

Note: The application has been modified so that when you edit a contact, half of the time the transaction is committed, the other half of the time the application throws an exception and the transaction is rolled back. Using the modified version of the application will provide you with committed and rolled backed transactions to monitor.

a. In the web browser, use the **File** menu and select either **New Window** or **New Tab**.

b. In the new web browser window or tab, enter the URL for the cluster proxy and the contacts application:

http://host01.example.com:7777/contacts

c. The contacts application opens.

d. Click the **browse all contacts** link.

Welcome to Your Contacts!

Click here to **browse all contacts**.

e. Click the **[edit]** link in one of the rows. When the edit window displays, change something and click the Update button.

Note: Back on the browse window, check whether the change has taken place.

f. Click the **[edit]** link in another row. When the edit window displays, change something and click the Update button.

Note: Back in the browse window, check whether the change has taken place.

g. Do this a few more times.

8. View information on the transactions back in the administration console. (But first you need to figure out which server in the cluster is handling your requests.)

   a. Return to the web browser running the administration console.

   b. In the Domain Structure, expand **Environment**, and select **Clusters**.

   c. In the Clusters table, select **cluster2**.

   d. Click the **Monitoring** tab.

   e. Use the Primary column to see which server has been servicing your requests. Click on that server's name in this table (this is the same as selecting its name in the Servers table).

   f. Under this server's **Monitoring** tab, click the **JTA** subtab.

   g. Notice under the **Summary** subtab, the number of transactions. Also notice the number of committed transactions (Transactions Committed Total Count). The other transactions were rolled back (Transactions Rollled Back for Application Errors Total Count).

9. (Optional) If you are interested and have time, you can see what happened by viewing your primary server's "out" file.

   a. Access the host where your primary server runs. (You figured out your primary server in the previous task.) You can use the Servers table in the admin console to see on which machine your primary server runs. If it runs on machine1, use host01. If it runs on machine2, use host02. In either case the password is oracle.

   b. Once on the proper host, open a Terminal window and navigate to the servers directory under the domain:

   ```
   $ cd /u01/domains/part1/wlsadmin/servers
   ```

   c. Then cd into the directory for your primary server (for example, cluster2server-1):

   ```
   $ cd cluster2server-1
   ```

   d. Then cd into the logs directory:

   ```
   $ cd logs
   ```

   e. Edit the "out" file for this server (for example, cluster2server-1.out):

   ```
   $ gedit cluster2server-1.out
   ```

   Note: Remember, the "out" file is the standard out of a server started by Node Manager (because it is not running in a Terminal window).

   f. Scroll to the bottom. You should see some messages that the code printed out. You can see that sometimes the code calls "commit" and sometimes "rollback." These are two methods added to the code in this application. The "commit" method does nothing, which lets the code finish and commit the database changes. The "rollback" method throws a RuntimeException, which forces the database to roll back.

   g. Close the editor.

   h. Close the Terminal window.

Practice Solution: Configuring Transaction Persistence

Perform the following tasks if you did not do this practice and want to use the finished solution.

Assumptions

You completed "Practice 13-2: Configuring a Cluster Proxy."

The administration server is running.

The dynamic cluster managed servers do not have to be running. Whichever ones are, will be stopped and restarted as part of this practice.

Oracle HTTP Server (OHS) is running.

Solution Tasks

1. Connect to host01.
2. Stop all managed servers in cluster2.
   a. Open the WebLogic Server administration console.
   b. In the Domain Structure, expand **Environment**, and select **Servers**. Click the **Control** tab. Select the check box in front of each of the servers in cluster2 that is RUNNING. Click the **Shutdown** button and select **Force Shutdown Now**. When asked whether you are sure, click **Yes**.
   c. Wait a little while and refresh the browser. Ensure the state of each of the servers in cluster2 is SHUTDOWN.
3. Run the solution script.
   a. In a Terminal window, run the solution script.
      ```
      $ cd /practices/part1/practice15-01
      $ ./solution.sh
      ```
   Note
   - This script calls a WLST script that creates a data source to be used for TLogs. It then calls another WLST script that modifies the server template (on which the dynamic servers are based) to use that data source for its TLogs. Finally, it calls a WLST script that redeploys the contacts application with a new version. The new version of the contacts application sometimes rolls back transactions, so there is more interesting transaction data to monitor.
   - If you get the WLContext.close() warning, ignore it.
   b. Close the Terminal window.
4. Start all managed servers in cluster2.
   a. Return to the admin console.
   b. In the Domain Structure, expand **Environment**, and select **Servers**. Click the **Control** tab. Select the check box in front of each of the servers in cluster2. Click the **Start** button. When asked whether you are sure, click **Yes**.
   c. Wait a little while and refresh the browser. Ensure the state of each of the servers in cluster2 is RUNNING.

Practices for Lesson 16: WebLogic Server Security

Chapter 16

Practices for Lesson 16: WebLogic Server Security

Practices for Lesson 16: Overview

Practices Overview

In this practice, you configure an external LDAP and set it as one of the authentication providers of the WebLogic Server security realm.

Practice 16-1: Configuring an Authentication Provider

Overview

In this practice, you configure an external LDAP, OpenDS. You then set this LDAP, which is installed on host02, as one of the authentication providers in your WebLogic domain. Finally, you configure the authentication provider control flags.

Note: The default embedded LDAP continues as one of the authentication providers and retains all the administrative users, groups, and roles. The external LDAP is used for all other users, groups, and roles.

Assumptions

You completed "Practice 13-2: Configuring a Cluster Proxy."

The administration server and the four servers in the dynamic cluster are currently running.

OHS is running.

Tasks

1. Create some LDAP users in the external LDAP system.

    a. Connect to host02.

    Note: Notice that this is host<u>02</u>, not host01.

    b. Open a Terminal window. Navigate to the `bin` directory under the installed OpenDS LDAP system, and launch the OpenDS control panel:

       $ **cd /u01/app/ldap/bin**

       $ **./control-panel**

    c. A dialog box appears warning that the Local Server is not running. Click **OK** to close it.

    d. Click the **Start** button.

    e. When prompted, enter the password, Welcome1, and click **OK**.

    f. After the dialog box indicates that the LDAP server has successfully started, click the **Close** button on the dialog box.

    g. In the left menu, select **Directory Data > Manage Entries**.
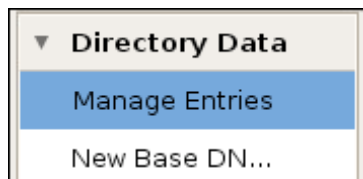
    h. Click the base node in the list on the left, **dc=example,dc=com**. Then right-click and select **New User**.

i. Enter or select the following values and then click **OK**.

Field	Value
First Name	Larry
Last Name	Fine
Common Name	Larry Fine
User ID	larryf
Password	Welcome1
Password (Confirm)	Welcome1
E-mail	larry.fine@example.com
Naming Attribute	uid

Note: Leave blank any fields not listed.

j. After the user has been successfully created, close the "Entry created" dialog box.

Note: It may be behind other windows.

k. Click the base node again, **dc=example,dc=com**. Right-click and select **New User**. Then enter or select the following values and click **OK**.

Field	Value
First Name	Moe
Last Name	Howard
Common Name	Moe Howard
User ID	moeh
Password	Welcome1
Password (Confirm)	Welcome1
E-mail	moe.howard@example.com
Naming Attribute	uid

Note: Leave blank any fields not listed.

l. After the user has been successfully created, close the "Entry created" dialog box.

Note: It may be behind other windows.

m. Confirm that you have two new users within the base DN.
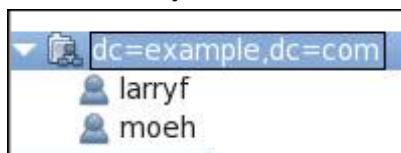
2. Create a group in the external LDAP system and add a user to it.

   a. Click the base node, **dc=example,dc=com** again. Right-click and this time select **New Group**.

   b. For **Name**, enter `boss`.

   c. Ensure that **Static Group** is selected.

   d. Click the **Add Members** button.

   e. Select the **moeh** user and click **OK**.

   f. Click **OK** again.

   g. Close the "Entry created" dialog box.

   Note: It may be behind other windows.

   h. Close the Manage Entries dialog box.

   i. Exit the control panel.

   Tip: Click the "**X**" at the top right, or select **File** > **Exit**.

   j. Close the Terminal window.

3. Open the WebLogic Server administration console.

4. Add the external LDAP system as an authentication provider to the domain's security realm.

   a. In the Change Center, click the **Lock & Edit** button.

   b. In the Domain Structure, select **Security Realms**.

   c. In the Realms table, click **myrealm**.

   d. Click the **Providers** > **Authentication** tabs.

   e. Click the **New** button.

   f. Enter or select the following, then click **OK**.

Field	Value
Name	CompanyLDAP
Type	LDAPAuthenticator

   g. In the Authentication Providers table, click the name of the new provider.

   h. Click the **Configuration > Provider Specific** tabs.

   i. Enter the following values, then click **Save**.

Field	Value
Host	host02.example.com
Port	7878
Principal	cn=Directory Manager
Credential	Welcome1
Confirm Credential	Welcome1
User Base DN	dc=example,dc=com
User Name Attribute	uid
Group Base DN	dc=example,dc=com
Static Group Name Attribute	cn

   Note: Any fields not mentioned should be left at their default values.

5. Adjust the authentication provider processing order and control flags.

   a. Use the breadcrumbs (at the top of the administration console) to return to the Authentication Providers table.

   Home > Summary of Security Realms > myrealm > Providers > CompanyLDAP

   b. Click the **Reorder** button.

   c. Select providers and use the arrow buttons (▲ ▼) to put the authentication providers in the following order:
      – CompanyLDAP
      – DefaultAuthenticator
      – DefaultIdentityAsserter

   d. Once the order is correct, click **OK**.

   e. In the Authentication Providers table, click the **CompanyLDAP** provider.

   f. Ensure that the **Configuration > Common** tabs are selected.

   g. Set the **Control Flag** to **Sufficient**.

   h. Click **Save**.

   i. Similarly, edit **DefaultAuthenticator** and set its **Control Flag** to **Sufficient** as well. Save that change.

   j. In the Change Center, click **Activate Changes**.

   Note: Notice the message that some items must be restarted. You need to stop and start all servers that are running. (The admin server and the managed servers need to access the new external LDAP.)

6. Navigate to the practice folder and execute the following script to disable the user cache.

   ```
   $ cd /practices/part1/practice16-01
   $ ./disable_cache.sh
   ```

7. Stop all the managed servers.

   a. In the Domain Structure, expand **Environment** and then select **Servers**.

   b. On the right, click the **Control** tab.

   c. Select the check box next to any managed server that is running. Click the **Shutdown** button and select **Force Shutdown Now**. When asked to confirm, click **Yes**.

   d. Wait a moment and refresh the screen. Ensure that the "State" column in the table confirms that all managed servers are shut down.

8. Stop and restart the administration server.
   a. Connect to host01.
   b. Find the Terminal window in which the admin server is running.
   c. Press **Ctrl + C** in the admin server window.
   Note: This has the same effect as Force Shutdown Now.
   d. Use the up arrow to bring back the command issued to start the admin server, and start it again.
      $ **./startWebLogic.sh**
9. Access the WebLogic Server administration console again.
10. Restart all the managed servers in cluster2.
    a. In the Domain Structure, expand **Environment** and then select **Clusters**.
    b. Click on the name of **cluster2**.
    c. Click the **Control** tab.
    d. Select the check box next to all the managed servers in cluster2. Click the **Start** button. When asked to confirm, click **Yes**.
    e. Wait a moment and refresh the screen. Ensure that the "State" column in the table confirms that all these managed servers are RUNNING.
11. Deploy and start an application that uses role-based security. This application uses its deployment descriptors to:
    – Define a role called manager.
    – Protect certain resources, which only users in the manager role are allowed to access.
    – Map the manager role to a principal called boss.

    Therefore, any user in the boss group should be allowed to access the protected resources.

    a. Open a new Terminal window on host01 and navigate to the current practice directory. Copy the new application to the domain's application directory.
       $ **cd /practices/part1/practice16-01**
       $ **cp timeoff.war /u01/domains/part1/wlsadmin/apps**
    b. Return to the web browser running the admin console.
    c. In the Change Center, click **Lock & Edit**.
    d. In the Domain Structure, select **Deployments**.
    e. Above the Deployments table, click **Install**.
    f. Using the links, navigate to:
       host01.example.com/u01/domains/part1/wlsadmin/apps
    g. Select the option button in front of **timeoff.war** and click **Next**.
    h. Ensure that **Install this deployment as an application** is selected. Click **Next**.
    i. Select **cluster2**. Ensure that **All servers in the cluster** is selected. Click **Next**.
    j. Do not change any optional settings. Click **Next**.
    k. Select **No, I will review the configuration later**. Click **Finish**.
    l. In the Change Center, click **Activate Changes**.
    m. Return to the Deployments table. Select the check box in front of the **timeoff** application.

n. Click **Start** and select **Servicing all requests**. Click **Yes**.

o. Ensure the state of the timeoff application is now "Active."

p. Close the web browser. If any other web browsers are open, close them, too.

Why? You do not want to be logged in to anything.

12. Use the new application. Log in as a user that does not have the correct role to access the protected resources.

a. Open the web browser.

b. In the web browser, enter the URL to access the new timeoff application:

http://host01.example.com:7777/timeoff

c. The timeoff application opens.

d. Click the **Request Time Off** link.

> **Welcome To Time Off Requests**
>
> Request Time Off

e. Fill out the form and click the **Submit Report** button.

f. Click the **Back to Home Page** link.

Note: This part of the application is not protected, so it is open to anyone.

g. Now try the **Close an Office** link.

> **Welcome To Time Off Requests**
>
> Request Time Off
>
>
>
> Managers Only:
> Close an Office

h. When the "Log In" page displays, enter the username and password of the non-manager and then click **Log In**.

– **User Name: larryf**

– **Password: Welcome1**

> **Please Log In**
>
> Username [   ]
> Password [   ]
> [Log In]

i. Since Larry does not have the correct role, you get an error.

Error 403--Forbidden

From RFC 2068 *Hypertext Transfer Protocol -- HTTP/1.1:*

10.4.4 403 Forbidden

   j.   Close the web browser.

13. Use the new application again. This time, log in as a user that does have the correct role to access the protected resources.

   a.   Open the web browser.

   b.   In the web browser, enter the URL to access the new timeoff application:

       http://host01.example.com:7777/timeoff

   c.   The timeoff application opens.

   d.   Click the **Close an Office** link.

   e.   When the "Log In" page displays, enter the username and password of the manager and then click **Log In**.

      – **User Name: moeh**

      – **Password: Welcome1**

   f.   This time, because Moe is a manager, you are taken to the "Close an Office Form."

Close An Office Form

Date   [   ]
Reason [   ]
       [Submit]

Back to Home Page

Note: The user Moe (uid: moeh) was placed in the boss group. The boss principal was mapped to the role manager by the application's deployment descriptor. The protected resources (particular pages in the web application) allow the role manager to have access.

   g.   Enter a **Date** and a **Reason** and click the **Submit Form** button.

   h.   On the next page, click the **Back to Home Page** link.

   i.   Close the web browser.

Practice Solution: Configuring an Authentication Provider

Perform the following tasks if you did not do this practice and want to use the finished solution.

Assumptions

You completed "Practice 13-2: Configuring a Cluster Proxy."

The administration server and the four servers in the dynamic cluster are currently running.

OHS is running.

Solution Tasks

1. Connect to host02.

    Note: Notice that this is host<u>02</u>, not host01.

2. Run the solution script.

    a. In a Terminal window, run the solution script.

        ```
        $ cd /practices/part1/practice16-01
        $ ./solution.sh
        ```

    Note: This script runs an executable under the `bin` directory of the LDAP server that imports users and a group. It then calls another executable that starts the LDAP server. Next, it calls a WLST script that creates the external LDAP authentication provider within the domain. Finally, it calls two more scripts: one stops all the servers in cluster2, the next starts them up again. (Servers must be rebooted for the authentication provider changes to take effect.) Stopping and starting the servers can take a while, so be patient.

    b. Close the Terminal window.

3. Connect to host01. Run a script to deploy an application to the dynamic cluster. Then stop and restart the administration server.

    a. In a Terminal window, run the deployment script.

        ```
        $ cd /practices/part1/practice16-01
        $ ./deploy.sh
        ```

    Note: If you get the WLContext.close() warning, ignore it.

    b. Close the Terminal window.

    c. Find the window in which the admin server is running. Press **Ctrl + C**.

    d. Once the server has stopped, use the up arrow to bring back the last command entered (`startWebLogic.sh`). Press enter to run it.

        ```
        $ ./startWebLogic.sh
        ```

    Note: If you do not have a boot identity file, when prompted, enter the username and password (**weblogic** and **Welcome1**).

    e. Wait for the server to indicate it is in RUNNING mode.

Practices for Lesson 17: Backing Up a Domain and Upgrading WebLogic Server

Chapter 17

Practices for Lesson 17: Overview

Practices Overview

In this practice, you back up a domain. You then restore from that backup.

Practice 17-1: Backing Up and Restoring a Domain

Overview

In this practice, you back up the domain. You stop servers and remove the existing domain directories from one of the hosts. You restore the domain from the backup and restart the servers on that machine to ensure the backup is working properly.

You also set up the domain to automatically back up the configuration when changes are made.

Assumptions

You completed "Practice 13-2: Configuring a Cluster Proxy."

The administration server and the four servers in the dynamic cluster are currently running.

OHS is running.

Tasks

1. Lock the domain configuration by using the WebLogic administration console.

    a. In the Change Center, click **Lock & Edit**.

    Note: Although in the classroom, no other administrator will be making configuration changes to your domain, in the real world this step is recommended to keep other administrators from making changes to the domain configuration while the backup is being created.

2. Create a backup of the domain on host01.

    Note: You are just backing up the domain. This is just one of the tasks you would perform in an online backup.

    a. Open a Terminal window on host01. Navigate to the directory that holds the domain: `/u01/domains/part1`.

    $ **cd /u01/domains/part1**

    b. Create a backup of the domain.

    $ **tar -zcpvf /home/oracle/wlsadminbackup.tarz wlsadmin**

    Note: The options are:

    - z: Zip the archive
    - c: Create archive
    - p: Preserve file and directory permissions
    - v: Verbose output
    - f: File name

3. Use the admin console to set up automatic domain configuration backups.

    a. Return to the admin console.

    b. In the Domain Structure, click on the domain, **wlsadmin**.

    c. Ensure that the **Configuration** and **General** tabs are selected.

    d. Scroll down and click **Advanced**.

    e. Scroll down again and select **Configuration Archive Enabled**.

    f. Set **Archive Configuration Count** to **5**.

    g. Click the **Save** button.

    h. In the Change Center, click **Activate Changes**.

4. Make sure the cluster2 servers on host02 (machine2) are running.

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to use this Student Guide.

a. In the Domain Structure, expand **Environment** and select **Clusters**.

b. In the Clusters table, select **cluster2**.

c. Click the **Control** tab.

d. Make sure the servers that run on machine2 are running. If not, select their check boxes, click **Start**. Then click **Yes**.

5. Stop all servers in the domain that are running on host01 (machine1).

a. In the Domain Structure, expand **Environment** and select **Servers**.

b. Click the **Control** tab.

c. Select the check box in front of any managed servers that are currently running on machine1 (which is host01). Click **Shutdown** > **Force Shutdown Now**. Then click **Yes**. Wait for a little while and refresh the web browser. Ensure that the State of the servers is SHUTDOWN.

d. Now, select the check box in front of the admin server. Click **Shutdown** > **Force Shutdown Now**. Then click **Yes**.

Note: Notice the message that you no longer have an administration console, because the admin server is shutting down.

6. Find the Node Manager running on host01 and stop it.

Note: You want to stop Node Manager before removing its directory.

a. Find the Terminal window on host01 that is running Node Manager. Stop it by pressing **Ctrl + C** in the window. Do not close this Terminal window, you will use it later.

7. Simulate a "media failure" by renaming the domain directory. (You could delete it, but we will rename it, just in case the backup does not work.)

a. Open a new Terminal window on host01. Rename the domain directory.

Note: The command is shown on two lines due to space limitations. Enter it on one line.

```
$ mv /u01/domains/part1/wlsadmin

                                /u01/domains/part1/wlsadminorig
```

8. Before restoring the domain on host01 and starting the admin server and some managed servers, notice that the servers on host02 (machine2) continue to run.

a. Return to the web browser. Use it to access an application running on the two remaining cluster2 servers, which are both running on machine2. You will access them through the OHS cluster proxy. Depending upon which practices you have completed, you may have the contacts, supplies, or timeoff applications to try. Their URLs are:

```
http://host01.example.com:7777/contacts
```

```
http://host01.example.com:7777/supplies
```

```
http://host01.example.com:7777/timeoff
```

9. Restore the domain on host01 from the backup.

Note: You could alternatively use the Weblogic pack and unpack commands to back up your domain. The entire domain must be shut down prior to using pack and unpack.

a. In the Terminal window on host01, navigate to the directory that contained the domain directory.

```
$ cd /u01/domains/part1
```

b. Restore the domain directory.

```
$ tar –zxpvf /home/oracle/wlsadminbackup.tarz
```

Note: The options are:

– z: Unzip the archive

- – `x`: Extract the archive
- – `p`: Preserve file and directory permissions
- – `v`: Verbose output
- – `f`: File name

10. Restart the Node Manager on host01.

    a. Find the Terminal window on host01 in which Node Manager was running. Use the up arrow to retrieve the last command entered. Start Node Manager again by entering the command:

    `$ ./startNodeManager.sh.`

11. Start the admin server.

    a. Find the Terminal window in which the admin server was running. Use the up arrow to retrieve the last command entered. Start the admin server by entering that command:

    `$ ./startWebLogic.sh`

    Note: If the window has been closed, open a new Terminal window, navigate to the domain directory and start the admin server.

    `$ cd /u01/domains/part1/wlsadmin`

    `$ ./startWebLogic.sh`

    Note: Wait for the server to show it is in RUNNING mode.

12. Open the WebLogic administration console.

13. Start the two managed servers in cluster2 that run on machine1 (and that use the domain directories just restored).

    a. In the Domain Structure, expand **Environment**, and select **Servers**.

    b. Click the **Control** tab.

    c. Select the check box in front of the two managed servers in cluster2 that are on `machine1` (which is host01).

    Note: The servers are `cluster2server-1` and `cluster2server-3`.

    d. Click **Start**. Then click **Yes**.

    e. Wait for a little while and refresh the web browser. Ensure the State of the servers is RUNNING.

    Note: You have restored the "missing" domain files from a backup and restarted the servers running on that machine.

Practice Solution: Backing Up and Restoring a Domain

There is no solution to this practice.

Appendix A: Connecting to the Environment

Chapter 18

Overview

The set of Oracle WebLogic Server 12*c* courses are offered in multiple formats. Each format requires a different form of connecting to the environment to work with the hands-on practices of the course. To accommodate this, the connection instructions within each course generically tell you to connect to your hosts and leave the connection details to this document. Refer to this document and your instructor whenever you have questions about connecting to your lab environment.

Instructor-Led Training (ILT) or Live Virtual Class (LVC)

Environment: OVM

Primary Machine Connection: Ask your instructor to provide you with Oracle University's instructions for connecting to your environment.

Virtual Machine Instances: Connectivity is made by clicking the provided VNC shortcuts on the primary machine's desktop. Note that the password entered to connect via VNC is not the operating system password, but rather it is the password used to connect to the VNC server.

1. Accessing host01.

   From your gateway machine, double-click the **VNC Viewer - host01** icon on the desktop. You connect to host01 as the `oracle` user. (The Username field is not displayed.) Enter **oracle** in the Password field (it displays as **********) and press the Enter key.

2. Accessing host02.

   From your gateway machine, double-click the **VNC Viewer - host02** icon on the desktop. You connect to host02 as the `oracle` user. (The Username field is not displayed.) Enter **oracle** in the Password field (it displays as **********) and press the Enter key.

Appendix A: Connecting to the Environment
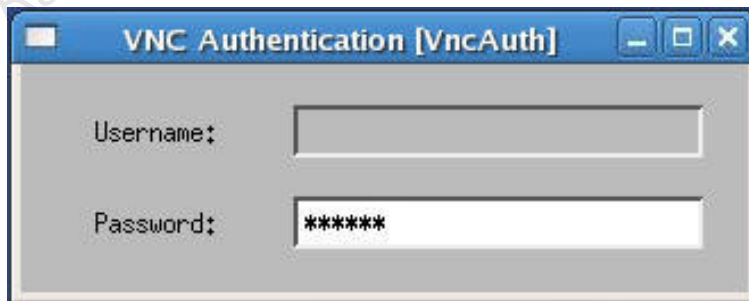
Training On Demand (TOD)

Environment: OVM

Primary Machine Connection: Ask your instructor to provide you with Oracle University's instructions for connecting to your environment.

Virtual Machine Instances: Ask your instructor to provide you with Oracle University's instructions for connecting to your environment.

Course Practice Environment: Security Credentials

For OS usernames and passwords, see the following:

- If you are attending a classroom-based or live virtual class, ask your instructor or LVC producer for OS credential information.
- If you are using a self-study format, refer to the communication that you received from Oracle University for this course.

For product-specific credentials used in this course, see the following table:

Product-Specific Credentials		
Product/Application	**Username**	**Password**
Oracle WebLogic Server	weblogic	Welcome1
Oracle Database	system	Welcome1
Oracle Database	oracle	Welcome1
Oracle HTTP Server	weblogic	Welcome1

Practices for Lesson Intro: Course Practice Environment