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Oracle Enterprise Manager Cloud Control 13*c*: Install & Upgrade

Activity Guide

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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 the product-specific credentials that are used in this course, see the following table:

host01.example.com Product-Specific Credentials		
Product/Application	**Username**	**Password**
Operating system	`root`	`oracle`
Operating system	`oracle`	`oracle`

orcl database instance	`system`
	`sys`
	`dbsnmp`
		`oracle_4U`
		`oracle_4U`
		`oracle_4U`

em13c.example.com Product-Specific Credentials		
Product/Application	**Username**	**Password**
Operating system	`root`	`oracle`
Operating system	`oracle`	`oracle`
em13rep database instance	`system` `sys`	`oracle_4U` `oracle_4U`

Enterprise Manager Cloud Control 13*c* installation practice	`weblogic`
	
	`nodemanager`
	
	`sysman`
	`Agent registration`
		`webl0gic`
		(w.e.b.l.zero.g.i.c)
		`n0demanager`
		(n.zero.d.e.m.a.n.a.g.e.r)
		`Oracle123`
		`Oracle123`

Enterprise Manager Cloud Control 13*c* Initial Setup Console practice	`emadmin` `bipuser`	`emadmin` `bipuser`
Enterprise Manager Cloud Control 13*c* for UI practice	`sysman`	`Oracle123`

em12c.example.com Product-Specific Credentials		
Product/Application	**Username**	**Password**
Operating system	root	oracle
Operating system	oracle	oracle
emrep database instance	system	oracle_4U
	sys	oracle_4U
Enterprise Manager Cloud Control 12*c*	sysman	Oracle123
	weblogic	webl0gic
		(w.e.b.l.zero.g.i.c)
	nodemanager	n0demanager
		(n.zero.d.e.m.a.n.a.g.e.r)

Practices for Lesson 1: Introduction

Overview

Practices for Lesson 1: Overview

Practices Overview

In these practices, you use Oracle VM VirtualBox to restore a virtual machine (VM) to a snapshot in time, start the VM, switch the VM to full-screen mode, and exit the full-screen mode to return to the base operating system.

# Practice 1-1: Using Oracle VM VirtualBox

Overview

In this practice, you use Oracle VM VirtualBox to restore a VM snapshot, start that VM, and then switch it to full-screen mode before returning to control the base operating system.

Assumptions

Your instructor has provided you with the OS credentials for your classroom environment.

Tasks

1. Log in to your classroom machine as vncuser.

2. Start Oracle VM VirtualBox Manager from the menu: *Applications > System Tools > Oracle VM VirtualBox.*

3. Highlight the host01.example.com VM and click the **Snapshots** button to display the list of snapshots.
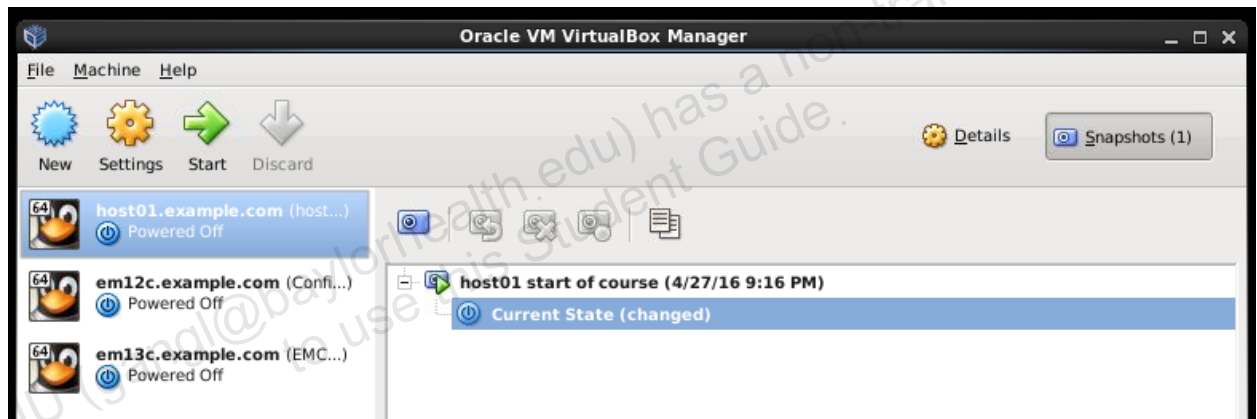
4. Highlight the snapshot called "host01 start of course" and click the **Restore Snapshot**

   button .

   In the VirtualBox - Question dialog box, **deselect** the check box to create a snapshot of the current machine state if it is shown, and click **Restore**.
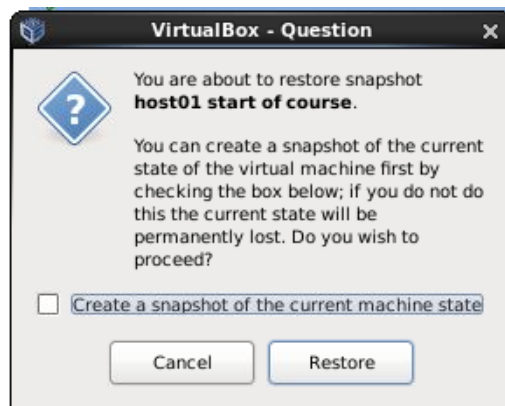
5. Start the `host01.example.com` VM by clicking the **Start** button or by selecting the *Machine > Start* menu option.

6. After the VM starts, manually switch to full-screen mode from the VM menu: *View > Switch to Fullscreen*.

You will be presented with a VirtualBox - Information dialog box that states that the VM will be switched to full-screen mode. Allow this to happen by clicking the **Switch** button.

Your desktop shows the GUI of `host01.example.com` (discernible by the visual cue in the desktop background), logged in as the `oracle user` (as shown in the GUI menu panel).

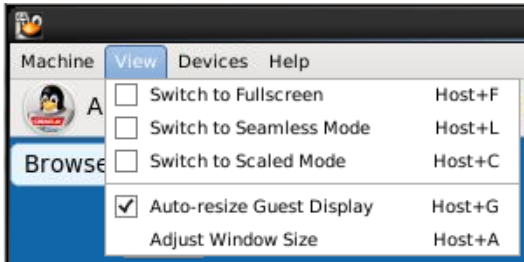7. Return to your classroom machine's GUI by minimizing the `host01` GUI.

a. Move your cursor to the center of the screen towards the bottom to reveal the VM toolbar and click the **Minimize Window** icon.
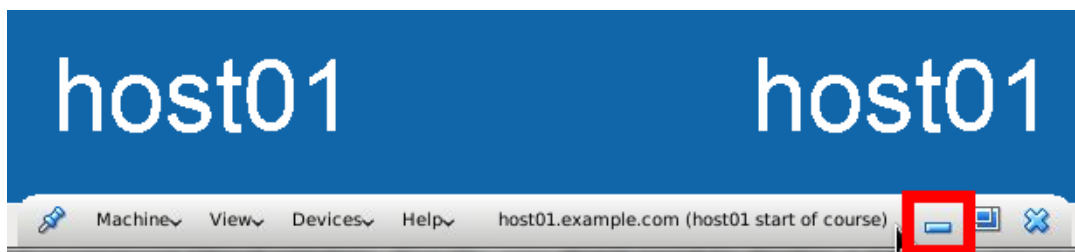
The `host01` GUI will be minimized to the window list on your classroom machine and control will be returned to your classroom machine's desktop GUI.

8. Switch back to the `host01` GUI and start a terminal session.

a. Restore the `host01` GUI by clicking the host01.example.com button in the list of windows.

b. Start a terminal session from the menu: Applications > System Tools > Terminal.

c. List the processes owned by the `oracle` user.

```
[oracle@host01 ~]$ ps -fu oracle
UID          PID  PPID  C STIME TTY           TIME CMD
oracle      2652     1  0 Feb03 ?          00:00:38
/u01/app/oracle/product/12.1.0/d
oracle      3044     1  0 Feb03 ?          00:01:04 ora_pmon_orcl
…
```

9. Exit the full-screen mode of the `host01` VM to experience another way of returning to your machine's GUI.

   a. Move your cursor to the center of the screen towards the bottom to reveal the VM toolbar and click the **Exit Full Screen** icon.
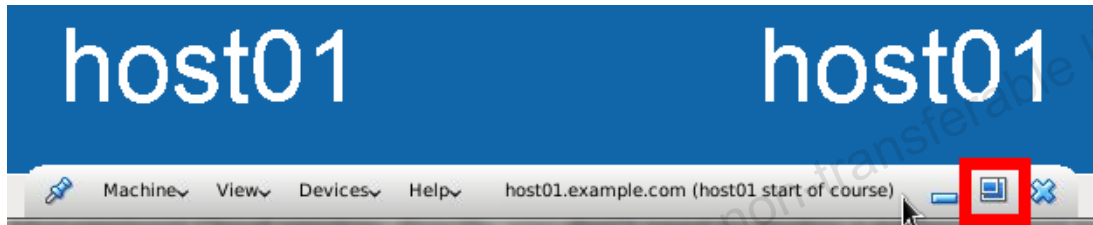
   The `host01` GUI will be minimized and presented as a normal application window on your desktop.

10. When running multiple virtual machine GUIs, as you will most likely do, working in full-screen mode can often be less confusing, so switch `host01` back to full-screen mode.

    a. From the `host01` VM's window menu, select *View > Switch to Fullscreen* and click **Switch** in the Information dialog box.

11. Minimize `host01` to reveal your desktop.

    a. Move your cursor to the center of the screen towards the bottom to reveal the VM toolbar and click the **Minimize Window** icon. The `host01` GUI will be minimized and you will be able to view the standard desktop.

Practices for Lesson 1: Introduction

Practice 1-2: Getting to Know the Cloud Control 13*c* Interface

Overview

In this practice, you log in to the Enterprise Manager Cloud Control 13*c* console and explore the user interface.

Assumptions

There are no assumptions for this practice.

Tasks

1. Start the `em13c.example.com` VM by using Oracle VM VirtualBox Manager.

   a. Return to the Oracle VM VirtualBox Manager interface. If it is not running, start Oracle VM VirtualBox Manager from the menu: *Applications > System Tools > Oracle VM VirtualBox.*

   b. Highlight the `em13c.example.com` VM and click the **Snapshots** button to display the list of snapshots.

   c. Highlight the snapshot called "EMCC13*c* ready to use for UI lab" and click the **Restore Snapshot** button. In the VirtualBox - Question dialog box, **deselect** the check box to create a snapshot of the current machine state if it is shown, and click **Restore**.

   d. Start the `em13c.example.com` VM by clicking the **Start** button or by selecting the *Machine > Start* menu option.

   e. If you are presented with an Information dialog box that states that the VM will be switched to full-screen mode, allow this to happen by clicking the **Switch** button. Your desktop will show the GUI of `em13c.example.com` with the browser open at the Enterprise Manager Cloud Control 13*c* console login page.

2. Log in to the Enterprise Manager Cloud Control 13*c* console as the `sysman` user. Refer to the security credentials list for the password.

   The home page for the `sysman` user has been set to the Enterprise Summary page, so this is the page that you see when you log in as `sysman`.

3. Everything that Enterprise Manager Cloud Control 13*c* monitors is referred to as a *target*.

   a. View the list of all monitored targets in this setup by navigating to **Targets > All Targets**.

   b. Restrict the list of targets to show only host targets by clicking the **Host** link in the Refine Search panel on the left.

   c. Every target has its own home page where you can see more details as well as initiate monitoring and management actions. Open the home page for host `em13c.example.com` (where Enterprise Manager Cloud Control 13*c* is running) by clicking the link `em13c.example.com`.

4. The Setup menu allows you to monitor, manage, and configure Enterprise Manager Cloud Control 13*c*.

   a. Open the Health Overview page by navigating to **Setup > Manage Cloud Control > Health Overview.**

5. Users can change their preferences, such as their home page, by using the menu that has their username as its title. One of these preferences is called Projector Color Contrast and is intended to make the Enterprise Manager Cloud Control 13*c* console pages friendlier when displayed on a large screen or using a projector. It can also be useful if you ever feel the need for more contrast in the Cloud Control 13*c* console pages. Set this preference now:

    a. Select the menu option: **SYSMAN > Preferences > Projector Color Contrast.**

    b. After a short interval, the screen is redrawn with more contrasting colors.

6. The History menu allows you to efficiently navigate to the target and other pages that you have recently visited.

    a. Return to the em13c.example.com host page by selecting the menu option: **History > em13c.example.com.**

7. Log out from the Enterprise Manager Cloud Control 13*c* console. The logout option is available under the user's menu.

    a. Select the menu option: **SYSMAN > Log Out**.

8. You will not be using this VM snapshot again, so close em13c.example.com in preparation for subsequent practices.

    a. Move your cursor to the center of the screen towards the bottom to reveal the VM toolbar and select Machine > Close.

    b. In the Close Virtual Machine dialog box, select Power off the machine. *Do Not* select the option to restore the current snapshot.

    c. Click OK.

Practices for Lesson 2: Architecture and Implementation Options

Overview

Practices for Lesson 2: Overview

Practices Overview

In these practices, you install Enterprise Manager Cloud Control 13*c* in a single-server topology, discover a host and its targets, and explore the EM CC 13*c* user interface.

Practice 2-1: Installing Cloud Control in a Single-Server Topology

Overview

In this practice, you install Enterprise Manager Cloud Control 13*c* in a single-server topology, starting with the database instance that will house the Oracle Management Repository, and then the Oracle Management Service. You then log in to the Cloud Control Console to confirm whether the installation was a success before applying patches to your repository and OMS.

Assumptions

- You are logged on to your classroom machine as `vncuser`.
- Only the virtual machines (VMs) that are required for this practice are running while the exercises are being attempted.

Tasks

1. Start the `em13c.example.com` VM by using Oracle VM VirtualBox Manager.

    a. If it is not running, start Oracle VM VirtualBox Manager from the menu: *Applications > System Tools > Oracle VM VirtualBox.*

    b. Highlight the `em13c.example.com` VM and click the **Snapshots** button to display the list of snapshots.

    c. Highlight the snapshot called "DB 12.1.0.2 installed" and click the **Restore Snapshot** button. In the VirtualBox - Question dialog box, **deselect** the check box to create a snapshot of the current machine state if it is shown, and click **Restore**.

    d. Start the `em13c.example.com` VM by clicking the **Start** button or by selecting the *Machine > Start* menu option.

    e. If you are presented with an Information dialog box that states that the VM will be switched to full-screen mode, allow this to happen by clicking the **Switch** button. Your desktop will show the GUI of `em13c.example.com` (discernible by the visual cue in the desktop background).

2. Establish a terminal session for executing Enterprise Manager Cloud Control command-line operations on `em13c.example.com`.

    a. Open a terminal session from the menu in the `em13c` VM's GUI console: *Application > System Tools > Terminal.*

    b. Because this is where you will perform all Enterprise Manager Cloud Control-related command-line operations for this practice, change the prompt to clearly identify its use.

    ```
    [oracle@em13c ~]$ export PS1='EM '$PS1
    EM [oracle@em13c ~]$
    ```

    For the rest of this practice, we will refer to this terminal session as the "EM session."

3. Typically, hardware and software requirements are checked ahead of time based on the installation documentation. Before starting the installation, it is recommended that you run the installer's prerequisite checks to verify the host's suitability for the installation, which

gives you an opportunity to fix any parameters that may need to be adjusted. In your environment, all parameters have been set to the required values, and the output will reflect this fact.

Note: Execute these commands in the **EM session**.

a. Navigate to the directory where the installation media is staged and execute the prerequisite checks.

```
EM [oracle@em13c ~]$ cd /stage/emcc13c/emcc13cR2/
```

```
EM [oracle@em13c emcc13cR2]$ ./em13200_linux64.bin \
-prereqchecker \
-entryPoint "oracle.sysman.top.oms_Core" \
-silent \
-J-Djava.io.tmpdir=/u02/temp
0%...........................................................
.100%
Launcher log file is /u02/temp/OraInstall2017-01-17_07-46-
43PM/launcher2017-01-17_07-46-43PM.log.
Starting Oracle Prerequisite Checker


Checking if CPU speed is above 300 MHz.    Actual 3391.746 MHz
Passed
Checking swap space: must be greater than 512 MB.    Actual 8197
MB    Passed
Checking if this platform requires a 64-bit JVM.    Actual 64
Passed (64-bit not required)
Checking temp space: must be greater than 300 MB.    Actual 22089
MB    Passed


Preparing to launch the Oracle Universal Installer from
/u02/temp/OraInstall2017-01-17_07-46-43PM
Oracle Prerequisite Checker Version 13.8.0.0.0 Production
Copyright (C) 1999, 2015, Oracle. All rights reserved.


Starting execution of prerequisite checks...
Total No of checks: 12


Performing check for CertifiedVersions
S_CHECK_CERTIFIED_VERSIONS
Expected result: One of enterprise-6,redhat-6,oracle-7,redhat-
7,oracle-8,SuSE-11,SuSE-12
Actual Result: redhat-6
Check complete. The overall result of this check is: Passed
```

Practices for Lesson 2: Architecture and Implementation Options

```
Check complete: Passed
========================================================
…
PrereqChecks complete


Logs are located here: /u02/temp/OraInstall2017-01-17_07-46-
43PM.
EM [oracle@em13c emcc13cR2]$
```

Note that some of the checks may fail, such as kernel parameters and total memory. This is to be expected because your classroom environment is running with limited compute resources and your VMs have been sized accordingly, even though this does not entirely meet Enterprise Manager Cloud Control prerequisites.

b. Change to the log directory and list the files within, looking for the prereqchecker log.

Note that your directory will differ from the one in the following example:

```
EM [oracle@em13c emcc13cR2]$ cd \
/u02/temp/OraInstall2017-01-17_07-46-43PM
```

```
EM [oracle@em13c OraInstall2017-01-17_07-46-43PM]$ ls -1
install
install7780260219369623385.sh
launcher2017-01-17_07-46-43PM.log
OPatch
oracle_common
oraInstall2017-01-17_07-46-43PM.err
oraInstall2017-01-17_07-46-43PM.out
oui
prereqchecker2017-01-17_07-46-43PM.log
response
results
stage
sysman
EM [oracle@em13c OraInstall2017-01-17_07-46-43PM]$
```

c. View the prereqchecker log. Its contents are the same as the output that you saw on the screen, wrapped in some diagnostic information.

```
EM [oracle@em13c OraInstall2017-01-17_07-46-43PM]$ view \
> prereqchecker2017-01-17_07-46-43PM.log
```

4. Establish a terminal session for executing database operations on em13c.example.com.

---

a. Open a terminal session from the menu: *Application > System Tools > Terminal.*

b. This is where you will perform all database-related command-line operations for this practice, so change the prompt to clearly identify its use.

```
[oracle@em13c ~]$ export PS1='DB '$PS1
DB [oracle@em13c ~]$
```

c. Set the environment to include the Oracle 12.1.0.2 Database software in the path, even though we don't yet have a database.

```
DB [oracle@em13c ~]$ . oraenv
ORACLE_SID = [oracle] ? <Enter>
ORACLE_HOME = [/home/oracle] ?
/u01/app/oracle/product/12.1.0/dbhome_1
The Oracle base has been set to /u01/app/oracle
DB [oracle@em13c ~]$
```

For the rest of this practice, we will refer to this terminal session as the "DB session."

5. Your em13c.example.com Virtual Machine already has Oracle Database 12*c* software installed. You will create a database instance that will host the Oracle Management Repository by using the Database Creation Assistant (DBCA) and predefined management repository templates. DBCA creates and starts the new database instance.

Preconfigured management repositories are offered by Oracle in the form of database templates and are available for download from Oracle Technology Network (OTN).

In your environment, these database templates are staged as
`/stage/emcc13c/emcc13cR2/12.1.0.2.0_Database_Template_for_EM13_2_0_0_0_Linux_x64.zip`.

Note: Execute these commands in the **DB session**.

a. Extract the database template files to the DBCA templates directory.

Note: Notice the use of the backslash (\) followed by the Enter key to allow the shell command to continue over multiple lines.

Note: In Linux, when having to type in directory paths and file names, take advantage of tab completion. Typing in a part of a file name or directory path, and then pressing the Tab key will expand the directory or file as far as possible. A double tap on the Tab key will show all directories and files that match whatever you have typed so far, and typing in some more followed by the Tab key should complete the directory or file name that you want. When entering a long directory path, get into the habit of typing the slash character, then one or two characters of the directory, then tab to complete the directory name, and then use the slash character again, and so on. After a while, you will become adept at quickly entering directory paths and file names.

```
DB [oracle@em13c ~]$ cd /stage/emcc13c/emcc13cR2
```

```
DB [oracle@em13c emcc13cR2]$ unzip \
12.1.0.2.0_Database_Template_for_EM13_2_0_0_0_Linux_x64.zip \
-d $ORACLE_HOME/assistants/dbca/templates
```

Practices for Lesson 2: Architecture and Implementation Options

b. Start the Database Creation Assistant, DBCA.

```
DB [oracle@em13c emcc13cR2]$ dbca
```

c. Select the Database Operation "Create Database" and click **Next**.

d. Select the "Advanced Mode" Creation Mode and click **Next**.

e. Select the "12.1.0.2.0 Database Template for EM13 2 0 0 0 Small deployment" template and click **Next**.

f. Enter the following values for Database Identification, and click **Next**.

Global Database Name	em13rep.example.com
SID	em13rep

g. **Deselect** the option to "Configure Enterprise Manager (EM) Database Express" on the Management Options page.

Deselecting this option will prevent Database Express (part of the 12*c* database distribution) from being configured because it clashes with the Enterprise Manager Cloud Control schema.

h. Select "Use the Same Administrative Password for All Accounts" on the Database Credentials page, enter the sys and system password from your Security Credentials list as the Administrative Password, and click **Next**.

i. Use the listener called LISTENER (selected by default) and click **Next**.

j. Select Use Database File Locations from Template and click **Next**.

k. Accept the default option to **not** install the sample schemas or run any scripts and click **Next**.

l. Accept the template's Custom Settings for Memory allocations and click **Next**.

m. Leave the "Create Database" option selected and click **Next**.

n. Click Finish on the Summary page to initiate creation of the database. You will be presented with the DBCA progress window.

o. When complete, you will see the database creation Finish page. Click **Close** to exit DBCA.

6. Confirm that the database is created and registered with the listener.

Note: Execute these commands in the **DB session**.

a. First, set your environment to point to the newly created database.

```
DB [oracle@em13c emcc13cR2]$ . oraenv
ORACLE_SID = [oracle] ? em13rep
The Oracle base remains unchanged with value /u01/app/oracle
```

b. Check the **status** of the listener to confirm that it is running and the newly created database has been registered with it.

```
DB [oracle@em13c emcc13cR2]$ lsnrctl status

LSNRCTL for Linux: Version 12.1.0.2.0 - Production on 17-JAN-
2017 20:23:10
```

```
Copyright (c) 1991, 2014, Oracle.  All rights reserved.


Connecting to
(DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=em13c.example.com)(POR
T=1521)))
STATUS of the LISTENER
----------------------
Alias                     LISTENER
Version                   TNSLSNR for Linux: Version 12.1.0.2.0
- Production
Start Date                04-APR-2016 04:25:15
Uptime                    288 days 15 hr. 57 min. 55 sec
Trace Level               off
Security                  ON: Local OS Authentication
SNMP                      OFF
Listener Parameter File
/u01/app/oracle/product/12.1.0/dbhome_1/network/admin/listener.o
ra
Listener Log File
/u01/app/oracle/diag/tnslsnr/em13c/listener/alert/log.xml
Listening Endpoints Summary...

(DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=em13c.example.com)(POR
T=1521)))
  (DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(KEY=EXTPROC1521)))
Services Summary...
Service "em13rep.example.com" has 1 instance(s).
  Instance "em13rep", status READY, has 1 handler(s) for this
service...
Service "em13repXDB.example.com" has 1 instance(s).
  Instance "em13rep", status READY, has 1 handler(s) for this
service...
The command completed successfully
DB [oracle@em13c ~]$
```

7. **Note: This step is for your information only.**

The EM Prerequisite Kit (empreqkit) is automatically called at installation time to check that your database instance is suitable to be used as the Oracle Management Repository (OMR). However, you can call it beforehand, similar to the operating system prerequisite checks.

The empreqkit is designed to be run a number of times through a life cycle of operations: listing prerequisites, running the prerequisite checks, showing recommended corrective actions, running the recommended corrective actions, showing post-corrective actions, and running the post-corrective actions.

Note that because you created your OMR from the DBCA template without any modifications, you can simply let the installer invoke `emprereqkit` during the installation process.

8. **Note: This step is for your information only.**

   At this point, you would download and stage any additional plug-ins that may be required for your system that are not included in the default distribution. The additional plug-ins developed by Oracle are available at:
   `http://www.oracle.com/technetwork/oem/enterprise-manager/downloads/index.html`.

   You will **not** perform this step in this practice, but the Enterprise Manager for Golden Gate plug-in has been staged for you as
   `/stage/emcc13c/emcc13cR2/plugins/13.2.1.0.0_oracle.fmw.gg_2000_0.opar` and you will install this along with the standard out-of-the-box default plug-ins.

9. Install Enterprise Manager Cloud Control 13*c*R2.

   a. Launch the installer from the **EM session**, specifying where the installer can look for additional plug-ins to install and where the self-extraction should occur:

   ```
   EM [oracle@em13c OraInstall2017-01-17_07-46-43PM]$ cd \
   /stage/emcc13c/emcc13cR2
   ```

   ```
   EM [oracle@em13c emcc13cR2]$ ./em13200_linux64.bin \
   PLUGIN_LOCATION=/stage/emcc13c/emcc13cR2/plugins \
   -J-Djava.io.tmpdir=/u02/temp
   ```

   Note: On being invoked, the installer unpacks the installation media before, in turn, invoking the Oracle Universal Installer. This will take a few minutes in the virtualized classroom environment.

   b. **Deselect** "I wish to receive security updates via My Oracle Support" and click **Next**. Then click **Yes** when asked if you "Wish to remain uninformed of critical security issues in your configuration."

   c. **Skip** the check for updates (your VMs cannot access anything outside your classroom machine).

   d. The system prerequisite checks may produce a warning on some resources. Click **Ignore**, and then click **Next** to proceed.

   e. Select the option to "Create a new Enterprise Manager System" in Advanced installation mode and click **Next**.

   f. Specify the following on the Installation Details page , and then click **Next**.

Middleware Home Location	`/u02/app/oracle/product/middleware`
Agent Base directory	`/u02/app/oracle/product/agent13c`

   g. The Plug-ins page allows you to select the OMS plug-ins that are to be configured at installation time, other than the defaults.

Because you passed the PLUGIN_LOCATION parameter to the installer and pointed it to /stage/emcc13c/emcc13cR2/plugins, the installer has found the Oracle GoldenGate plug-in that has been staged there for you, and listed that along with the plug-ins that are bundled with the installer.

Select the Oracle GoldenGate plug-in and click **Next**.

h. Enter the following values on the WebLogic Server Configuration page:

WebLogic Password	Refer to the security credentials list.
Node Manager Password	Refer to the security credentials list.

Click **Next**.

i. Enter the following values on the Database Connection Details page and click **Next**:

Database Host Name	em13c.example.com
Port	1521
Service/SID	em13rep.example.com
SYS Password	Refer to the security credentials list.
Deployment Size	SMALL

j. Enter the following values on the Enterprise Manager Configuration Details page and click **Next**.

SYSMAN Password	Refer to the security credentials list.
Agent Registration Password	Refer to the security credentials list.

k. Accept the default option to configure the software library with its default location. The software library is a key component for Enterprise Manager Cloud Control 13*c* self update and private clouds.

Deselect the option to configure a shared location for BI Publisher. This is required only if you intend to install a multi-OMS topology.

Select the option to enable BI Publisher.

Click **Next**.

l. Accept the default ports on the Port Configuration Details page, taking note of the Central Console Http SSL Port, and click **Next**.

m. Initiate the installation by clicking the **Install** button on the Review page.

n. The installer will report on progress.

Note: If you let it run, the installation will take approximately one and a half hours.

10. Interrupt the installation by stopping the virtual machine, and start up the virtual machine with a snapshot that is already at the end of the installation process.

a. Stop the virtual machine by using the *Machine > Close…* menu option and elect to Power Off the machine.

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b. From Oracle VM VirtualBox Manager, display the snapshots for em13c.example.com.

c. Highlight the snapshot called "EM Installer waiting for allroot.sh" and click the **Restore Snapshot** button. In the VirtualBox - Question dialog box, **deselect** the check box to create a snapshot of the current machine state if it is shown, and click **Restore**.

d. Start em13c.example.com. The snapshot will be restored and you will be presented with the installer that would be waiting for you to execute the configuration scripts.

11. Execute the configuration script.

a. Execute the allroot.sh script as prompted by the installer by using a new terminal session that is launched from the menu: *Applications > System Tools > Terminal*.

b. Switch to the root user.

```
[oracle@em13c ~]$ su -
Password: <refer to security credentials list>
[root@em13c ~]#
```

c. Execute the allroot.sh script.

```
[root@em13c ~]# /u02/app/oracle/product/middleware/allroot.sh

Starting to execute allroot.sh ........

Starting to execute /u02/app/oracle/product/middleware/root.sh
......
/etc exist

Creating /etc/oragchomelist file...
/u02/app/oracle/product/middleware
Finished product-specific root actions.
/etc exist
Finished execution of
/u02/app/oracle/product/middleware/root.sh ......



Starting to execute
/u02/app/oracle/product/agent13c/agent_13.2.0.0.0/root.sh ......
Finished product-specific root actions.
/etc exist
Finished execution of
/u02/app/oracle/product/agent13c/agent_13.2.0.0.0/root.sh ......
[root@em13c ~]#
```

d. Click **OK** in the Execute Configuration Scripts dialog box.

e. On the Finish page, take note of the Cloud Control URL:

```
Enterprise Manager Cloud Control URL:
https://em13c.example.com:7802/em
Admin Server URL: https://em13c.example.com:7102/console
```

Click **Close** to close the installer.

12. Before you perform some patching on your newly installed Cloud Control 13*c* installation, log in to confirm that the installation was successful.

   a. Open the browser in the em13c.example.com GUI by clicking the icon in the menu panel, or by using the menu path: *Applications > Internet > Firefox Web Browser.*

   b. Stop any pages that automatically try to load. Your VM does not have access beyond your desktop machine anyway.

   c. Open the Cloud Control Console URL that is reported by the installer:

   https://em13c.example.com:7802/em

   d. Add an exception to your browser for the OMS' SSL certificate. This is required because you installed the default, out-of-the-box certificate, but in a production environment, you would secure the Cloud Control Console with a certificate from a trusted source.

   e. Click "I Understand the Risks" in the "This Connection is Untrusted" dialog box.

   f. Click Add Exception to display the Add Security Exception dialog box.

   g. After a few seconds, the **Confirm Security Exception** button is enabled. Click **Confirm Security Exception** and leave Permanently Store this Exception selected.

   h. The Enterprise Manager Cloud Control 13*c* login page will now be displayed.

   i. Log in as sysman by using the password that you provided to the installer (refer to the security credentials list for password).

   j. Review the Accessibility Preference options and click **Save and Continue**. This is always shown upon a user's first log in to Cloud Control.

   k. **Accept** the license agreement. This is always shown on the very first log in to Cloud Control.

   l. Select a home page—for example, **Summary**—by clicking its option button. This preference can be changed at any time.

13. For ease of use, include the newly installed Enterprise Manager Cloud Control 13*c* bin directory in the path in the **EM session**.

```
EM [oracle@em13c emcc13cR2]$ export \
ORACLE_HOME=/u02/app/oracle/product/middleware
```

```
EM [oracle@em13c emcc13cR2]$ export \
PATH=$ORACLE_HOME/bin:$PATH
```

14. Take a moment to view some of the installation information that is made available to you. Use your **EM session**.

   a. Change to the install directory and list the contents.

```
EM [oracle@em13c emcc13cR2]$ cd $ORACLE_HOME/install
```

```
EM [oracle@em13c install]$ ls
clone              ocm_silent.rsp    selfUpdate
```

Practices for Lesson 2: Architecture and Implementation Options

```
em                   ohs_templates      setupinfo_bak.txt
eminstall.info       oneoffs            setupinfo.txt
envVars.properties   portlist.ini       transientVariables.list
filesCopy.txt        released_plugins   unix
installer            requisites         utility
java.security        response           utl
make.log             rpm
nt                   scripts
EM [oracle@em13c install]$
```

Two files are of immediate interest: `eminstall.info` and `setupinfo.txt`.

b. Display the contents of `eminstall.info`. It is a quick reference to the directories that you installed into.

```
EM [oracle@em13c install]$ cat eminstall.info
INSTALL_TYPE=NOSEED
UPGRADE=false
ORACLE_MIDDLEWARE_HOME_LOCATION=/u02/app/oracle/product/middlewa
re
OMS_HOME=/u02/app/oracle/product/middleware/
AGENT_HOME=/u02/app/oracle/product/agent13c/agent_13.2.0.0.0
AGENT_BASE_DIR=/u02/app/oracle/product/agent13c
EM [oracle@em13c install]$
```

c. Display the contents of `setupinfo.txt`. It is the same information that was displayed on the final page of the installer.

```
EM [oracle@em13c install]$ cat setupinfo.txt


This information is also available at:

    /u02/app/oracle/product/middleware/install/setupinfo.txt

See the following for information pertaining to your Enterprise
Manager installation:



Use the following URL to access:

    1. Enterprise Manager Cloud Control URL:
https://em13c.example.com:7802/em
    2. Admin Server URL: https://em13c.example.com:7102/console
    3. BI Publisher URL:
https://em13c.example.com:9803/xmlpserver
…
```

d.   Notice the following two paragraphs:

```
NOTE:
 An encryption key has been generated to encrypt sensitive data
in the Management Repository. If this key is lost, all encrypted
data in the Repository becomes unusable.


 A backup of the OMS configuration is available in
/u02/app/oracle/product/gc_inst/em/EMGC_OMS1/sysman/backup on
host em13c.example.com. See Cloud Control Administrators Guide
for details on how to back up and recover an OMS.
```

The encryption key is in $ORACLE_HOME/sysman/config/emkey.ora and it is a
good practice to take a copy and keep it safe for the reason stated in the preceding
text.

The OMS configuration backup will be a .bka file that is similar to the one shown as
follows. It is a backup of your out-of-the-box configuration, and it is a best practice to
take a new configuration backup by using the emctl exportconfig oms command
after significant changes.

```
EM [oracle@em13c install]$ cd \
/u02/app/oracle/product/gc_inst/em/EMGC_OMS1/sysman/backup/
EM [oracle@em13c backup]$ ls
opf_ADMIN_20160119_182337.bka
EM [oracle@em13c backup]$
```

The emctl exportconfig oms command backs up the OMS configuration
information that is kept in the gc_inst directory tree, as well as the configuration of
the WebLogic AdminServer. We can see an indication of this by listing the contents of
the backup file (it is in a Zip archive format).

```
EM [oracle@em13c backup]$ unzip -l \
opf_ADMIN_20160119_182337.bka
Archive:  opf_ADMIN_20160119_182337.bka
  Length      Date    Time    Name
---------  ---------- -----    ----
      630  01-19-2016 18:23   plugins.list
 40966042  01-19-2016 18:23   GCDomain_backup.zip
    10928  01-19-2016 18:23
/sysman/prov/agentpush/agentpush.properties
     4347  01-19-2016 18:23   export.properties
      424  01-19-2016 18:23
module/bip/bip_gcha/embip.properties
---------                     -------
 40982371                     5 files
EM [oracle@em13c backup]$
```

If ever required, you can restore the backed up configuration with the `emctl importconfig oms` command. For example, to import the preceding backup, you would use:

```
emctl importconfig oms –file
/u02/app/oracle/product/gc_inst/em/EMGC_OMS1/sysman/backup/
opf_ADMIN_20160119_182337.bka
```

15. Although your installation has been successful, you will now look at the location of the log files that would aid in troubleshooting a problematic installation. Use your **EM session**.

a. View the OUI logs. These are located in your central inventory.

b. Locate your central inventory by looking at the contents of /etc/oraInst.loc.

```
EM [oracle@em13c backup]$ cat /etc/oraInst.loc
inventory_loc=/u01/app/oraInventory
inst_group=oinstall
EM [oracle@em13c backup]$
```

c. Change to the central inventory log directory, and list the logs in reverse chronological order. Note that the dates in your output will differ from those shown in this practice.

```
EM [oracle@em13c backup]$ cd /u01/app/oraInventory/logs
```

```
EM [oracle@em13c logs]$ ls -gotr
total 3996
-rw-rw----. 1      117 Sep 30  2015 oraInstall2015-09-30_05-28-
05AM.out
-rw-rw----. 1        0 Sep 30  2015 oraInstall2015-09-30_05-28-
05AM.err
-rw-rw----. 1 1174420 Sep 30  2015 installActions2015-09-30_05-
28-05AM.log
-rw-r-----. 1 2887406 Jan 18 16:33 install2017-01-17_08-32-
54PM.log
-rw-r-----. 1      193 Jan 18 16:33 oraInstall2017-01-17_08-32-
54PM.err
-rw-r-----. 1       89 Jan 18 16:33 oraInstall2017-01-17_08-32-
54PM.out
-rw-r-----. 1    12429 Jan 18 16:33 launcher2017-01-17_08-32-
54PM.log
EM [oracle@em13c logs]$
```

d. The most recent install<timestamp>.log file should be for your just-completed Cloud Control 13*c* installation. View the file and examine it from the bottom up, where you will see it having recorded that other log files were copied from the temporary installation directory to the product directories. Using the previous example output, we will view this file:

```
EM [oracle@em13c logs]$ view install2016-01-19_04-16-40PM.log
```

You should see lines similar to the following examples. This level of detail is of use when debugging an installation problem, especially if working with Oracle Support.

```
2017-01-17 20:33:17,709 INFO  [1]
oracle.sysman.oii.oiio.oiiol.OiiolTextLogger - paramFile
location for auto updates :
/u02/temp/sfx_RtkK8p/Disk1/install/linux64/oraparam.ini
…
2017-01-18 16:33:25,193 INFO  [16]
oracle.sysman.oii.oiio.oiiol.OiiolTextLogger - Copying file from
/u02/temp/OraInstall2017-01-17_08-32-54PM/oraInstall2017-01-
17_08-53-03PM.out to
/u02/app/oracle/product/agent13c/agent_13.2.0.0.0/cfgtoollogs/ou
i/oraInstall2017-01-17_08-53-03PM.out
```

e. Exit the log file.

f. View the various OMS configuration tool logs. Change to the OMS configuration tool logs directory and list its subdirectories.

```
EM [oracle@em13c logs]$ cd $ORACLE_HOME/cfgtoollogs
```

```
EM [oracle@em13c cfgtoollogs]$ ls
bip  cfgfw  omsca  opatch  oui  pluginca
EM [oracle@em13c cfgtoollogs]$
```

Each directory contains log files that can be useful for determining the cause of failure at various points of the installation process. Spend some time examining the subdirectories and their contents. Some of the specific files that can be useful are listed as follows:

– bip/bipca_<timestamp>.log for the BIP configuration

– cfgfw/CfmLogger<timestamp>.log for the configuration manager

– cfgfw/oracle.sysman.top.oms_<timestamp>.log for the OMS configuration

– omsca/omsca_<timestamp>.log for the OMS configuration assistant

– oui/install<timestamp>.log, which is a copy of the OUI log from the central inventory

– oui/oraInstall<timestamp>.err and .out, which are individual log files generated by the processes invoked by the installer

– pluginca/gcinstall_<timestamp>/configplugin_deploy_<times tamp>.*, which trace the configuration of the OMS-side plug-ins

If you are curious, you can view oracle.sysman.top.agent_<timestamp>.log for the central agent configuration under
/u02/app/oracle/product/agent13c/agent_13.2.0.0.0/cfgtoollogs/cf gfw/.

g. If your installation encounters any OMR schema–related issues, you need to examine the relevant log files. View the files for your installation.

h. Change to the repository manager log directory and list the contents.

```
EM [oracle@em13c cfgtoollogs]$ cd \
$ORACLE_HOME/sysman/log/schemamanager/
```

```
EM [oracle@em13c schemamanager]$ ls
emschema.log   latest              m_011916_0503_PM
headers        m_011916_0506_PM    RepManager.log
```

Each m_<timestamp> directory holds the logs of an execution of the
RepManager utility at that time and date.

i. Change to the earliest RepManager log directory and list the contents.

```
EM [oracle@em13c schemamanager]$ cd m_011916_0503_PM
```

```
EM [oracle@em13c m_011916_0503_PM]$ ls
emschema.log   emschema.log.lck   m_011916_0503_PM.OUTOFBOX
EM [oracle@em13c m_011916_0503_PM]$
```

Within each RepManager log directory, there can be subdirectories for schema
actions such as the .OUTOFBOX directory, seen previously, which is for actions
performed on a repository that was created from pre-seeded DBCA templates.

j. Change to the OUTOFBOX directory and list the contents.

```
EM [oracle@em13c m_011916_0503_PM]$ cd \
m_011916_0503_PM.OUTOFBOX/
EM [oracle@em13c m_011916_0503_PM.OUTOFBOX]$ ls
em_repos_outofbox.log   emschema.log.OUTOFBOX   rcu.log
```

Take a look at any of the files.

– em_repos_outofbox.log will show you the repository manager that extracts
   the SQL statements to be executed.
– rcu.log will show you the Repository Creation Utility that creates the structure
   of the repository.
– emschema.log.OUTOFBOX will show you the Schema Manager that works on
   the EM schema in the repository.

k. Directly under the schemamanager directory is the latest directory. This is simply a
    copy of the latest Repository Manager, Repository Creation Utility, and Schema
    Manager logs. So for example, if the OUTOFBOX operation were executed twice, only
    the most recent OUTOFBOX logs would be in the latest directory. Look at the files in
    your latest directory now.

```
EM [oracle@em13c m_011916_0503_PM.OUTOFBOX]$ cd ../../latest/
```

```
EM [oracle@em13c latest]$ ls
emrep_config.log       emrep_config.log.3       emschema.log
emschema.log.lck       rcu.log
```

```
emrep_config.log.1      emrep_config.log.3.lck
emschema.log.1     emschema.log.OUTOFBOX
emrep_config.log.1.lck  emrep_config.log.lck
emschema.log.1.lck  emschema.log.OUTOFBOX.lck
emrep_config.log.2      em_repos_outofbox.log
emschema.log.2     emschema.log.UPGRADE
emrep_config.log.2.lck  em_repos_plugindeploy.log
emschema.log.2.lck  emschema.log.UPGRADE.lck
EM [oracle@em13c latest]$
```

Note that there is only one `rcu.log` in the latest directory, even though each of the `m_<timestamp>.<OPERATION>` directories will have its own `rcu.log`.

l. Enterprise Manager agents also have configuration tool logs. Confirm this with your central agent.

```
EM [oracle@em13c latest]$ cd \
/u02/app/oracle/product/agent13c/agent_13.2.0.0.0/cfgtoollogs
```

```
EM [oracle@em13c cfgtoollogs]$ ls
cfgfw  opatch  oui
```

```
EM [oracle@em13c cfgtoollogs]$ cd cfgfw/
EM [oracle@em13c cfgfw]$ ls
oracle.sysman.top.agent_2016-01-19_05-03-21-PM.log
OuiConfigVariables_2016-01-19_05-03-21-PM.log
EM [oracle@em13c cfgfw]$
```

16. A recommended post-installation task that you will perform during this practice is the application of Daylight Saving Time (DST)–related patches. These patches are for the database/OMR and the JRE-based components (OMS and agents).

Check the relevant My Oracle Support notes for the latest database DST patches. The latest Time Zone Updater Tool for the JDK/JRE-based software is available at:

http://www.oracle.com/technetwork/java/javase/tzupdater-readme-136440.html

In your classroom environment, these patches have been staged in
`/stage/emcc13c/DST_patching`.

a. Because the patch that you will be applying to the OMR shuts down the OMR database, first stop your OMS and central agent from the **EM session**.

```
EM [oracle@em13c cfgfw]$ emctl stop oms -all
Oracle Enterprise Manager Cloud Control 13c Release 2
Copyright (c) 1996, 2016 Oracle Corporation.  All rights
reserved.
Stopping Oracle Management Server...
WebTier Successfully Stopped
Oracle Management Server Successfully Stopped
Oracle Management Server is Down
```

```
JVMD Engine is Down
Stopping BI Publisher Server...
BI Publisher Server Successfully Stopped
AdminServer Successfully Stopped
BI Publisher Server is Down
EM [oracle@em13c cfgfw]$
```

```
EM [oracle@em13c cfgfw]$
/u02/app/oracle/product/agent13c/agent_inst/bin/emctl stop \
agent
Oracle Enterprise Manager Cloud Control 13c Release 2
Copyright (c) 1996, 2016 Oracle Corporation.  All rights
reserved.
Stopping agent ... stopped.
EM [oracle@em13c cfgfw]$
```

b. To DST-patch the OMR database, you apply RDBMS DSTv26 Patch 22873635. You
   should always use the latest OPatch available that corresponds to your OUI version—
   a recent OPatch has been provided for this practice. Perform this in your **DB session**.

```
DB [oracle@em13c emcc13cR2]$ cd $ORACLE_HOME
DB [oracle@em13c dbhome_1]$ mv OPatch OPatch.ootb
```

c. Unzip OPatch Patch 6880880 directly under the database home by using your **DB
   session**.

```
DB [oracle@em13c dbhome_1]$  unzip \
/stage/emcc13c/p6880880_121010_Linux-x86-64.zip
Archive:  /stage/emcc13c/p6880880_121010_Linux-x86-64.zip
 [...]
```

d. Confirm that you have an OPatch directory by using your **DB session.**

```
DB [oracle@em13c dbhome_1]$ ls -ld OPatch*
drwxr-x---. 10 oracle oinstall 4096 Nov 13 20:16 OPatch
drwxr-xr-x.  7 oracle oinstall 4096 Sep 30 05:32 OPatch.ootb
```

And include the directory in your path.

```
DB [oracle@em13c dbhome_1]$ export \
PATH=$ORACLE_HOME/OPatch:$PATH
```

e. Apply the DST patch—in this case, *Patch 22873635: DST-26: DST UPDATE APRIL
   2016 - TZDATA2016D*—by using your **DB session**. Do not provide an email address
   when prompted.

```
DB [oracle@em13c dbhome_1]$ cd \
/stage/emcc13c/DST_patching/22873635
```

```
DB [oracle@em13c 22873635]$ opatch apply
Oracle Interim Patch Installer version 12.2.0.1.8
```

```
Copyright (c) 2016, Oracle Corporation.  All rights reserved.


Oracle Home        : /u01/app/oracle/product/12.1.0/dbhome_1
Central Inventory : /u01/app/oraInventory
   from          :
/u01/app/oracle/product/12.1.0/dbhome_1/oraInst.loc
OPatch version    : 12.2.0.1.8
OUI version       : 12.1.0.2.0
Log file location :
/u01/app/oracle/product/12.1.0/dbhome_1/cfgtoollogs/opatch/opatc
h2016-12-04_20-37-50PM_1.log


Verifying environment and performing prerequisite checks...
OPatch continues with these patches:   22873635


Do you want to proceed? [y|n]
y
User Responded with: Y
All checks passed.
Backing up files...
Applying interim patch '22873635' to OH
'/u01/app/oracle/product/12.1.0/dbhome_1'

Patching component oracle.oracore.rsf, 12.1.0.2.0...
Patch 22873635 successfully applied.
Log file location:
/u01/app/oracle/product/12.1.0/dbhome_1/cfgtoollogs/opatch/opatc
h2016-12-04_20-37-50PM_1.log


OPatch succeeded.
DB [oracle@em13c 22873635]$
```

f. Apply the DST RDBMS scripts by using your **DB session**.

```
DB [oracle@em13c 22873635]$ cd ../DBMS_DST_scriptsV1.9
```

```
DB [oracle@em13c DBMS_DST_scriptsV1.9]$ ls
countstarTSTZ.sql  countstatsTSTZ.sql  upg_tzv_apply.sql
upg_tzv_check.sql
DB [oracle@em13c DBMS_DST_scriptsV1.9]$ sqlplus / as sysdba


SQL*Plus: Release 12.1.0.2.0 Production on Sun Feb 14 18:00:07
2016
```

```
Copyright (c) 1982, 2014, Oracle.  All rights reserved.


Connected to:
Oracle Database 12c Enterprise Edition Release 12.1.0.2.0 -
64bit Production
With the Partitioning, OLAP, Advanced Analytics and Real
Application Testing options

SQL> @upg_tzv_check.sql
INFO: Starting with RDBMS DST update preparation.
INFO: NO actual RDBMS DST update will be done by this script.
INFO: If an ERROR occurs the script will EXIT sqlplus.
INFO: Doing checks for known issues ...
INFO: Database version is 12.1.0.2 .
INFO: Database RDBMS DST version is DSTv18 .
INFO: No known issues detected.
INFO: Now detecting new RDBMS DST version.
A prepare window has been successfully started.
INFO: Newest RDBMS DST version detected is DSTv26 .
INFO: Next step is checking all TSTZ data.
INFO: It might take a while before any further output is seen
...
A prepare window has been successfully ended.
INFO: A newer RDBMS DST version than the one currently used is
found.
INFO: Note that NO DST update was yet done.
INFO: Now run upg_tzv_apply.sql to do the actual RDBMS DST
update.
INFO: Note that the upg_tzv_apply.sql script will
INFO: restart the database 2 times WITHOUT any confirmation or
prompt.
SQL> @upg_tzv_apply.sql
INFO: If an ERROR occurs the script will EXIT sqlplus.
INFO: The database RDBMS DST version will be updated to DSTv26 .
WARNING: This script will restart the database 2 times
WARNING: WITHOUT asking ANY confirmation.
WARNING: Hit control-c NOW if this is not intended.
INFO: Restarting the database in UPGRADE mode to start the DST
upgrade.
Database closed.
Database dismounted.
ORACLE instance shut down.
ORACLE instance started.
```

```
Total System Global Area 3003121664 bytes
Fixed Size                 2928920 bytes
Variable Size            771755752 bytes
Database Buffers        2214592512 bytes
Redo Buffers              13844480 bytes
Database mounted.
Database opened.
INFO: Starting the RDBMS DST upgrade.
INFO: Upgrading all SYS owned TSTZ data.
INFO: It might take time before any further output is seen ...
An upgrade window has been successfully started.
INFO: Restarting the database in NORMAL mode to upgrade non-SYS
TSTZ data.
Database closed.
Database dismounted.
ORACLE instance shut down.
ORACLE instance started.

Total System Global Area 3003121664 bytes
Fixed Size                 2928920 bytes
Variable Size            771755752 bytes
Database Buffers        2214592512 bytes
Redo Buffers              13844480 bytes
Database mounted.
Database opened.
INFO: Upgrading all non-SYS TSTZ data.
INFO: It might take time before any further output is seen ...
INFO: Do NOT start any application yet that uses TSTZ data!
INFO: Next is a list of all upgraded tables:
Table list: "GSMADMIN_INTERNAL"."AQ$_CHANGE_LOG_QUEUE_TABLE_S"
Number of failures: 0
Table list: "GSMADMIN_INTERNAL"."AQ$_CHANGE_LOG_QUEUE_TABLE_L"
Number of failures: 0
Table list: "SYSMAN"."MGMT_SYSTEM_ERROR_LOG_E"
Number of failures: 0
Table list: "SYSMAN"."EM_GI_AGT_JOB_INFO_E"
Number of failures: 0
Table list: "SYSMAN"."EM_GI_AGENT_COMPLIANCE_E"
Number of failures: 0
Table list: "SYSMAN"."EM_PROXY_E"
Number of failures: 0
Table list: "SYSMAN"."EM_PROV_DISKLESSIMAGE_E"
```

```
Number of failures: 0
Table list: "SYSMAN"."EM_PROV_DEPLOYMENT_PLAN_E"
Number of failures: 0
Table list: "SYSMAN"."EM_PROV_DEPLOYEDIMAGE_E"
Number of failures: 0
Table list: "SYSMAN"."EM_AUC_PREREQ_DUMP_E"
Number of failures: 0
Table list: "SYSMAN"."EM_AUC_AGT_JOB_INFO_E"
Number of failures: 0
Table list: "SYSMAN"."MGMT_PROV_STAGING_DIRS_E"
Number of failures: 0
Table list: "SYSMAN"."MGMT_PROV_RPM_REP_E"
Number of failures: 0
Table list: "SYSMAN"."MGMT_PROV_NET_CONFIG_E"
Number of failures: 0
Table list: "SYSMAN"."MGMT_PROV_IP_RANGE_E"
Number of failures: 0
Table list: "SYSMAN"."MGMT_PROV_DHCPSERVER_E"
Number of failures: 0
Table list: "SYSMAN"."MGMT_PROV_BOOTSERVER_E"
Number of failures: 0
Table list: "SYSMAN"."EM_SERVICECUSTDASHBOARD_E"
Number of failures: 0
Table list: "SYSMAN"."EM_SCHED_JOB_REG_HISTORY_E"
Number of failures: 0
Table list: "SYSMAN"."EM_SCHED_JOB_REGISTRY_E"
Number of failures: 0
Table list: "SYSMAN"."EM_BLACKOUT_WINDOWS_E"
Number of failures: 0
Table list: "SYSMAN"."EM_BLACKOUT_TARGET_STATE_E"
Number of failures: 0
Table list: "SYSMAN"."EM_BLACKOUT_SCHEDULE_E"
Number of failures: 0
Table list: "SYSMAN"."EM_BLACKOUT_OCCURRENCES_E"
Number of failures: 0
Table list: "SYSMAN"."EM_BLACKOUTS_NG_E"
Number of failures: 0
Table list: "SYSMAN"."MGMT_CCR_REG_CIPHER_E"
Number of failures: 0
Table list: "SYSMAN"."MGMT_CCR_LAST_MAPPER_RUN_E"
Number of failures: 0
Table list: "SYSMAN"."AQ$_MGMT_NOTIFY_QTABLE_S"
```

```
Number of failures: 0
Table list: "SYSMAN"."AQ$_MGMT_NOTIFY_QTABLE_L"
Number of failures: 0
Table list: "SYSMAN"."AQ$_MGMT_LOADER_QTABLE_S"
Number of failures: 0
Table list: "SYSMAN"."AQ$_MGMT_LOADER_QTABLE_L"
Number of failures: 0
Table list: "SYSMAN"."AQ$_MGMT_HOST_PING_QTABLE_S"
Number of failures: 0
Table list: "SYSMAN"."AQ$_MGMT_HOST_PING_QTABLE_L"
Number of failures: 0
Table list: "SYSMAN"."AQ$_MGMT_ADMINMSG_BUS_S"
Number of failures: 0
Table list: "SYSMAN"."AQ$_MGMT_ADMINMSG_BUS_L"
Number of failures: 0
Table list: "SYSMAN"."EM_LOADERJOB_TARGETS_E"
Number of failures: 0
Table list: "SYSMAN"."EM_FAVORITES_E"
Number of failures: 0
Table list: "SYSMAN"."AQ$_EM_PC_TP_TABLE_S"
Number of failures: 0
Table list: "SYSMAN"."AQ$_EM_PC_TP_TABLE_L"
Number of failures: 0
Table list: "SYSMAN"."AQ$_EM_NOTIFY_QTABLE_S"
Number of failures: 0
Table list: "SYSMAN"."AQ$_EM_NOTIFY_QTABLE_L"
Number of failures: 0
Table list: "SYSMAN"."AQ$_EM_LOADERJOB_Q_TBL_S"
Number of failures: 0
Table list: "SYSMAN"."AQ$_EM_LOADERJOB_Q_TBL_L"
Number of failures: 0
Table list: "SYSMAN"."AQ$_EM_JOB_STATUS_UPD_QTABLE_S"
Number of failures: 0
Table list: "SYSMAN"."AQ$_EM_JOB_STATUS_UPD_QTABLE_L"
Number of failures: 0
Table list: "SYSMAN"."AQ$_EM_EVENT_BUS_TABLE_S"
Number of failures: 0
Table list: "SYSMAN"."AQ$_EM_EVENT_BUS_TABLE_L"
Number of failures: 0
Table list: "SYSMAN"."AQ$_EM_CNTR_QTABLE_S"
Number of failures: 0
Table list: "SYSMAN"."AQ$_EM_CNTR_QTABLE_L"
```

```
Number of failures: 0
Table list: "SYSMAN_BIPLATFORM"."ESS_FAILOVER_RESOURCE"
Number of failures: 0
Table list: "SYSMAN_BIPLATFORM"."ESS_FAILOVER_LEASE"
Number of failures: 0
INFO: Total failures during update of TSTZ data: 0 .
An upgrade window has been successfully ended.
INFO: Your new Server RDBMS DST version is DSTv26 .
INFO: The RDBMS DST update is successfully finished.
INFO: Make sure to exit this sqlplus session.
INFO: Do not use it for timezone related selects.
SQL>
```

Note the RDBMS DST version. You may also check the time zone at the database level by using the following SQL query:

```
SQL> select version
  2   from v$timezone_file;


   VERSION
----------
       26

1 row selected.
```

g. Exit SQL*Plus.

```
SQL> exit
Disconnected from Oracle Database 12c Enterprise Edition Release
12.1.0.2.0 - 64bit Production
With the Partitioning, OLAP, Advanced Analytics and Real
Application Testing options
DB [oracle@em13c DBMS_DST_scriptsV1.9]$
```

h. Run the Timezone (TZ) Updater against your Enterprise Manager Cloud Control 13*c*
installation for Java-based components. The TZ Updater is staged in:

`/stage/emcc13c/DST_patching/tzupdater-2.1.0`

and the timezone data file is staged as:

`/stage/emcc13c/DST_patching/tzdata2016h.tar.gz`

By default, the TZ Updater downloads the latest timezone data from the Internet
Assigned Numbers Authority (IANA) website http://www.iana.org/time-zones . It can
still be used in offline mode by making the timezone data available on a local file
system, and that is the mode that you will use.

The TZ Updater works on the JDK installation that is used to invoke it. Using your **EM
session**, change into the TZ Updater directory and invoke it by using the JDK under
your OMS home directory with:

```
EM [oracle@em13c DBMS_DST_scriptsV1.9]$ cd \
```

```
/stage/emcc13c/DST_patching/tzupdater-2.1.0/
```

```
EM [oracle@em13c tzupdater-2.1.0]$
$ORACLE_HOME/oracle_common/jdk/bin/java \
-jar tzupdater.jar -v \
-l file:///stage/emcc13c/DST_patching/tzdata2016h.tar.gz
Using file:///stage/emcc13c/DST_patching/tzdata2016h.tar.gz as
source for tzdata bundle.
java.home:
/u02/app/oracle/product/middleware/oracle_common/jdk/jre
java.vendor: Oracle Corporation
java.version: 1.7.0_111
tzupdater version 2.1.0-b04
JRE tzdata version: tzdata2016d
Downloaded file to /tmp/tz.tmp/tzdata.tar.gz
tzupdater tool would update with tzdata version: tzdata2016h
Downloaded file to /tmp/tz.tmp/sha512hash
Extracting files... done.
Renaming
/u02/app/oracle/product/middleware/oracle_common/jdk/jre/lib/zi
to
/u02/app/oracle/product/middleware/oracle_common/jdk/jre/lib/zi.
tzdata2016d
Renaming
/u02/app/oracle/product/middleware/oracle_common/jdk/jre/lib/zi.
tzdata2016h to
/u02/app/oracle/product/middleware/oracle_common/jdk/jre/lib/zi
Validating for : tzdata2016h
Validation complete
JRE updated to version : tzdata2016h
EM [oracle@em13c tzupdater-2.1.0]$
```

i. Repeat this for the central agent by using the **EM session**.

```
EM [oracle@em13c tzupdater-2.1.0]$
/u02/app/oracle/product/agent13c/agent_13.2.0.0.0/oracle_common/
jdk/bin/java -jar tzupdater.jar -v \
-l file:///stage/emcc13c/DST_patching/tzdata2016h.tar.gz
Using file:///stage/emcc13c/DST_patching/tzdata2016h.tar.gz as
source for tzdata bundle.
java.home:
/u02/app/oracle/product/agent13c/agent_13.2.0.0.0/oracle_common/
jdk/jre
java.vendor: Oracle Corporation
java.version: 1.7.0_111
tzupdater version 2.1.0-b04
JRE tzdata version: tzdata2016d
```

```
Downloaded file to /tmp/tz.tmp/tzdata.tar.gz
tzupdater tool would update with tzdata version: tzdata2016h
Downloaded file to /tmp/tz.tmp/sha512hash
Extracting files... done.
Renaming
/u02/app/oracle/product/agent13c/agent_13.2.0.0.0/oracle_common/
jdk/jre/lib/zi to
/u02/app/oracle/product/agent13c/agent_13.2.0.0.0/oracle_common/
jdk/jre/lib/zi.tzdata2016d
Renaming
/u02/app/oracle/product/agent13c/agent_13.2.0.0.0/oracle_common/
jdk/jre/lib/zi.tzdata2016h to
/u02/app/oracle/product/agent13c/agent_13.2.0.0.0/oracle_common/
jdk/jre/lib/zi
Validating for : tzdata2016h
Validation complete
JRE updated to version : tzdata2016h
EM [oracle@em13c tzupdater-2.1.0]$
```

j. Restart the OMS and central agent by using the **EM session**.

```
EM [oracle@em13c tzupdater-2.1.0]$ emctl start oms
```

```
Oracle Enterprise Manager Cloud Control 13c Release 2
Copyright (c) 1996, 2016 Oracle Corporation.  All rights
reserved.
Starting Oracle Management Server...
WebTier Successfully Started
Oracle Management Server Successfully Started
Oracle Management Server is Up
JVMD Engine is Up
Starting BI Publisher Server ...
BI Publisher Server Successfully Started
BI Publisher Server is Up
EM [oracle@em13c tzupdater-2.1.0]$
```

```
EM [oracle@ em13c tzupdater-2.1.0]$
/u02/app/oracle/product/agent13c/agent_inst/bin/emctl \
start agent
Oracle Enterprise Manager Cloud Control 13c Release 2
Copyright (c) 1996, 2012 Oracle Corporation.  All rights
reserved.
Starting agent .................... started.
EM [oracle@em13c tzupdater-2.1.0]$
```

17. The following recommended post-installation tasks are **not** performed during this practice:

    a. Check the automatic startup of the OMS and agent on the host. This is OS-dependent. By default, on most platforms, the OMS and the central agent are started automatically every time their hosts are rebooted.

    b. Apply Cloud Control patches that were released after the release that you are installing. Be sure to check the My Oracle Support website for the latest Patch Sets Update (PSU) or other required one-off patches.

    c. Set up EM CLI on a non-OMS host, although EM CLI is installed by default with every OMS installation. Only a few steps are required to attach EM CLI to an OMS. Check the EM CLI documentation for complete steps.

    d. Apply custom third-party security certificates. Check the My Oracle Support documentation for specific steps.

    e. Check for periodic self-update downloads of components such as plug-ins and agents. You will navigate to the interface for doing this in the next practice.

Practices for Lesson 2: Architecture and Implementation Options

Practice 2-2: The Initial Setup Console

Overview

In this practice, you use the Initial Setup Console to create a Cloud Control administrator.

Assumptions

You were able to successfully complete the installation practice.

Tasks

1. Log in to the Cloud Control 13*c* console as the `sysman` user.

    a. Start the browser in the em13c.example.com GUI if it is not already running.

    b. Open the Cloud Control Console URL <u>`https://em13c.example.com:7802/em`</u>.

    c. Log in as the `sysman` user with the password that you supplied during installation.

2. Open the Initial Setup Console by navigating to *Setup > Initial Setup Console* and consider the tasks that are deemed to be part of your OMS initial setup.

3. Some of the tasks can be completed right here in the Initial Setup Console. Select the **OMS Agent Proxy Setting** task to see an example. You may want a proxy to sit between your management agents and your OMS as an additional layer of security, and you could set it up here.

4. Notice the dashboard that enumerates the pending, completed, and ignored tasks. Because you will not be setting up an OMS Agent Proxy, click **Ignore this task**. The contents of the page will be hidden, and the dashboard counts will be updated. Note that you now have the option to stop ignoring the task.

5. Other tasks in the Initial Setup Console simply provide a link to other pages in the Cloud Control 13*c* console. Select **Create Users** as an example. Along with a list of super administrators, there is a link to the *Setup > Security > Administrators* page (remember that all Cloud Control users are considered to be administrators of your managed environment).

6. Create a super administrator. It is considered a best practice to create at least one super administrator to use at your site rather than use the out-of-the-box `sysman` user who is typically used for OMS maintenance tasks.

    a. Click the link in the Create Users panel to open the page where you can manage Enterprise Manager Administrators.

    b. Click Create to launch the Create Administrator process.

        Note that the process has five steps: Properties, Roles, Target Privileges, Resource Privileges, and Review.

        Enter the following properties:

Name	`emadmin`
Password	Refer to the security credentials list.
Super Administrator	Selected

c. Click **Next**. Instead of proceeding to the Roles step, you are taken directly to the Resource Privileges step. This is because the roles and target privileges are fixed for super administrators.

d. You will not be editing any resource privileges, so click **Next** or **Review** to proceed to the Review page.

e. Click **Finish** to create the user. You will be returned to the Administrators page where a confirmation message will be displayed and the new user will be shown in the list of Administrators. Stay on this page.

7. Create an administrator who will run BI Publisher reports.

    a. Click Create to launch the Create Administrator process.

    b. Enter the following properties:

Name	bipuser
Password	Refer to the security credentials list.

c. Click **Next** to proceed to the Roles assignment page.

   Note that every user has the PUBLIC role to allow them to log in to the Cloud Control console and the EM_USER roles to allow them to view the standard Cloud Control interface.

   Assign the EM_ALL_VIEWER role by double-clicking the role in the Available Roles panel, or highlighting the role and clicking **Move**. This will allow the user to see all the targets and ensure that you get content on the BI Publisher reports.

d. You will not be assigning any target or resource privileges, so click **Review** to proceed directly to the Review page.

e. Click **Finish** to create the user. You will be returned to the Administrators page where a confirmation message is displayed and the new user is shown in the list of Administrators.

8. Return to the Initial Setup Console from the menu: *Setup > Initial Setup Console*, and notice that the Create Users task is now shown as Completed.

    a. Select the Create Users task. The super administrator that you created is not listed. This is because that user has not yet logged in.

9. Log in as the new super administrator, emadmin, and navigate to the Initial Setup Console.

    a. Log out as the sysman user. The logout button is in the menu under the sysman username.

    b. Log in as emadmin. Save the accessibility settings and choose a home page.

    c. Open the Initial Setup Console from the menu: *Setup > Initial Setup Console*.

    d. Select the Create Users task. emadmin will now be listed because you have just logged in as that user.

    For the rest of this practice, you will use emadmin to execute super administrator tasks.

Practices for Lesson 2: Architecture and Implementation Options

Practice 2-3: Adding Managed Hosts

Overview

In this practice, you add a host manually, discover targets on that host, and then create a Gold Agent Image from the newly added host before using the Gold Agent Image to add another host.

Assumptions

- You were able to successfully complete the installation practice.
- The host01.example.com VM is running.
- You created the emadmin super administrator.

Tasks

1. If you are not already logged in to the Cloud Control console as the emadmin user, log in now.

2. Add host01.example.com as a managed host to Cloud Control 13c.

    a. Navigate to Setup > Add Target > Add Targets Manually.

    b. Click **Install Agent on Host** from the Add Host Targets panel. The Host and Platform page of the Add Host Target wizard is displayed.

    c. Click **Add** (or **Add > Manually** if you use the select list next to **Add**) and use the following details to add host01.example.com:

Host name	host01.example.com
Platform	Linux x86-64

    d. Expand Agent Software Options and note the choices: Without Gold Image and With Gold Image. For this operation, we will use the default of Without Gold Image because we do not yet have a Gold Agent Image to deploy.

    e. Click **Next** to proceed to the Installation Details page. Expand the Deployment Type field, and note the choices: Fresh Agent Install, Clone Existing Agent, and Add Host to Shared Agent. For this operation, we will use the default of Fresh Agent Install (default).

    f. Enter the base and instance directories:

Installation Base Directory	/u01/app/oracle/product/agent13c
Instance Directory	/u01/app/oracle/product/agent13c/agent_inst

    g. Add new named credentials by clicking the **+** sign next to the text "No Named Credentials defined," and save them by using the following details:

Username	`oracle`
Password	Refer to the security credentials list.
Run privilege	None
Save as	`NC_HOST_ORACLE`

h. The Privileged Delegation Setting value should read:

    /usr/bin/sudo -u %RUNAS% %COMMAND%

i. Delete the default **Port** of 3872 and leave the field blank to allow the wizard to choose an available port. You need to do this because there is a Cloud Control 12*c* agent on `host01.example.com` that is already using port 3872.

j. Click **Next** to progress to the Review page, and then click **Deploy Agent** to initiate the job to install the agent on `host01.example.com`.

k. You will be shown the status of the Add Host job as it proceeds. When the job is finished, click **Done** to return to the Add Targets Manually page.

l. A new agent that is deployed on a system automatically discovers default services such as a database or listeners. Auto discovery is set up to run once a day by default and you will check the results in the next steps.

m. Navigate to Setup > Add Target > Configure Auto Discovery.

n. Click the **Targets on Hosts** tab. Refresh the page to see whether automatic discovery ran.

o. If auto-discovery did not run:

    1) Highlight `host01.example.com`, click **Discover Now**, and then confirm that you want to run discovery now with **Yes**. The discovery process will look for the following default targets: databases, listeners, Automatic Storage Management (ASM), Oracle clusters, middleware, and associated Oracle Homes.

    2) When the Discover Now - Completed Successfully dialog box appears, click **Close**.

p. A number of discovered targets will be listed for `host01`.

q. Click the `host01` **Discovered Targets** number link and observe the discovered targets on it. At this stage, Cloud Control is aware that these targets exist, but is not managing them. The final step is to promote them from discovered to managed targets.

r. Highlight the `orcl.example.com` target, and click **Promote.**

s. Select the database by selecting the check box next to its name, entering the password for the `dbsnmp` user (refer to the security credentials list), and then clicking **Test Connection** to confirm that the password is correct.

t. Select the listener by selecting the check box next to its name.

u. Click **Next** to proceed to the Promote Target: Review page where the database and listener will be listed.

v. Click **Save** to confirm the target promotion, and then **Close** in the Completed Successfully dialog box to allow Cloud Control to start monitoring and managing the

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database and listener. Only discovered targets that you select to promote will be managed by Cloud Control, thus giving you the opportunity to determine exactly what is monitored and managed.

w. View the newly promoted database target under **Targets** > **Databases**. Switch to the Search List view to see the database listed.

3. Create a Gold Agent Image from the agent on `host01.example.com`.

a. Navigate to the Gold Agent Images page from the menu: *Setup > Manage Cloud Control > Gold Agent Images*. You do not have any Gold Agent Images yet, so this page is empty.

b. Click **Manage All Images** to open the Manage All Images page. Here you can create Gold Agent Images, subscribe agents to gold images, create new versions of gold images, and update subscribers with new images.

c. Click **Create** and enter the following details:

Image name	`fromHost01`
Platform Name	Linux x86-64

d. Click **Submit** to create the gold image. You will be returned to the Manage All Images page and the image will be listed. At this point, your gold image is nothing more than a placeholder–there is not actually a deployable image associated with it.

e. Click the name of your gold agent image to open its home page. Here you can see information about the image versions and subscribers.

f. Select Create from the Actions menu in the Versions and Drafts tab to open the Create Image Version dialog box. Enter the following details:

Image Version Name	V1
Description	Version 1 from host01
Create image by	Selecting a source agent
Source Agent	host01.example.com:1830

g. Click **OK**. After a short pause, the Create Image Summary dialog box will be displayed. Click **Yes** to continue with the image version creation.

h. A job is submitted to create the job. Click the **Show activity details** link to see more information, and then click the job name to monitor the job yourself. Turn on auto refresh so that the progress is automatically updated. This will take a few minutes because it is essentially zipping up the agent instance on `host01.example.com`. If you want to examine the output of the CreateGoldAgentImageStep after the job is completed, turn off Auto Refresh; otherwise the page will refresh as you scroll through the job.

i. Return to the Manage Image page for the `fromHost01` Gold Agent Image by using the menu: *Setup > Manage Cloud Control > Gold Agent Images*, clicking **Manage All Images**, and then using the link for your image.

Note that the image version that you just created has the status Draft. Draft image versions allow you to make changes to the version before you push it out as a new agent or as an update to subscribing agents.

j. Set the V1 version as the current version by highlighting the version (if it is not already highlighted) and clicking **Set Current Version**. The status will change to Current.

4. `myhost.example.com` is the host name by which your VMs know your classroom machine. You will use the `fromHost01` Gold Agent Image to add `myhost.example.com` as a managed host to Enterprise Manager Cloud Control 13*c*. Before you do this, you need to set the `oracle` user's password on `myhost.example.com`.

a. Use your **EM session** to open an SSH connection as the `oracle` user to `myhost.example.com` by using the password that your instructor will give you. Accept the RSA key if you are asked.

The `oracle` user's account has been configured to trigger a password reset upon first login; so when prompted, enter a new password of your choice.

Note that this operation will not actually log you in to `myhost.example.com` as the `oracle` user but simply allow you to change the password.

```
EM [oracle@em13c tzupdater-2.1.0]$ ssh \
myhost.example.com
The authenticity of host 'myhost.example.com (192.168.56.1)'
can't be established.
RSA key fingerprint is
bc:9b:21:8b:f4:be:b9:58:e4:03:91:cc:9b:b7:f4:70.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'myhost' (RSA) to the list of known
hosts.
oracle@myhost.example.com's password: <ask your instructor>
You are required to change your password immediately (root
enforced)
WARNING: Your password has expired.
You must change your password now and login again!
Changing password for user oracle.
Changing password for oracle.
(current) UNIX password: <ask your instructor>
New password: <choose your own password>
Retype new password: <re-enter your chosen password>
passwd: all authentication tokens updated successfully.
Connection to myhost.example.com closed.
EM [oracle@em13c tzupdater-2.1.0]$
```

5. Add a host by using the `fromHost01` Gold Agent Image version V1.

a. Back in the Enterprise Manager Cloud Control 13*c* console, click the Subscriptions tab. There is no information displayed because you have only just created the gold image.

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b. Click **Add Hosts** to launch the Add Host Targets wizard. Notice that Agent Software Options are expanded, the With Gold Image option button is selected, and the current version of `fromHost01` has been automatically chosen.

c. Click **Add** (or **Add > Manually** if you use the select list next to **Add**) and use the following details to add `myhost.example.com`, which is the host name by which your VMs know your classroom machine.

Host name	myhost.example.com
Platform	Linux x86-64

d. Click **Next** to proceed to the Installation Details page and enter the following information:

Installation Base Directory	/u01/app/oracle/product/agent13c
Instance Directory	/u01/app/oracle/product/agent13c/agent_inst
Privileged Delegation Setting	/usr/bin/sudo –u %RUNAS% %COMMAND%
Port	Leave the port blank to allow the wizard to select an available port.

e. Add new named credentials by clicking the **+** sign in the Named Credentials row, and save them by using the following details:

Username	oracle
Password	The password that you chose when you reset it
Run Privilege	None
Save As	NC_MYHOST_ORACLE

f. Click **Next** to progress to the Add Host Targets: Review page, and then click **Deploy Agent** to initiate the job to install the agent on `myhost.example.com`.

g. You will be shown the status of the Add Host job as it proceeds. When the job is finished, click **Done** to be taken to the Add Targets Manually page.

6. Now that there is a subscription to the Gold Agent Image, reconsider the Gold Agent Image pages.

a. Return to the Gold Agent Images page by using the menu: *Setup > Manage Cloud Control > Gold Agent Images*. Notice the graph that now displays the number of agents subscribed to your gold image.

b. Click **Manage All Images**, and then click the link for your `fromHost01` image.

c. The Subscriptions tab will show that there is one agent subscribed to the current version (V1) of the image.

7. There are no manageable targets to discover on `myhost.example.com`.

Practices for Lesson 2: Architecture and Implementation Options

Practice 2-4: Setting Up BI Publisher Security

Overview

In this practice, you use the Enterprise Manager Command-Line Interface (EM CLI) to grant BI Publisher privileges to a Cloud Control administrator.

Assumptions

- You have completed the previous practice and created the Cloud Control administrator `bipuser`.

Tasks

1. Log in to the Cloud Control console as `bipuser` and try to run a BI Publisher report.

   a. Log in to the Cloud Control console as `bipuser`, save the accessibility settings, and select a home page if you want.

   b. Navigate to the BI Publisher Reports page from the menu: *Enterprise > Reports > BI Publisher Enterprise Reports*.

   Instead of being presented with a list of reports to run, you will be told that "You do not have sufficient privileges to access BI Publisher Enterprise reports." This is because, out-of-the-box, only super administrators have access to BI Publisher reports.

2. Use EM CLI to grant the BI Publisher view privilege to `bipuser`.

   a. Reuse your **EM Session** or open a new terminal session from the em13c VM's GUI menu: *Applications > System Tools > Terminal*.

   b. Confirm that the `emcli` utility is in your path. If it is not, add the OMS `bin` directory to your path. In this first example, `emcli` is in the path.

   ```
   EM [oracle@em13c tzupdater-2.1.0]$ which emcli
   /u02/app/oracle/product/middleware/bin/emcli
   ```

   In the following example, `emcli` is not in the path, so we add the OMS `bin` directory to the path:

   ```
   [oracle@em13c ~]$ which emcli
   /usr/bin/which: no emcli in (/usr/lib64/qt-
   3.3/bin:/usr/local/bin:/bin:/usr/bin:/usr/local/sbin:/usr/sbin:/
   sbin:/home/oracle/bin)
   [oracle@em13c ~]$ export \
   PATH=/u02/app/oracle/product/middleware/bin:$PATH
   [oracle@em13c ~]$ which emcli
   /u02/app/oracle/product/middleware/bin/emcli
   ```

   The `emcli` utility can be used in a number of ways: as a command line, as an interactive shell, or in script mode. You will use it in command-line mode, issuing EM CLI commands individually from the operating system prompt.

c. emcli can be thought of as a client of the OMS, similar to the Cloud Control console or the management agents. As such, the first step is to establish a session with the OMS by logging in. Log in as the emadmin super administrator.

```
[oracle@em13c ~]$ emcli login -username=emadmin
Enter password <refer to security credentials list>


Login successful
[oracle@em13c ~]$
```

d. The EM CLI command to grant BI Publisher privileges is grant_bipublisher_roles, and we can get emcli to show us the full syntax for the command.

```
EM [oracle@em13c ~]$ emcli help grant_bipublisher_roles
emcli grant_bipublisher_roles
    -roles="<role1>[;<role2>;...<role_n>]"
    [-users="<user1>[;<user2>;...<user_n>]"]
    [-external_role="<grantee_group>"]


Description:
  This verb grants roles for accessing the BI Publisher catalog.
  To grant roles specify the -roles option and specify one or
more roles separated by a semicolon.
  Use the -external_role option to specify the name of the
external group to receive the grant.
  Use the -users option to specify the name of the users to
receive the grant, one or more users separated by a semicolon.



Options:
    -roles
        Grants one or more roles to BI Publisher.
    -external_role
        Group to assign the role.
    -users
        Users to receive the granted role.

Example 1 - Grants one role to a group:
    emcli grant_bipublisher_roles -roles="EMBIPViewer" -
external_role="TESTGROUPNAME"

Example 2 - Grants more than one role to a group:
    emcli grant_bipublisher_roles -
roles="EMBIPViewer;EMBIPAuthor" -external_role="TESTGROUPNAME"
```

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```
Example 3 - Grants one role to a user:
  emcli grant_bipublisher_roles -roles="EMBIPViewer" -
users="TESTUSERNAME"


Example 4 - Grants one role to multiple users:
  emcli grant_bipublisher_roles -roles="EMBIPViewer" -
users="TESTUSERNAME;TESTUSERNAME2"


Example 5 - Grants more than one role to multiple users and a
group:
   emcli grant_bipublisher_roles -
roles="EMBIPViewer;EMBIPAuthor" -external_role="TESTGROUPNAME" -
users="TESTUSERNAME;TESTUSERNAME2"
```

Note that you can generate a handy EM CLI reference file by first logging in to `emcli`, and then redirecting the output of `emcli help` to a file. EM CLI is also documented in detail in the Cloud Control documentation set.

e. Grant the `EMBIPViewer` role to `bipuser`. Note that the username should be specified in uppercase.

```
[oracle@em13c ~]$ emcli grant_bipublisher_roles \
-roles="EMBIPViewer" -users="BIPUSER"
EMBIPViewer role successfully granted to BIPUSER
[oracle@em13c ~]$
```

Log out of `emcli`.

```
[oracle@em13c ~]$ emcli logout
Logout successful
EM [oracle@em13c ~]$
```

3. View a BI Publisher report.

a. Return to the Cloud Control console. If the BI Publisher Enterprise Reports page is still displayed for `bipuser`, refresh it to see the effect of granting the `EMBIPViewer` privilege. Otherwise, navigate to the BI Publisher reports page from the menu: *Enterprise > Reports > BI Publisher Enterprise Reports*. You will be presented with a hierarchy of out-of-the-box reports.

b. Choose any report, such as the Agents Information report, and click the link. A new browser tab is opened. This is because BI Publisher runs a separate application, and the links displayed in the Cloud Control console merely act as a punchout to BI Publisher.

c. As you did for the Cloud Control console, add an exception for the BI Publisher SSL certificate. You will be presented with the BI Publisher Enterprise authentication page, which means that you have to log in separately to BI Publisher.

d. Enter the credentials for `bipuser` and the report will be executed. Because `bipuser` has the `EM_ALL_VIEWER` role and therefore, can view the agent targets, the report is populated with data.

e. The EMBIPViewer security role gives the grantee exactly that: BI Publisher view privileges only. Open the New menu to see that bipuser cannot create any objects in BI Publisher.

Practices for Lesson 2: Architecture and Implementation Options

Practices for Lesson 3:
Oracle Cloud in Your IT
Ecosystem

Practices for Lesson 3

There are no practices for this lesson.

Practices for Lesson 4:
Upgrade Paths

Overview

Practices for Lesson 4: Overview

Practices Overview

In these practices, you work through a 1-System upgrade from Enterprise Manager Cloud Control 12*c* to Cloud Control 13*c*.

Practice 4-1: 1-System Upgrade Cloud Control 12.1.0.5 to 13.1.0.0

Overview

In this practice, you perform a 1-System upgrade on a single-server installation of Oracle Enterprise Manager Cloud Control 12.1.0.5 with one managed host. You step through the entire upgrade process. You install all required patches to an existing OMS and agents, shut down the OMS, and then use the Oracle Universal Installer's upgrade path to upgrade the OMS and deploy the new 13*c* agents. Next, you start up your system and delete the old management agents.

Assumptions

- Only the Virtual Machines that are required for this practice are running while the exercises are being attempted.

Tasks

1. Ensure that the Cloud Control 12*c* agent on host01.example.com is running.

    a. Switch to the host01.example.com VM GUI console, where you should already be logged in as the oracle user.

    b. Start a terminal session if one is not already running, from the menu: *Applications > System Tools > Terminal,* and check the status of the Enterprise Manager Cloud Control 12*c* agent. In the following example, the agent is running.

    NOTE that because you have not yet started the em12c.example.com VM, the OMS is unreachable at the moment. However your agent is still collecting metrics and will start uploading them after you start the OMS in the next step.

```
[oracle@host01 ~]$
/u01/app/oracle/product/agent12c/agent_inst/bin/emctl \
status agent
Oracle Enterprise Manager Cloud Control 12c Release 5
Copyright (c) 1996, 2015 Oracle Corporation.  All rights
reserved.
----------------------------------------------------------------
Agent Version        : 12.1.0.5.0
OMS Version          : (unknown)
Protocol Version     : 12.1.0.1.0
Agent Home           :
/u01/app/oracle/product/agent12c/agent_inst
Agent Log Directory  :
/u01/app/oracle/product/agent12c/agent_inst/sysman/log
Agent Binaries       :
/u01/app/oracle/product/agent12c/core/12.1.0.5.0
Agent Process ID     : 4904
Parent Process ID    : 2410
```

```
Agent URL                :
https://host01.example.com:3872/emd/main/
Local Agent URL in NAT :
https://host01.example.com:3872/emd/main/
Repository URL           :
https://em12c.example.com:4903/empbs/upload
Started at               : 2016-04-27 21:13:32
Started by user          : oracle
Operating System         : Linux version 3.8.13-
98.2.2.el6uek.x86_64 (amd64)
Last Reload              : (none)
Last successful upload                         : (none)
Last attempted upload                          : (none)
Total Megabytes of XML files uploaded so far : 0
Number of XML files pending upload           : 163
Size of XML files pending upload(MB)         : 0.24
Available disk space on upload filesystem    : 69.61%
Collection Status                            : Collections
enabled
Heartbeat Status                             : OMS is
unreachable
Last attempted heartbeat to OMS              : 2017-03-26
21:20:48
Last successful heartbeat to OMS             : (none)
Next scheduled heartbeat to OMS              : 2017-03-26
21:21:36

----------------------------------------------------------------
Agent is Running and Ready
[oracle@host01 ~]$
```

c. **If the agent is not running**, start it with the following command:

```
/u01/app/oracle/product/agent12c/agent_inst/bin/emctl \
start agent
```

d. Minimize the host01.example.com VM and return to your desktop's GUI.

2. Start the em12c.example.com VM by using Oracle VM VirtualBox Manager.

a. If it is not running, start Oracle VM VirtualBox Manager on your classroom machine from the menu: *Applications > System Tools > Oracle VM VirtualBox.*

b. If the em13c.example.com VM is still running, power it off in Oracle VM VirtualBox Manager by highlighting em13c.example.com and selecting the menu option *Machine > Close > Power off*.

c. Highlight the em12c.example.com VM and click the **Snapshots** button to display the list of snapshots.

d. Highlight the snapshot called "EMCC12*c* installed and host01 managed" and click the **Restore Snapshot** button. In the VirtualBox - Question dialog box, **deselect** the check box to create a snapshot of the current machine state if it is shown, and click **Restore**.

e. Start the `em12c.example.com` VM by clicking the **Start** button or by selecting the *Machine > Start* menu option.

f. If you are presented with an Information dialog box that states that the VM will be switched to full-screen mode, allow this to happen by clicking the **Switch** button. Otherwise, after the VM starts, manually switch to full-screen mode from the VM menu: *View > Switch to Fullscreen*. Your desktop will show the GUI of `em12c.example.com` (discernible by the visual cue in the desktop background).

3. Establish a terminal session for executing database operations on `em12c.example.com`.

a. If not already logged in, log in to the `em12c.example.com` GUI as the `oracle` user.

b. Open a terminal session from the menu: *Application > System Tools > Terminal.*

c. This is where you will perform all database-related command-line operations for this practice, so change the prompt to clearly identify its use.

```
[oracle@em12c ~]$ export PS1='DB '$PS1
DB [oracle@em12c ~]$
```

d. Set the environment to point to the EM 12*c* OMR database.

```
DB [oracle@em12c ~]$ . oraenv
ORACLE_SID = [oracle] ? emrep
The Oracle base has been set to /u01/app/oracle
DB [oracle@em12c ~]$
```

For the rest of this practice, we will refer to this terminal session as the "DB session."

4. Establish a terminal session for executing Enterprise Manager Cloud Control 12*c* R5 operations on `em12c.example.com`.

a. Open a terminal session from the menu: *Application > System Tools > Terminal.*

b. This is where you will perform all Enterprise Manager Cloud Control 12*c* R5–related command-line operations for this practice, so change the prompt to clearly identify its use.

```
[oracle@em12c ~]$ export PS1='EM12 '$PS1
EM12 [oracle@em12c ~]$
```

c. Set your environment to reference the Enterprise Manager Cloud Control 12*c* R5 home directories.

```
EM12 [oracle@em12c ~]$ export \
ORACLE_HOME=/u02/app/oracle/product/middleware12c/oms
EM12 [oracle@em12c ~]$ export \
PATH=$ORACLE_HOME/bin:$ORACLE_HOME/OPatch:$PATH
```

For the rest of this practice, we will refer to this terminal session as the "EM12 session."

5. Establish a terminal session for executing Enterprise Manager 13*c* operations on `em12c.example.com`.

    a. Open a terminal session from the menu: *Application > System Tools > Terminal.*

    b. This is where you will perform all Enterprise Manager 13*c* R2–related command-line operations for this practice, so change the prompt to clearly identify its use.

```
[oracle@em12c ~]$ export PS1='EM13 '$PS1
EM13 [oracle@em12c ~]$
```

   For the rest of this practice, we will refer to this terminal session as the "EM13 session."

6. Check the status of the Enterprise Manager Cloud Control 12*c* components by using the **EM12 session**.

    a. Check the status of the OMS. If the OMS is up, we can infer that the OMR is also up and running.

```
EM12 [oracle@em12c ~]$ emctl status oms
Oracle Enterprise Manager Cloud Control 12c Release 5
Copyright (c) 1996, 2013 Oracle Corporation.  All rights
reserved.
WebTier is Up
Oracle Management Server is Up
EM12 [oracle@em12c ~]$
```

    b. Check if the central agent (installed with the OMS) is running by issuing the `emctl status agent` command from the agent home. Here, the agent is running.

```
EM12 [oracle@em12c ~]$
/u02/app/oracle/product/agent12c/agent_inst/bin/emctl \
status agent
Oracle Enterprise Manager Cloud Control 12c Release 5
Copyright (c) 1996, 2015 Oracle Corporation.  All rights
reserved.
---------------------------------------------------------------
Agent Version          : 12.1.0.5.0
OMS Version            : 12.1.0.5.0
Protocol Version       : 12.1.0.1.0
Agent Home             :
/u02/app/oracle/product/agent12c/agent_inst
Agent Log Directory    :
/u02/app/oracle/product/agent12c/agent_inst/sysman/log
Agent Binaries         :
/u02/app/oracle/product/agent12c/core/12.1.0.5.0
Agent Process ID       : 6972
Parent Process ID      : 3772
Agent URL              :
https://em12c.example.com:3872/emd/main/
```

```
Local Agent URL in NAT :
https://em12c.example.com:3872/emd/main/
Repository URL         :
https://em12c.example.com:4903/empbs/upload
Started at             : 2016-02-02 16:28:51
Started by user        : oracle
Operating System       : Linux version 3.8.13-
98.2.2.el6uek.x86_64 (amd64)
Last Reload            : (none)
Last successful upload                        : 2016-02-02
18:31:17
Last attempted upload                         : 2016-02-02
18:31:17
Total Megabytes of XML files uploaded so far : 0.16
Number of XML files pending upload           : 0
Size of XML files pending upload(MB)         : 0
Available disk space on upload filesystem    : 74.10%
Collection Status                            : Collections
enabled
Heartbeat Status                             : Ok
Last attempted heartbeat to OMS              : 2016-02-02
18:36:18
Last successful heartbeat to OMS             : 2016-02-02
18:36:18
Next scheduled heartbeat to OMS              : 2016-02-02
18:37:18

---------------------------------------------------------------
Agent is Running and Ready
EM12 [oracle@em12c ~]$
```

c. At this point, you may optionally log in to Oracle Enterprise Manager Cloud Control from your browser by using the URL https://em12c.example.com:7802/em. Log in as sysman (refer to the security credentials list for the password) and ensure that your system is up and running as expected.

7. **Copy** the emkey from the OMS file system to the Management Repository by using the **EM12 session**. The emkey is used to encrypt all sensitive data in the OMR and is usually stored outside the OMR. However, for the upgrade, we need to make it available in the OMR. The upgrade process will automatically remove the emkey from the repository.

Refer to the security credentials list for the sysman password.

```
EM12 [oracle@em12c ~]$ emctl config emkey \
-copy_to_repos -sysman_pwd <password>
Oracle Enterprise Manager Cloud Control 12c Release 5
Copyright (c) 1996, 2015 Oracle Corporation.  All rights
reserved.
```

```
The EMKey has been copied to the Management Repository. This
operation will cause the EMKey to become unsecure.
After the required operation has been completed, secure the
EMKey by running "emctl config emkey -remove_from_repos".
EM12 [oracle@em12c ~]$
```

Check the status of the emkey.

```
EM12 [oracle@em12c ~]$ emctl status emkey \
-sysman_pwd <password>
Oracle Enterprise Manager Cloud Control 12c Release 5
Copyright (c) 1996, 2015 Oracle Corporation.  All rights
reserved.
The EMKey  is configured properly, but is not secure. Secure the
EMKey by running "emctl config emkey -remove_from_repos".
EM12 [oracle@em12c ~]$
```

8. In a production system, you would next back up your Enterprise Manager Cloud Control
    system by using your predefined backup strategy. In your practice environment, in the
    interest of timeliness, you will skip this step.

9. **Note: This step is for your information only.**

    The EM Prerequisite Kit (emprereqkit) will be called by the installer to check that your
    Cloud Control 12*c* Oracle Management Repository (OMR) database instance is suitable to
    be used for Cloud Control 13*c*, because the requirements may have changed between
    versions. However, rather than wait for the moment of upgrade to take any corrective steps,
    you can call it beforehand to ensure that your upgrade is as smooth as possible.

    You will let the installer run emprereqkit in this exercise.

10. You can upgrade the OMS and the Management Repository in graphical or silent mode.
    You can also choose to install the software binaries and plug-ins first and perform the
    upgrade later, thereby reducing your Cloud Control down time to only the time taken to
    perform the upgrade. This is the recommended upgrade process, and in this exercise, you
    will perform an upgrade in graphical mode by using the software-only process. At the same
    time, you will deploy a new plug-in.

    a. Use your **EM13 session** to issue the mktemp command to create a temporary
        directory with a randomly generated name, where the EM13 next generation installer
        can unpack the installation media:

    ```
    EM13 [oracle@em12c ~]$ mktemp -d -p /u02/app
    /u02/app/tmp.LWwjISojnm
    ```

    Note: Your generated directory name will differ from what is shown in this practice.

    b. Launch the installer from your **EM13 session.** Specify the temporary directory that you
        created as the location for unpacking the installation media, specify the parameter
        INSTALL_SWONLY_WITH_PLUGINS to indicate that this will be a two-part upgrade
        (software-only, and then configuration), and specify the PLUGIN_LOCATION parameter
        to tell the installer where to look for non-default plug-ins.

```
EM13 [oracle@em12c ~]$
/stage/emcc13c/emcc13cR2/em13200_linux64.bin \
INSTALL_SWONLY_WITH_PLUGINS=true \
PLUGIN_LOCATION=/stage/emcc13c/emcc13cR2/plugins \
-J-Djava.io.tmpdir=/u02/app/tmp.LWwjISojnm
```

Note: On being invoked, the installer unpacks the installation media before, in turn, invoking the Oracle Universal Installer. This will take a few minutes in the virtualized classroom environment.

c. Deselect "I wish to receive security updates via My Oracle Support" and click **Next**. Then click **Yes** when asked if you "wish to remain uninformed of critical security issues in your configuration."

d. **Skip** the check for updates (your VMs cannot access anything outside your classroom machine).

e. The installer performs the prerequisite checks. You will get a warning about your available port range and physical memory. Click **Ignore**, and then click **Next**.

f. Select the option to "Upgrade an existing Enterprise Manager System" with a 1-System Upgrade of the current EM 12*c* home. Select the only management server listed, version 12.1.0.5, and click **Next**.

g. Enter the following value on the Installation Details Page:

Middleware Home Location	/u02/app/oracle/product/middleware13c

Note that the host name is already listed and cannot be altered.

Click **Next**.

h. Enter the following information on the Database Connection Details page:

SYS password	Refer to the security credentials list.
SYSMAN password	Refer to the security credentials list.
Confirm OMR backup	Selected (even though you have not done this. However, it is a moot point because you are only performing the software installation phase.)
Disable DDMP jobs	Deselected, Because we do not have a lot of data, running deferred data migration jobs will not stress our system.

i. You will be presented with a warning that the "upgrade process has detected MD5 certificate usage for some OMS-agent communications." Strictly speaking, this is a warning that MD5 certificates may be used, not that they are definitely in use. SHA-based certificates are now preferred and at some point, MD5 certificates will no longer be supported.

The warning message will refer to a file informing you where MD5 certificates may be used. Take a moment to examine this file now:

1) The `md5Target.txt` file, as shown in the dialog box, will be located in your temporary directory such as `/u02/app/ tmp.LWwjISojnm/OraInstall2016-12-11_08-47-48PM/md5Target.txt`.

   Use your **EM12 session** to list the contents of the `md5Target.txt` file:

```
EM12 [oracle@em12c ~]$ cat \
/u02/app/tmp.LWwjISojnm/OraInstall2016-12-11_08-47-
48PM/md5Target.txt
/EMGC_GCDomain/GCDomain/EMGC_ADMINSERVER|weblogic_j2eeserver|Bot
h|em12c.example.com:3872|em12c.example.com|7102,/EMGC_GCDomain/G
CDomain/EMGC_OMS1|weblogic_j2eeserver|Both|em12c.example.com:387
2|em12c.example.com|7301,/Farm01_base_domain/base_domain/AdminSe
rver|weblogic_j2eeserver|Both|host01.example.com:3872|192.168.56
.101|7002,EM Management
Beacon|oracle_beacon|Agent|em12c.example.com:3872|em12c.example.
com|7802
EM12 [oracle@em12c ~]$
```

Each comma-separated row in `md5Target.txt` contains six fields separated by pipe symbols | :

Field	Usage	Example Value
Target name	The internal name of the target	`/EMGC_GCDomain/GCDomain/ EMGC_ADMINSERVER|weblogi c_j2eeserver`
Target type	Standard Cloud Control target types	`weblogic_j2eeserver`
MD5 usage	OMS = from OMS to target Agent = from agent to target Both = from OMS and agent to target	Both
Agent	The internal name of the agent	`em12c.example.com:3872`
Host	Where the agent is running	`em12c.example.com`
Target port	The monitoring port that is using MD5 communication	7102

You can safely ignore any targets listed that are part of GCDomain because these will be updated during the upgrade. MD5-based communication with other targets should be confirmed and eventually re-secured by using SHA certificates. You can refer to each target type's documentation for details on how this is done. For the purposes of this exercise, we will just take note of the warning and move on.

j. Click **OK** in the MD5 certificate warning dialog box.

k. Click **OK** in the Information dialog box that states the need to apply the required database patches. Because we are only installing the Enterprise Manager Cloud Control 13*c*R2 software right now, we will defer patching the repository database until later when we configure Cloud Control 13*c*R2 and there is forced down time.

l. Click **OK** in the Information dialog box that recommends that the central agent should be shut down. As with the required database patches, we are only installing the Cloud Control 13*c*R2 software at this point in time, and can let the central agent continue to monitor the Cloud Control 12c instance.

m. Review the upgraded versions of the plug-ins and click **Next**. Note that the Systems Infrastructure plug-in is deployed. This is an additional default plug-in in Enterprise Manager Cloud Control 13*c*.

n. Because you launched the installer with the INSTALL_SWONLY_WITH_PLUGINS parameter with a value of true, the next screen is the Select Plug-ins step that allows you to select one or more additional plug-ins to be deployed while upgrading your system.

   By passing the parameter PLUGIN_LOCATION to the installer, the additional plug-ins screen also lists the plug-ins that you have provided in that location.

   Select an additional plug-in from your PLUGIN_LOCATION, for example, the Oracle GoldenGate plug-in, and click **Next**.

o. Enter the following values on the Extend WebLogic Server Domain page, and then click **Next**:

WebLogic Password	Refer to the security credentials list.
OMS Instance Base Location	/u02/app/oracle/product/gc_inst13

p. BI Publisher is deployed with every Enterprise Manager Cloud Control 13*c* installation. The Shared Location Details page allows you to nominate shared storage for BI Publisher in a multi-node topology. We have a single-node topology, so enter the following information on the Enterprise Manager Shared Location Details page, and then click **Next**:

Configure a Shared Location for Oracle BI Publisher	Deselected
Enable BI Publisher	Selected

q. Accept the ports chosen by the installer for your BI Publisher installation and click **Next**.

r. Review the upgrade information and click **Upgrade**.

s. The installer will report on progress.

11. Interrupt the software-only installation phase of the upgrade by stopping the virtual machine, and start up the virtual machine with a snapshot that is already at the end of this phase.

    a. Stop the virtual machine by using the *Machine > Close…* menu option, and elect to just power off the machine without restoring the current snapshot.

    b. From the Oracle VM VirtualBox Manager, display the snapshots for `em12c.example.com`.

    c. Highlight the snapshot called "EMCC13c installer waiting for allroot.sh" and click the Restore Snapshot button. In the VirtualBox - Question dialog box, **deselect** the check box to create a snapshot of the current machine state if it is shown, and click **Restore**.

    d. Start `em12c.example.com`. The snapshot will be restored and you will be presented with the installer that waits for you to execute the configuration scripts. Switch to full-screen mode if it didn't happen automatically.

12. Execute the `root` script.

    a. Switch to the `root` user in the **EM12 session** and run the `allroot.sh` script. Refer to the security credentials list for the `root` password.

```
EM12 [oracle@em12c]$ su -
Password: <password>
```

```
[root@em12c ~]# /u02/app/oracle/product/middleware13c/allroot.sh

Starting to execute allroot.sh .........

Starting to execute
/u02/app/oracle/product/middleware13c/root.sh ......
/etc exist
/u02/app/oracle/product/middleware13c
Finished execution of
/u02/app/oracle/product/middleware13c/root.sh ......

[root@em12c ~]#
```

    b. Switch back to the `oracle` user.

```
[root@em12c ~]# exit
logout
EM12 [oracle@em12c]$
```

    c. Click **OK** in the OUI window.

13. Review the information about this first step and the next step of your upgrade. In particular, note the location of the `ConfigureGC.sh` script that you will use for the second part of the upgrade. Click **Close**.

```
Successfully installed the software binaries.
```

Practices for Lesson 4: Upgrade Paths

```
To configure the installation, run the following command from
the OMS home:


/u02/app/oracle/product/middleware13c/sysman/install/ConfigureGC
.sh


Ensure that you run the emctl command on the old OMS home to
stop all the OMS instance that are running.


<Old OMS home>/bin/emctl stop oms -all
```

14. Now that the Enterprise Manager Cloud Control 13*c*R2 software has been installed, you
    can configure the new installation. This is the phase that requires the existing Enterprise
    Manager Cloud Control 12*c* instance to be shut down. And because you have to shut down
    your Cloud Control 12*c* instance, you can take advantage of this opportunity to patch your
    repository database.

    If you also needed to upgrade your OMR database to a version that is supported by Cloud
    Control 13*c*R2, this would be the time to do that.

    Shut down the OMS by using your **EM12 session**:

```
EM12 [oracle@em12c ~]$ emctl stop oms
Oracle Enterprise Manager Cloud Control 12c Release 5
Copyright (c) 1996, 2015 Oracle Corporation.   All rights
reserved.
Stopping WebTier...
WebTier Successfully Stopped
Stopping Oracle Management Server...
Oracle Management Server Successfully Stopped
Oracle Management Server is Down
EM12 [oracle@em12c ~]$
```

Note that if you are running a JVMD or ADP engine, you must stop them explicitly. For
example:

```
emctl extended oms jvmd stop -all
emctl extended oms adp stop –all
```

15. **Shut down** the central Management Agent by using your **EM12 session**. Even though this
    agent is not yet being upgraded, it must be stopped because it monitors the management
    repository that is being upgraded.

```
EM12 [oracle@em12c ~]$
/u02/app/oracle/product/agent12c/agent_inst/bin/emctl \
stop agent
Oracle Enterprise Manager Cloud Control 12c Release 5
Copyright (c) 1996, 2015 Oracle Corporation.  All rights
reserved.
----------------------------------------------------------------
Stopping agent ...... stopped.
```

16. You need to apply all required patches for the OMR database home, in your case, the 12.1.0.2 version of the database. First, install the latest version of *Patch 6880880: OPatch … for Oracle software releases 12.1.0.x* into the OMR DB home. The patch is available as `/stage/emcc13c/p6880880_121010_Linux-x86-64.zip`.

   a. Return to your **DB session** and move the existing OPatch directory.

```
DB [oracle@em12c ~]$ cd $ORACLE_HOME
DB [oracle@em12c dbhome_1]$ mv OPatch OPatch.ootb
```

   b. Unzip the new Patch 6880880 directly under the DB home.

```
DB [oracle@em12c dbhome_1]$ unzip \
/stage/emcc13c/p6880880_121010_Linux-x86-64.zip
Archive:  /stage/p6880880_121010_Linux-x86-64.zip
   creating: OPatch/
  inflating: OPatch/datapatch
  inflating: OPatch/operr
…
  extracting: OPatch/config/opatch.properties
DB [oracle@em12c dbhome_1]$
```

   c. Include OPatch in your environment's execution path.

```
DB [oracle@em12c dbhome_1]$ export \
PATH=$ORACLE_HOME/OPatch:$PATH
```

17. Apply Patch 24006101: DATABASE PATCH SET UPDATE 12.1.0.2.161018 to your OMR database home. This patch is available for you as `/stage/emcc13c/p24006101_121020_Linux-x86-64.zip`.

   a. Shut down the OMR and the database listener by using your **DB session.**

```
DB [oracle@em12c dbhome_1]$ sqlplus / as sysdba

SQL*Plus: Release 12.1.0.2.0 Production on Tue Feb 2 19:03:51 2016

Copyright (c) 1982, 2014, Oracle.  All rights reserved.


Connected to:
Oracle Database 12c Enterprise Edition Release 12.1.0.2.0 - 64bit Production
With the Partitioning, OLAP, Advanced Analytics and Real Application Testing
options
```

Practices for Lesson 4: Upgrade Paths

```
SQL> shutdown immediate
Database closed.
Database dismounted.
ORACLE instance shut down.
SQL> exit
Disconnected from Oracle Database 12c Enterprise Edition Release 12.1.0.2.0 -
64bit Production
With the Partitioning, OLAP, Advanced Analytics and Real Application Testing
options
DB [oracle@em12c dbhome_1]$
```

```
DB [oracle@em12c dbhome_1]$ lsnrctl stop

LSNRCTL for Linux: Version 12.1.0.2.0 - Production on 03-FEB-
2016 16:45:18

Copyright (c) 1991, 2014, Oracle.  All rights reserved.

Connecting to
(DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=em12c.example.com)(POR
T=1521)))
The command completed successfully
DB [oracle@em12c dbhome_1]$
```

b. Create a temporary directory for the patch and unzip it there by using your **DB session**.

```
DB [oracle@em12c dbhome_1]$ cd /tmp
DB [oracle@em12c tmp]$ mkdir p24006101
DB [oracle@em12c tmp]$ cd $_
DB [oracle@em12c p24006101]$ unzip \
/stage/emcc13c/p24006101_121020_Linux-x86-64.zip
…
  inflating: 24006101/21948354/files/lib/libxml12.a/ltxvm1.o
  inflating: PatchSearch.xml
DB [oracle@em12c p24006101]$ ls
24006101  PatchSearch.xml
DB [oracle@em12c p24006101]$
```

c. **Apply** the patch in your **DB session**.

```
DB [oracle@em12c p24006101]$ cd 24006101
DB [oracle@em12c 24006101]$ opatch apply
Oracle Interim Patch Installer version 12.2.0.1.8
Copyright (c) 2016, Oracle Corporation.  All rights reserved.
```

```
Oracle Home         : /u01/app/oracle/product/12.1.0/dbhome_1
Central Inventory : /u01/app/oraInventory
   from            :
/u01/app/oracle/product/12.1.0/dbhome_1/oraInst.loc
OPatch version    : 12.2.0.1.8
OUI version       : 12.1.0.2.0
Log file location :
/u01/app/oracle/product/12.1.0/dbhome_1/cfgtoollogs/opatch/opatc
h2016-12-15_21-32-48PM_1.log


Verifying environment and performing prerequisite checks...
```

```
OPatch continues with these patches:   19769480   20299023
20831110   21359755   21948354   22291127   23054246   24006101

Do you want to proceed? [y|n]
Y
User Responded with: Y
All checks passed.


Please shutdown Oracle instances running out of this ORACLE_HOME
on the local system.
(Oracle Home = '/u01/app/oracle/product/12.1.0/dbhome_1')



Is the local system ready for patching? [y|n]
Y
User Responded with: Y
Backing up files...
Applying sub-patch '19769480' to OH
'/u01/app/oracle/product/12.1.0/dbhome_1'


Patching component oracle.rdbms.deconfig, 12.1.0.2.0...


…
Composite patch 24006101 successfully applied.
Log file location:
/u01/app/oracle/product/12.1.0/dbhome_1/cfgtoollogs/opatch/opatc
h2016-12-15_21-32-48PM_1.log


OPatch succeeded.
DB [oracle@em12c 24006101]$
```

d. **Start** up the listener and the OMR database in your **DB session**.

```
DB [oracle@em12c 24006101]$ lsnrctl start
```

```
LSNRCTL for Linux: Version 12.1.0.2.0 - Production on 03-FEB-
2016 20:51:05


Copyright (c) 1991, 2014, Oracle.  All rights reserved.


Starting /u01/app/oracle/product/12.1.0/dbhome_1/bin/tnslsnr:
please wait...


TNSLSNR for Linux: Version 12.1.0.2.0 - Production
System parameter file is
/u01/app/oracle/product/12.1.0/dbhome_1/network/admin/listener.o
ra
Log messages written to
/u01/app/oracle/diag/tnslsnr/em12c/listener/alert/log.xml
Listening on:
(DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=em12c.example.com)(POR
T=1521)))
Listening on:
(DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(KEY=EXTPROC1521)))


Connecting to
(DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=em12c.example.com)(POR
T=1521)))
STATUS of the LISTENER
------------------------
Alias                     LISTENER
Version                   TNSLSNR for Linux: Version 12.1.0.2.0
- Production
Start Date                03-FEB-2016 20:51:05
Uptime                    0 days 0 hr. 0 min. 20 sec
Trace Level               off
Security                  ON: Local OS Authentication
SNMP                      OFF
Listener Parameter File
/u01/app/oracle/product/12.1.0/dbhome_1/network/admin/listener.o
ra
Listener Log File
/u01/app/oracle/diag/tnslsnr/em12c/listener/alert/log.xml
Listening Endpoints Summary...

(DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=em12c.example.com)(POR
T=1521)))
  (DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(KEY=EXTPROC1521)))
The listener supports no services
The command completed successfully
```

```
DB [oracle@em12c 24006101]$
```

```
DB [oracle@em12c 24006101]$ sqlplus / as sysdba
SQL*Plus: Release 12.1.0.2.0 Production on Wed Feb 3 20:50:19
2016

Copyright (c) 1982, 2014, Oracle.  All rights reserved.

Connected to an idle instance.

SQL> startup
ORACLE instance started.

Total System Global Area 2013265920 bytes
Fixed Size                   2926080 bytes
Variable Size              771754496 bytes
Database Buffers          1224736768 bytes
Redo Buffers                13848576 bytes
Database mounted.
Database opened.
```

```
SQL> exit
Disconnected from Oracle Database 12c Enterprise Edition Release
12.1.0.2.0 - 64bit Production
With the Partitioning, OLAP, Advanced Analytics and Real
Application Testing options
DB [oracle@em12c 24006101]$
```

e. Execute the patch post-installation steps in your **DB session**.

```
DB [oracle@em12c 24006101]$ cd $ORACLE_HOME/OPatch
DB [oracle@em12c OPatch]$ ./datapatch –verbose
SQL Patching tool version 12.1.0.2.0 on Thu Dec 15 21:39:00 2016
Copyright (c) 2016, Oracle.  All rights reserved.

Log file for this invocation:
/u01/app/oracle/cfgtoollogs/sqlpatch/sqlpatch_21245_2016_12_15_2
1_39_00/sqlpatch_invocation.log

Connecting to database...OK
Bootstrapping registry and package to current versions...done
Determining current state...done

Current state of SQL patches:
```

```
Bundle series PSU:
  ID 161018 in the binary registry and not installed in the SQL
registry


Adding patches to installation queue and performing prereq
checks...
Installation queue:
  Nothing to roll back
  The following patches will be applied:
    24006101 (Database Patch Set Update : 12.1.0.2.161018
(24006101))


Installing patches...
Patch installation complete.  Total patches installed: 1


Validating logfiles...
Patch 24006101 apply: SUCCESS
  logfile:
/u01/app/oracle/cfgtoollogs/sqlpatch/24006101/20683584/24006101_
apply_EMREP_2016Dec15_21_39_35.log (no errors)
SQL Patching tool complete on Thu Dec 15 21:40:00 2016
DB [oracle@em12c OPatch]$
```

18. A prerequisite for the Cloud Control 13*c* upgrade is that there are no snapshots created of the Management Repository tables. To check, log in as the `sysman` user and run the following query. It should return no rows. Refer to the security credentials list for the `sysman` password.

```
DB [oracle@em12c OPatch]$ sqlplus sysman/<password>

SQL*Plus: Release 12.1.0.2.0 Production on Thu Feb 4 15:21:10
2016

Copyright (c) 1982, 2014, Oracle.  All rights reserved.

Last Successful login time: Wed Feb 03 2016 20:00:16 +00:00

Connected to:
Oracle Database 12c Enterprise Edition Release 12.1.0.2.0 -
64bit Production
With the Partitioning, OLAP, Advanced Analytics and Real
Application Testing options

SQL> select master, log_table
  2  from all_mview_logs
  3  where log_owner='SYSMAN';

no rows selected

SQL> exit
Disconnected from Oracle Database 12c Enterprise Edition Release
12.1.0.2.0 - 64bit Production
With the Partitioning, OLAP, Advanced Analytics and Real
Application Testing options
DB [oracle@em12c OPatch]$
```

19. **Start** the Cloud Control 12*c* OMS to confirm that the patch was applied successfully and that the OMR database is still operational. You may log in and confirm that your system is working as expected. Use your **EM12 session**.

```
EM12 [oracle@em12c ~]$ emctl start oms
Oracle Enterprise Manager Cloud Control 12c Release 5
Copyright (c) 1996, 2015 Oracle Corporation.  All rights
reserved.
Starting Oracle Management Server...
Starting WebTier...
WebTier Successfully Started
Oracle Management Server Successfully Started
Oracle Management Server is Up
```

Practices for Lesson 4: Upgrade Paths

```
EM12 [oracle@em12c ~]$
```

20. **Stop** the Cloud Control 12*c* OMS so that you can configure the new Cloud Control 13*c* installation. Use your **EM12 session**.

```
EM12 [oracle@em12c ~]$ emctl stop oms -all
Oracle Enterprise Manager Cloud Control 12c Release 5
Copyright (c) 1996, 2015 Oracle Corporation.  All rights
reserved.
Stopping WebTier...
WebTier Successfully Stopped
Stopping Oracle Management Server...
Oracle Management Server Successfully Stopped
AdminServer Successfully Stopped
Oracle Management Server is Down
EM12 [oracle@em12c ~]$
```

Note that if you are running a JVMD or ADP engine, you must stop them explicitly. For example:

```
emctl extended oms jvmd stop -all
emctl extended oms adp stop -all
```

21. You are now ready to configure the Cloud Control 13*c*R2 software that you installed earlier.

a. Execute the ConfigureGC.sh script by using your **EM13 session**. This will launch the Oracle Universal Installer to collect your input and perform the configuration phase of the upgrade.

```
EM13 [oracle@em12c ~]$ cd \
/u02/app/oracle/product/middleware13c/sysman/install
EM13 [oracle@em12c install]$ ./ConfigureGC.sh
```

b. Select the option to "Upgrade an existing Enterprise Manager System" with a 1-System Upgrade of the current EM 12*c* home. Select the only management server listed, version 12.1.0.5, and click **Next**.

c. Enter the following information on the Database Connection Details page:

SYS password	Refer to the security credentials list.
SYSMAN password	Refer to the security credentials list.
Confirm OMR backup	Selected (even though you have not done this)
Disable DDMP jobs	Deselected. Because we do not have a lot of data, running deferred data migration jobs will not stress our system.

d. You should be presented with an Error dialog box that states that the OMR optimizer_adaptive_features parameter is not set to FALSE. Ideally, we would have met this requirement before the upgrade, but this illustrates that even at this

stage, we can modify the parameter without cancelling the upgrade; so do that by using your **DB session**:

```
DB [oracle@em12c OPatch]$ sqlplus / as sysdba

SQL*Plus: Release 12.1.0.2.0 Production on Thu Feb 4 18:46:12
2016

Copyright (c) 1982, 2014, Oracle.  All rights reserved.


Connected to:
Oracle Database 12c Enterprise Edition Release 12.1.0.2.0 -
64bit Production
With the Partitioning, OLAP, Advanced Analytics and Real
Application Testing options


SQL> show parameter adaptive

NAME                                 TYPE    VALUE
------------------------------------ ------- ---------------
---------------
optimizer_adaptive_features          boolean    TRUE
optimizer_adaptive_reporting_only    boolean    FALSE
parallel_adaptive_multi_user         boolean    TRUE
SQL> alter system set optimizer_adaptive_features=false
scope=both;

System altered.


SQL> exit
Disconnected from Oracle Database 12c Enterprise Edition Release
12.1.0.2.0 - 64bit Production
With the Partitioning, OLAP, Advanced Analytics and Real
Application Testing options
DB [oracle@em12c OPatch]$
```

e. Back in the installer, click **OK** in the Error dialog box with information about the optimizer_adaptive_features parameter, and then click **Next** again. This time, the test for the optimizer_adaptive_features parameter will pass.

f. Click **Yes** in the Error dialog box to allow the installer to modify the OMR automatically.

g. Click **OK** in the warning dialog box about some of the OMR configuration parameters. Your OMR has been configured to suit the limitations of the classroom environment and does not meet the installer's configuration requirements.

h. There is very little on the Review page other than the fact that an upgrade will occur. Click **Upgrade**.

i. The installer will report on progress.

   Note: If you let it run, the upgrade will take approximately one and a half hours.

22. Interrupt the upgrade by stopping the virtual machine, and start up the virtual machine with a snapshot that is already at the end of the installer's processing.

    a. Stop the virtual machine by using the *Machine > Close…* menu option, and elect to just power off the machine without restoring the current snapshot.

    b. From the Oracle VM VirtualBox Manager, display the snapshots for em12c.example.com.

    c. Highlight the snapshot called "ConfigureGC.sh finished" and click the Restore Snapshot button. In the VirtualBox - Question dialog box, **deselect** the check box to create a snapshot of the current machine state if it is shown, and click **Restore**.

    d. Start em12c.example.com. The snapshot will be restored and you will be presented with the installer that displays the Finish page with the Close button highlighted. Switch to full-screen mode if it didn't happen automatically.

23. Review the information about your upgrade that is presented on the Finish screen of the installer.

    a. In particular, note the following:

```
Use the following URL to access:
Enterprise Manager Cloud Control URL:
https://em12c.example.com:7802/em
Admin Server URL: https://em12c.example.com:7102/console
BI Publisher URL: https://em12c.example.com:9803/xmlpserver
The following details must be provided during the additional OMS
installation:
Admin Server Host name: em12c.example.com
Admin Server Port: 7102
```

    and

```
A backup of the OMS configuration is available in
/u02/app/oracle/product/gc_inst13/em/EMGC_OMS1/sysman/backup on
host em12c.example.com. See Cloud Control Administrators Guide
for details on how to back up and recover an OMS.
```

    b. Click **Close.**

24. The Enterprise Manager Console URL remains the same after an upgrade. Log in to confirm that your 13*c* upgrade has been a success.

    a. Start the web browser in the em12c.example.com VM GUI and connect to https://em12c.example.com:7802/em.

    b. Add an exception to your browser for the upgraded OMS' SSL certificate. This is required because you are still using the default, out-of-the-box certificate. However, in a production environment, you would secure the Cloud Control Console with a certificate from a trusted source.

c. Click "I Understand the Risks" in the "This Connection is Untrusted" dialog box.

d. Click Add Exception to display the Add Security Exception dialog box.

e. After a few seconds, the **Confirm Security Exception** button is enabled. Click **Confirm Security Exception** and leave Permanently Store this Exception selected.

f. The Enterprise Manager Cloud Control 13*c* login page will now be displayed.

g. Log in as the sysman user.

h. Accept the license agreement.

Note the status of all the targets on the Summary page. Most are in an Unknown state, which means that their agent cannot be contacted.

i. View host targets by navigating to *Targets > Hosts*. em12c.example.com is shown as being unreachable, which makes sense because we shut its 12*c* agent down for the duration of the upgrade process, but host01.example.com is shown as Up even though we have not upgraded it yet.

If we remember that Cloud Control 12*c*R3+ agents are compatible with the 13*c* OMS, it makes sense that the agent on host01 has started communicating with the 13*c* OMS. Despite the compatibility, it is a best practice to upgrade all agents to the latest possible version.

25. Before we upgrade any agents, navigate to *Setup > Manage Cloud Control > Post Upgrade Tasks* to see the tasks that Cloud Control automatically ran as part of the upgrade. These are the Deferred Data Migration (DDM) tasks that migrate all data that was not converted to the Cloud Control 13*c* schema when the installer upgraded the repository. The installer focuses on migrating only critical data so that your Cloud Control 13*c* installation will be functional as quickly as possible. The DDM tasks migrate the remaining data.

26. Upgrade the central management agent.

a. You stopped the central agent for the repository upgrade. You must now restart it by using your **EM12 session** because only running agents can be upgraded.

```
EM12 [oracle@em12c ~]$
/u02/app/oracle/product/agent12c/agent_inst/bin/emctl \
start agent
Oracle Enterprise Manager Cloud Control 12c Release 5
Copyright (c) 1996, 2015 Oracle Corporation.  All rights
reserved.
Starting agent ............................ started.
```

b. Confirm the status of the agent, paying attention to the OMS version that is reported.

```
EM12 [oracle@em12c ~]$
/u02/app/oracle/product/agent12c/agent_inst/bin/emctl \
status agent
Oracle Enterprise Manager Cloud Control 12c Release 5
Copyright (c) 1996, 2015 Oracle Corporation.  All rights
reserved.
------------------------------------------------------------------
```

```
Agent Version          : 12.1.0.5.0
OMS Version            : 13.2.0.0.0
Protocol Version       : 12.1.0.1.0
Agent Home             :
/u02/app/oracle/product/agent12c/agent_inst
Agent Log Directory    :
/u02/app/oracle/product/agent12c/agent_inst/sysman/log
Agent Binaries         :
/u02/app/oracle/product/agent12c/core/12.1.0.5.0
Agent Process ID       : 27634
Parent Process ID      : 27559
Agent URL              :
https://em12c.example.com:3872/emd/main/
Local Agent URL in NAT :
https://em12c.example.com:3872/emd/main/
Repository URL         :
https://em12c.example.com:4903/empbs/upload
Started at             : 2015-08-28 05:22:55
Started by user        : oracle
Operating System       : Linux version 3.8.13-
98.2.2.el6uek.x86_64 (amd64)
Last Reload            : (none)
Last successful upload                       : 2015-08-28
05:24:33
Last attempted upload                        : 2015-08-28
05:24:33
Total Megabytes of XML files uploaded so far : 0.06
Number of XML files pending upload           : 0
Size of XML files pending upload(MB)         : 0
Available disk space on upload filesystem    : 30.77%
Collection Status                            : Collections
enabled
Heartbeat Status                             : Ok
Last attempted heartbeat to OMS              : 2015-08-28
05:24:10
Last successful heartbeat to OMS             : 2015-08-28
05:24:10
Next scheduled heartbeat to OMS              : 2015-08-28
05:25:10


---------------------------------------------------------------
Agent is Running and Ready
```

c. In the Cloud Control 13*c* Console, navigate to *Setup > Manage Cloud Control >*
    Upgrade Agents to open the Agent Upgrade Console (AUG) where you will see two
    tabs:

- **Agent Upgrade Tasks:** This is where you can upgrade agents, as well as see why an agent may be deemed not upgradeable.
- **Post Agent Upgrade Tasks:** This is where you can clean up old agents after upgrading them.

d. If not already selected, select the Upgrade Agents option on the Agent Upgrade Tasks tab. This page allows you to submit a job to upgrade one or more agents.

e. Set the **Job Name** to CentralAgentUpgrade.

f. Click **Add** in the **Agents for upgrade** section.

g. Select only the central agent, `em12c.example.com:3872`, and click **OK.**

h. Select **Override Privileged Credentials** and click the plus sign to create new credentials. Enter the following values:

Username	root
Password	Refer to the security credentials list.
Run Privilege	None
Save As	NC_HOST_ROOT

i. Click **OK** to return to the **Upgrade Agents** screen and select your new credentials.

j. Skip the **Additional Inputs** section and click **Submit.**

k. Monitor the upgrade on the Agent Upgrade Status page and make sure that all steps are successful. This should take about 10 minutes.

Notice the phases of the upgrade. First the agent is blacked out, then the new agent is deployed before the agent upgrade occurs, and finally the blackout is lifted.

You can click any of the steps to see more detailed information.

l. After the upgrade has completed (and the overall status is shown as successful), click the Agent Upgrade Results link on the Agent Upgrade Tasks tab and confirm that the central agent upgrade was successful.

27. Delete the old 12*c* central agent with the Agent Upgrade Console.

a. Click the **Post Agent Upgrade Tasks** tab in the Agent Upgrade Console (*Setup > Manage Cloud Control > Upgrade Agents*).

b. Enter the Job name: `Cleanup_12105Agent`.

c. Click **Add** to open the "Agents available for Clean-up" dialog box.

Select the agent that you just upgraded, `em12c.example.com:3872`, and click **OK** to return to the Clean-up Agents page. Note the Oracle Home that will be cleaned up.

d. Click **Submit**, and then **OK** to close the job submission dialog box. Drill down into the job that you just submitted by clicking its name. If the job has not already succeeded (it only takes seconds to run), monitor its progress by refreshing the page until the status is Succeeded.

28. Gold Agent Images are considered a best practice for installing new Cloud Control 13*c* agents, but they are also considered a best practice for upgrading agents. In an environment with hundreds or thousands of agents, rather than upgrade all agents through

the Agent Upgrade Console, you could upgrade one agent to Cloud Control 13*c* by using the Agent Upgrade Console, create a gold image from it, subscribe your 12*c* agents to the gold image, and then update them to the current version.

In your classroom environment, we have only two agents—the central agent from which you cannot create a gold image, and host01, which is still a Cloud Control 12*c* version agent. So we will take another approach to creating a Gold Agent Image—importing a staged image.

a. A compressed tarball of a staged Gold Agent Image is available for you as /stage/emcc13c/stagedAgentImage.tgz. Untar it to a directory on em12*c* by using your **EM13 session**.

```
EM13 [oracle@em12c install]$ cd /tmp
EM13 [oracle@em12c tmp]$ tar -xvzf \
/stage/emcc13c/stagedAgentImage.tgz
stagedAgentImage/AgentCleanup.pl
stagedAgentImage/agentcoreimage.zip
stagedAgentImage/agentDeploy.sh
stagedAgentImage/agentimage.properties
stagedAgentImage/agent.zip
stagedAgentImage/DeployGoldImage.pl
stagedAgentImage/GoldAgentImage.xml
stagedAgentImage/unzip
EM13 [oracle@em12c tmp]$
```

b. Open the Gold Agent Images page by navigating to *Setup > Manage Cloud Control > Gold Agent Images*.

c. Click **Manage All Images** to open the Manage All Images page.

d. Click **Create** and enter the following information in the Create New Images dialog box:

Image name	fromStagedImage
Platform Name	Linux x86-64

e. Click **Submit** to create the image.

f. Now we need to create a version of the image. Click the image name link to open the image's home page, and then click **Manage Image Versions and Subscriptions** to open the **Manage Image : fromStagedImage** page.

g. Select **Create** from the **Actions** menu on the Versions and Drafts tab and enter the following information in the Create Image Version dialog box:

Image Version Name	V1
Create image by	Importing an image
Image location	/tmp/stagedAgentImage

h. Click **OK,** and then **Yes** in the Create Image Summary dialog box.

i. You will be presented with an Information dialog box that states that an image creation job has been submitted. Click the job link to open the activity details page.

j. Turn on Auto Refresh to monitor the job status, or click the job name to see more details. After the job has completed (with a status of PASSED), navigate back to the **Manage Image : fromStagedImage** page.

29. Set V1 as the current version of the fromStagedImage Gold Agent Image.

   a. Highlight the V1 version row and click **Set Current Version.**

30. Add the agent on host01 as a subscriber to the fromStagedImage Gold Agent Image.

   a. Click the Subscriptions tab.

   b. Click **Subscribe** to open the Select Targets dialog box.

   c. Select host01.example.com:3872 and click **Select** to return to the Subscriptions tab.

31. Update the subscriber host01 (a Cloud Control 12*c* agent) to the current version of the fromStagedImage Gold Agent Image (a Cloud Control 13*c* agent image).

   a. Highlight host01.example.com:3872 and select To Current Version from the Update menu. You will be presented with the Update Agents page.

   b. In the Choose Credentials section, select Override Privileged Credentials and select NC_HOST_ROOT(SYSMAN) from the select list.

   c. Click **Next**. You will be presented with an Agent Update Notification dialog box that explains that you will need to manually execute the root.sh script for the upgraded agent.

   d. Click **OK** to move to the second step of the Gold Agent Image update where you can specify various parameters such as batch size, frequency, and schedule to allow you to queue up large numbers of agent upgrades in a single operation.

   e. Scroll to the bottom of the page and check the Post-Cleanup Cleanup option to get the upgrade job to remove the old 12*c* agent for us.

   f. Click **Update** to launch the update job.

   g. You will be returned to the Gold Agent Images page with a successful job submission information message at the top of the page. Click the job name to open the Agent Update Status page. Turn on Auto Refresh to monitor the status. You can expand the Job Steps panel (by collapsing the main section) to easily see each step as the job progresses.

      This should take around 10 minutes to complete.

32. View a summary of all the agents in your Cloud Control 13*c* site.

   a. Open the Agents page by navigating to *Setup > Manage Cloud Control > Agents,* where you can see a summary of all your agents.

33. Other recommended post-upgrade tasks that you will *NOT* perform in this exercise are:

   a. Delete the old OMS home (in graphical or silent modes, by using OUI).

   b. Set up the command-line interface, EM CLI.

   c. Set up automatic startup of the OMS and central agent, if it is not already set up.

d. Apply custom third-party security certificates.

e. Apply patches released after the release that you are upgrading to.

f. Perform periodic Self-Update review and downloads.

Practices for Lesson 5:

Implementation Planning

Practices for Lesson 5

There are no practices for this lesson.

Practices for Lesson 5: Implementation Planning