# Oracle Enterprise Manager Cloud Control 12c: Cloud Mgmt Workshop

**Activity Guide**

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# Table of Contents

# Reference Material for All Practices

## Overview

These pages provide a ready reference of hostnames, usernames, and passwords that you will be using throughout the practices.

**Enterprise Manager Cloud Control 12c URL:** https://em12.example.com:7799/em

### All Practices:

| Hostname/Application | Username/Passwords |
|---|---|
| Your classroom PC (dom0) | `vncuser/vnctech`<br>`root/oracle` |

### Practice 1-1: Getting to Know Your Classroom Environment

| Hostname/Application | Username/Passwords |
|---|---|
| em12.example.com | `root/oracle`<br>`oracle/oracle` |

### Practice 2-1: Using the IaaS Self Service Portal

| Hostname/Application | Username/Passwords |
|---|---|
| Enterprise Manager Cloud Control 12*c* | `lab2_user/Oracle123` |

### Practice 3-1: Setting Up the Common Cloud Elements

| Hostname/Application | Username/Passwords |
|---|---|
| Enterprise Manager Cloud Control 12*c* | `sysman/Oracle123` |
| em12.example.com | `root/oracle`<br>`oracle/oracle` |

### Practice 4-1: Setting Up the IaaS Cloud

| Hostname/Application | Username/Passwords |
|---|---|
| Enterprise Manager Cloud Control 12*c* | `sysman/Oracle123`<br>`iaas_admin/Oracle123` |
| OVM Manager ovmmgr02 | `admin/Oracle123` |
| OVM Server agent | `oracle/ovsagent` |

### Practice 5-1: Setting Up the IaaS Self Service Portal

| Hostname/Application | Username/Passwords |
|---|---|
| Enterprise Manager Cloud Control 12*c* | `sysman/Oracle123`<br>`iaas_admin/Oracle123`<br>`iaas_user/Oracle123` |

**Practice 6-1: Creating a PaaS Infrastructure Zone**

| Hostname/Application | Username/Passwords |
|---|---|
| Enterprise Manager Cloud Control 12*c* | `sysman/Oracle123`<br>`paas_admin/Oracle123` |

**Practice 7-1: Setting Up the DBaaS Cloud**

| Hostname/Application | Username/Passwords |
|---|---|
| Enterprise Manager Cloud Control 12*c* | `sysman/Oracle123`<br>`paas_admin/Oracle123` |
| paas02, paas03 | `root/oracle`<br>`oracle/oracle` |

**Practice 8-1: Setting Up the DBaaS Self Service Portal**

| Hostname/Application | Username/Passwords |
|---|---|
| Enterprise Manager Cloud Control 12*c* | `sysman/Oracle123`<br>`paas_admin/Oracle123`<br>`dbaas_user/Oracle123` |

**Practice 9-1: Setting Up the MWaaS Cloud**

| Hostname/Application | Username/Passwords |
|---|---|
| Enterprise Manager Cloud Control 12*c* | `sysman/Oracle123`<br>`paas_admin/Oracle123` |

**Practice 10-1: Setting Up the MWaaS Self Service Portal**

| Hostname/Application | Username/Passwords |
|---|---|
| Enterprise Manager Cloud Control 12*c* | `sysman/Oracle123`<br>`paas_admin/Oracle123`<br>`mwaas_user/Oracle123`<br>`dbaas_user/Oracle123` |

**Practice 11-1: Setting Up Chargeback**

| Hostname/Application | Username/Passwords |
|---|---|
| Enterprise Manager Cloud Control 12*c* | `sysman/Oracle123` |

**Practice 12-1: Using Consolidation Planner**

| Hostname/Application | Username/Passwords |
|---|---|
| em12.example.com | `root/oracle`<br>`oracle/oracle` |
| em12rep database | `sysman/Oracle123` |
| Enterprise Manager Cloud Control 12*c* | `sysman/Oracle123` |

# Practices for Lesson 1: Introduction

**Chapter 1**

# Practices for Lesson 1: Overview

## Practices Overview

In this practice, you will get to know the classroom environment that you will use for all subsequent practice sessions.

# Practice 1-1: Getting to Know Your Classroom Environment

## Overview

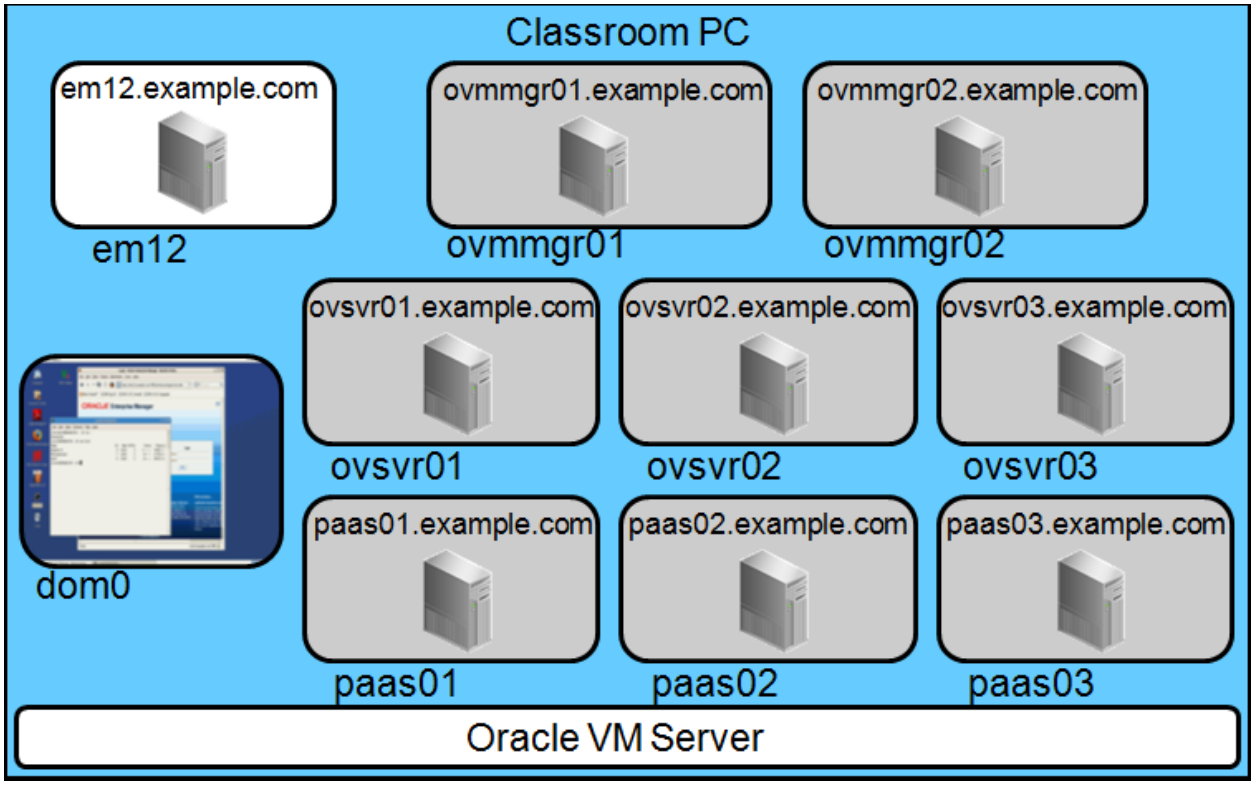
In this practice, you become familiar with the Oracle VM Server environment installed on your classroom PC that you will use for all subsequent practices in this course.

## Assumptions

You are able to log in to your classroom PC.

## Virtual Machines Used by This Practice

The virtual machines used by this practice are illustrated here with a white background.




## Usernames and Passwords

| Hostname/Application | Username/Password |
|---|---|
| em12.example.com | `root/oracle`<br>`oracle/oracle` |

## Tasks

1. Log on to your classroom PC (dom0) as user `root`.
2. Start a terminal session: double-click the Terminal icon.

3. List the running guest domains with the `xm list` command.

```
# xm list
Name                                        ID   Mem VCPUs
State   Time(s)
Domain-0                                     0  2048     2
r----- 190790.2
```

Note that `dom0` is shown as one of the running guest domains. This is because the `xm` command interrogates and returns information from the hypervisor, which considers `dom0` to be a guest.

Note also that the name of the domain as known to the hypervisor is not necessarily the same as the hostname of the VM running in that domain or in `dom0`'s hosts configuration.

4. Run the script for this lab to start the required domains and their VMs.

```
# startVMs_lab1-1.sh
```

5. Use the `xm` command to confirm that the `em12` domain is running, and then the `ping` command to confirm that the `em12.example.com` VM is running. You may need to ping the VM a few times before it responds.

Note that your Time and State values may differ from what is shown here.

```
# xm list
Name                                        ID   Mem VCPUs
State   Time(s)
Domain-0                                     0  2048     2
r-----  82680.3
em12                                        51  4608     2
r-----    126.6
#
```

Note the use of the `-c` switch on the `ping` command to limit the number of ping attempts. If the guest VM has not yet booted, you will see a destination host unreachable error.

```
# ping -c4 em12
PING em12.example.com (192.0.2.12) 56(84) bytes of data.
From dns.us.oracle.com (192.0.2.1) icmp_seq=1 Destination Host
Unreachable
From dns.us.oracle.com (192.0.2.1) icmp_seq=2 Destination Host
Unreachable
From dns.us.oracle.com (192.0.2.1) icmp_seq=3 Destination Host
Unreachable
From dns.us.oracle.com (192.0.2.1) icmp_seq=4 Destination Host
Unreachable


--- em12.example.com ping statistics ---
4 packets transmitted, 0 received, +4 errors, 100% packet loss,
time 3025ms
, pipe 3
#
```

After waiting a short while and trying again, the guest VM should respond.

```
# ping -c4 em12
PING em12.example.com (192.0.2.12) 56(84) bytes of data.
64 bytes from em12.example.com (192.0.2.12): icmp_seq=1 ttl=64
time=3.06 ms
64 bytes from em12.example.com (192.0.2.12): icmp_seq=2 ttl=64
time=0.091 ms
64 bytes from em12.example.com (192.0.2.12): icmp_seq=3 ttl=64
time=0.075 ms
64 bytes from em12.example.com (192.0.2.12): icmp_seq=4 ttl=64
time=0.076 ms

--- em12.example.com ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3002ms
rtt min/avg/max/mdev = 0.075/0.825/3.060/1.290 ms
#
```

6. Log on to em12 as the `root` user with a secure shell session. Accept the RSA key if asked.

```
# ssh root@em12
The authenticity of host 'em12 (192.0.2.12)' can't be
established.
```

```
RSA key fingerprint is
8e:60:d0:a7:fc:55:6e:d9:81:bb:c9:90:19:f4:a8:11.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'em12,192.0.2.12' (RSA) to the list
of known hosts.
oracle@em12's password: oracle
Last login: Sat Oct 20 23:58:59 2012 from 192.0.2.1
#
```

7. Create a new shell as the `oracle` user.

```
# su - oracle
[oracle@em12 ~]$
```

8. Set the environment to work with the `em12rep` database, your Enterprise Manager Cloud Control 12*c* repository.

```
$ . oraenv
ORACLE_SID = [oracle] ? em12rep
The Oracle base has been set to /u01/app/oracle
$
```

9. Check the status of the listener, and start it if required.

```
$ lsnrctl status

LSNRCTL for Linux: Version 11.2.0.2.0 - Production on 21-OCT-
2012 00:02:52

Copyright (c) 1991, 2010, Oracle.  All rights reserved.

Connecting to
(DESCRIPTION=(ADDRESS=(PROTOCOL=IPC)(KEY=EXTPROC1521)))
TNS-12541: TNS:no listener
 TNS-12560: TNS:protocol adapter error
  TNS-00511: No listener
   Linux Error: 111: Connection refused
Connecting to
(DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=em12.example.com)(PORT
=1521)))
TNS-12541: TNS:no listener
 TNS-12560: TNS:protocol adapter error
  TNS-00511: No listener
   Linux Error: 111: Connection refused
$
```

Here, you see that the listener is not running, so it needs to be started.

```
$ lsnrctl start

LSNRCTL for Linux: Version 11.2.0.2.0 - Production on 21-OCT-
2012 00:04:11

Copyright (c) 1991, 2010, Oracle.  All rights reserved.

Starting /u01/app/oracle/product/11.2.0/dbhome_1/bin/tnslsnr:
please wait...

TNSLSNR for Linux: Version 11.2.0.2.0 - Production
System parameter file is
/u01/app/oracle/product/11.2.0/dbhome_1/network/admin/listener.o
ra
Log messages written to
/u01/app/oracle/diag/tnslsnr/em12/listener/alert/log.xml
Listening on:
(DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(KEY=EXTPROC1521)))
Listening on:
(DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=em12.example.com)(PORT
=1521)))
```

```
Connecting to
(DESCRIPTION=(ADDRESS=(PROTOCOL=IPC)(KEY=EXTPROC1521)))
STATUS of the LISTENER
------------------------
Alias                     LISTENER
Version                   TNSLSNR for Linux: Version 11.2.0.2.0
- Production
Start Date                21-OCT-2012 00:04:13
Uptime                    0 days 0 hr. 0 min. 0 sec
Trace Level               off
Security                  ON: Local OS Authentication
SNMP                      OFF
Listener Parameter File
/u01/app/oracle/product/11.2.0/dbhome_1/network/admin/listener.o
ra
Listener Log File
/u01/app/oracle/diag/tnslsnr/em12/listener/alert/log.xml
Listening Endpoints Summary...
  (DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(KEY=EXTPROC1521)))

(DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=em12.example.com)(PORT
=1521)))
The listener supports no services
The command completed successfully
$
```

10. Start the `em12rep` database instance by using SQL*Plus, and then exit from SQL*Plus.

```
$ sqlplus / as sysdba

SQL*Plus: Release 11.2.0.2.0 Production on Sun Oct 21 00:05:03
2012

Copyright (c) 1982, 2010, Oracle.  All rights reserved.

Connected to an idle instance.

SQL> startup
ORACLE instance started.

Total System Global Area  668082176 bytes
Fixed Size                  2229480 bytes
Variable Size             499125016 bytes
Database Buffers          159383552 bytes
Redo Buffers                7344128 bytes
Database mounted.
Database opened.
SQL> exit
Disconnected from Oracle Database 11g Enterprise Edition Release
11.2.0.2.0 - 64bit Production
With the Partitioning, OLAP, Data Mining and Real Application
Testing options
$
```

11. Drop back to the `root` shell. This is the simplest way to unset the Oracle database environment.

```
$ exit
logout
[root@em12 ~]#
```

12. Create a new shell as the `oracle` user so that you can work with Enterprise Manager Cloud Control 12*c*.

```
[root@em12 ~]# su - oracle
[oracle@em12 ~]$
```

13. Because the em12rep Oracle Management Repository (OMR) and listener were not started, you need to stop any Oracle Management Service (OMS) processes that may have attempted to start. Notice the use of the backslash (\) to allow the shell command to continue over multiple lines.

```
$ /u01/app/oracle/product/middleware/oms/bin/emctl \
stop oms -all -force
Oracle Enterprise Manager Cloud Control 12c Release 2
Copyright (c) 1996, 2012 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
$
```

14. Start the OMS – this may take a few minutes. Notice the use of the backslash (\) to allow the shell command to continue over multiple lines.

```
$ /u01/app/oracle/product/middleware/oms/bin/emctl \
start oms
Oracle Enterprise Manager Cloud Control 12c Release 2
Copyright (c) 1996, 2012 Oracle Corporation.  All rights
reserved.
Starting Oracle Management Server...
Starting WebTier...
WebTier Successfully Started
Oracle Management Server Successfully Started
Oracle Management Server is Up
$
```

15. Issue the command to start the management agent, although it may already be running. Notice the use of the backslash (\) to allow the shell command to continue over multiple lines.

```
$ /u01/app/oracle/product/agent12c/agent_inst/bin/emctl \
start agent
Oracle Enterprise Manager Cloud Control 12c Release 2
Copyright (c) 1996, 2012 Oracle Corporation.  All rights
reserved.
Agent is already running
$
```

16. Confirm that the OMS is running by accessing the login page.
    a. Open a browser session from your desktop and navigate to https://em12.example.com:7799/em
    b. Add an exception to your browser for the OMS's SSL certificate if prompted to do so – installed using the default out-of-the-box certificate. In a production environment, you would secure the Cloud Control Console with certificate from a trusted source.
    c. You should be presented with the Enterprise Manager Cloud Control 12*c* login page. It may take some time to display as this is the first session opened against the OMS since it was started.

       There is no need to log in to Enterprise Manager Cloud Control 12*c* yet.
    d. Make the Enterprise Manager Cloud Control 12*c* login page your browser's home page.
       1) Navigate to *Edit* > *Preferences* to open the *Firefox Preferences* dialog.
       2) Click *Use Current Page* to set the home page to be the Enterprise Manager Cloud Control 12*c* login page.
       3) Edit the URL to only be `https://em12.example.com:7799/em`.
       4) Click *Close* to save your change.

# Practices for Lesson 2: Cloud for Self Service Users

**Chapter 2**

# Practices for Lesson 2

## Practices Overview

In these practices, you will experience Enterprise Manager Cloud Control 12*c* clouds as a self service user, giving you an understanding of the end goal for subsequent practices.

# Practice 2-1: Using the IaaS Self Service Portal

## Overview

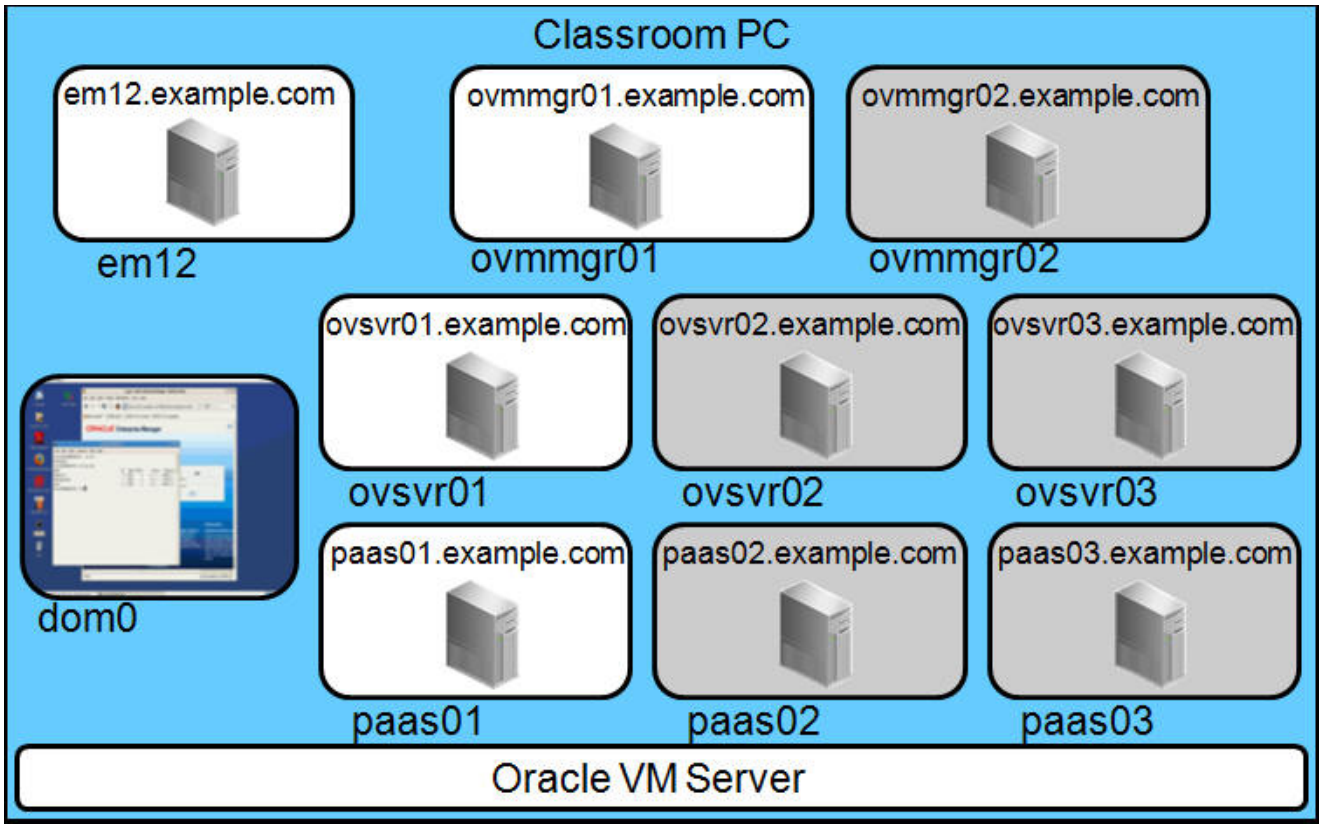
In this practice, you will experience the Enterprise Manager Cloud Control 12*c* IaaS cloud as a self service user, and create a request to create an environment in an IaaS zone. Because the deployment process can take some time to complete, you will assess the deployment status after completing the rest of the lesson.

## Assumptions

You are logged on to `dom0` and have a terminal session open as root.

## Virtual Machines Used by This Practice

The virtual machines used by this practice are illustrated here with a white background.




## Usernames and Passwords

| Hostname/Application | Username/Passwords |
|---|---|
| Enterprise Manager Cloud Control 12*c* | `lab2_user/Oracle123` |

## Tasks

1. Start a terminal session in `dom0`, switch to the root user, and then run the script for this lab to start the required VMs.

```
bash-3.2$ su -
Password: oracle
# startVMs_lab2-1.sh
```

2. Use the `xm list` command to confirm that the virtual machines used by this practice are running.
   Note that your Time and State values may differ from what is shown here.

```
# xm list
Name                                        ID   Mem VCPUs
State   Time(s)
Domain-0                                     0  2048     2
r----- 1256555.6
em12                                       108  4608     2     -
b----     30.9
ovmmgr01                                   111  2048     1     -
-----      7.0
ovsvr01                                    109  2048     2
r-----     58.8
paas01                                     110  4096     2     -
-----     24.3
#
```

3. Log in to Enterprise Manager Cloud Control 12*c* as `lab2_user` where you will be presented with the Infrastructure Cloud Self Service Portal page.
4. Start the server request process by clicking *Request Servers* in the *10 Last Requested Servers* section and enter the following values on the *New Server Request: General* page:

| | |
|---|---|
| **Name** | lab2_iaas_request |
| **Zone** | lab2IaaS_Zone |
| **Source** | Lab 2 Oracle Linux 5 Update 7 x86 assembly |
| **Assembly Instance Name** | lab2_iaas_request_instance |

5. Click Next to proceed to the *New Server Request: Deployment Configuration* page.
6. Highlight the row for `OVM_OL5U7_x86_PVM:lab2_iaas_request_instance` and select *Server Size* of `Lab2Machine`.
7. In the *Server Configuration* tab, enter a root password for your virtual machine:

| | |
|---|---|
| **Root Password** | `oracle` |
| **Confirm Root Password** | `oracle` |

8. Expand the *Network* section, highlight `eth0`, and click *Edit* to open the *Edit Network Interface Card* dialog. Make the following selections:

| | |
|---|---|
| **IP Assignment** | Network Profile |
| **Network Profile Name** | lab2NetworkProfile |

9. Click *OK* to return to the *New Server Request: Deployment Configuration* page.
10. Click *Next* to proceed to the *New Server Request: Schedule* page and set the following values:

| | |
|---|---|
| **Start Date** | Immediately |
| **End Date** | Until two days from today |

11. Click *Next* to proceed to the *New Server Request: Review* page.
12. Click *Finish* to submit the request. You will be returned to the *Infrastructure Cloud Self Service Portal* page where your request will be shown in the *10 Latest Requests* section with a status of `Scheduled`.
13. Use the Enterprise Manager Cloud Control 12*c* page refresh button to see the current status.

# Practice 2-2: Reviewing the IaaS Self Service Request

## Overview

In this practice, you will complete the IaaS self service request life cycle by reviewing the outcome of the request created in Practice 2-1.

## Assumptions

You have completed Practice 2-1.

## Tasks

1. If you are not already logged in to Enterprise Manager Cloud Control 12*c*, log in as `lab2_user` where you should be presented with the Infrastructure Cloud Self Service Portal page.
2. The request you made in Practice 2-1 should now be shown in the 10 Latest Requests section with a status of Successful, and your virtual machine will be listed in the 10 Last Requested Servers section with the hostname that was assigned to it from the network profile you nominated.
3. Right-click the virtual machine name and select *Launch VNC Console* from the context menu. This will request connection information from the OVM Manager console, and your browser will prompt you to add an exception for the OVM Manager SSL certificate. Add the exception.
4. Next, your browser will prompt you about the content published by ovmmgr01; click *Yes* to accept the file that is being downloaded, and accept the default option to *Open with JavaWS*.
5. Your browser will automatically open the downloaded file, and you will be presented with a *Request Authentication* dialog asking you to select a certificate to be used for authentication. Even though no certificates are listed, click *Yes* to open a VNC session against your virtual machine.
6. You will be presented with a *Security Information* dialog stating that “The application’s digital signature has been verified. Do you want to run the application?” Click *Run* to launch the VNC console.
7. Log in as root with the password you entered in Practice 2-1 (`oracle` was the suggested password).
8. Log out and close the VNC session.

# Practice 2-3: Using the DBaaS Self Service Portal

## Overview

In this practice, you will experience the Enterprise Manager Cloud Control 12*c* DBaaS cloud as a self service user, and create a request for a database in a PaaS zone. You will monitor the progress of the request, and upon completion review the details of the database that has been created for you.

## Assumptions

You have completed Task 1 of Practice 2-1: Using the IaaS Self Service Portal.

## Tasks

1. Ensure the database listener is running on `paas01` as this is where your self service database requests will be fulfilled.
   a. Log on to `paas01` as the `root` user with a secure shell session. Accept the RSA key if asked.

```
# ssh paas01
root@paas01's password:
Last login: Tue Dec  4 17:45:19 2012 from 192.0.2.1
```

   b. Switch to the `oracle` user and set the environment to point to the Oracle Database home.

```
# su - oracle
$ . oraenv
ORACLE_SID = [oracle] ? <enter>
ORACLE_HOME = [/home/oracle] ?
/u01/app/oracle/product/11.2.0/dbhome_1
The Oracle base has been set to /u01/app/oracle
```

   c. Start the listener.

```
$ lsnrctl start

LSNRCTL for Linux: Version 11.2.0.2.0 - Production on 05-DEC-
2012 16:48:14

Copyright (c) 1991, 2010, Oracle.  All rights reserved.

Starting /u01/app/oracle/product/11.2.0/dbhome_1/bin/tnslsnr:
please wait...

TNSLSNR for Linux: Version 11.2.0.2.0 - Production
System parameter file is
/u01/app/oracle/product/11.2.0/dbhome_1/network/admin/listener.o
ra
Log messages written to
/u01/app/oracle/diag/tnslsnr/paas01/listener/alert/log.xml
```

```
Listening on:
(DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=paas01.example.com)(PO
RT=1521)))
Listening on:
(DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(KEY=EXTPROC1521)))

Connecting to
(DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=paas01.example.com)(PO
RT=1521)))
STATUS of the LISTENER
------------------------
Alias                     LISTENER
Version                   TNSLSNR for Linux: Version 11.2.0.2.0
- Production
Start Date                05-DEC-2012 16:48:14
Uptime                    0 days 0 hr. 0 min. 0 sec
Trace Level               off
Security                  ON: Local OS Authentication
SNMP                      OFF
Listener Parameter File
/u01/app/oracle/product/11.2.0/dbhome_1/network/admin/listener.o
ra
Listener Log File
/u01/app/oracle/diag/tnslsnr/paas01/listener/alert/log.xml
Listening Endpoints Summary...

(DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=paas01.example.com)(PO
RT=1521)))
  (DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(KEY=EXTPROC1521)))
The listener supports no services
The command completed successfully
$
```

d. Exit as the `oracle` user and then log out from `paas01`.

```
$ exit
logout
You have new mail in /var/spool/mail/root
[root@paas01 ~]# exit
logout

Connection to paas01 closed.
#
```

2. Log in to Enterprise Manager Cloud Control 12*c* as `lab2_user` and select the *Manage My Databases* radio button to open the *Database Cloud Self Service Portal* page.

3. Start the database request process by clicking *Request Database* in the *Databases* section to open the *Select Service Template* dialog.
4. Select the `Lab2 Tiny 11.2.0.2 Single Instance Linux x86-64 Database` template and click Select to open the *New Database Request: General* page. Enter the following values:

| | |
|---|---|
| **Request Name** | lab2_dbaas_request |
| **Destination Zone** | Lab2 PaaS Zone |

5. Click *Next* to proceed to the *New Database Request: Deployment Inputs* page and enter the following values:

| | |
|---|---|
| **User Name** | lab2 |
| **User Password** | oracle_4ME |

6. Click *Next* to proceed to the *New Database Request: Schedule* page and enter the following values:

| | |
|---|---|
| **Start** | Immediately |
| **Duration** | Until two days from today |

7. Click *Next* to proceed to the *New Database Request: Review* page, and then click *Submit* to initiate the database creation job. You will be returned to the *Database Cloud Self Service Portal* page where a job to create your database will be listed in the *Requests* section along with a matching job to delete the database at the time you nominated.
8. Use the Enterprise Manager Cloud Control 12*c* page refresh button to see the current status.

# Practice 2-4: Reviewing the DBaaS Self Service Request

## Overview

In this practice, you will complete the DBaaS self service request life cycle by reviewing the outcome of the request created in Practice 2-3.

## Assumptions

You have completed Practice 2-3.

## Tasks

1. Log in to Enterprise Manager Cloud Control 12*c* as `lab2_user` and select the *Manage My Databases* radio button to open the *Database Cloud Self Service Portal* page.
2. The request you made in Practice 2-3 should now be shown in the *Requests* section with a status of `Success`, and your database listed in the *Databases* section with the name that was generated for it during deployment.
3. Click the name of the database to open its home page where you will see the connect descriptor that could be used to connect to the database, as well as information on performance of the instance.

# Practice 2-5: Using the MWaaS Self Service Portal

## Overview

In this practice, you will experience the Enterprise Manager Cloud Control 12*c* MWaaS cloud as a self service user, and create a request for a database in a PaaS zone. You will monitor the progress of the request, and upon completion review the details of the database that has been created for you.

## Assumptions

You have completed Task 1 of Practice 2-1: Using the IaaS Self Service Portal.

## Tasks

1. Log in to Enterprise Manager Cloud Control 12*c* as `lab2_user` and select the *Manage My Middleware* radio button to open the *Middleware Cloud Self Service Portal* page.
2. Start the middleware service request process by clicking the *Request Service* button in the *Middleware Services* section to open the *Select Service Template* dialog.
3. Select the `Lab2 Small WLS 10.3.6 Linux x86-64` template and click *Select* to proceed to the *New Service Request* page and enter the following values:

| | |
|---|---|
| **Service Name** | lab2_mw_service |
| **PaaS Infrastructure Zone** | Lab2 PaaS Zone |
| **Schedule** | |
| **Start Date** | Immediately |
| **End Date** | Until two days from today |

4. Click *Submit* to initiate the request. You will be returned to the *Middleware Cloud Self Service Portal* where a job to create your service will be listed in the *Requests* section along with a matching job to delete the service at the time you nominated.
5. Use the Enterprise Manager Cloud Control 12*c* page refresh button to see the current status.

# Practice 2-6: Reviewing the MWaaS Self Service Request

## Overview

In this practice, you will complete the MWaaS self service request life cycle by reviewing the outcome of the request created in Practice 2-5.

## Assumptions

You have completed Practice 2-5.

## Tasks

1. Log in to Enterprise Manager Cloud Control 12*c* as `lab2_user` and select the *Manage My Middleware* radio button to open the *Middleware Cloud Self Service Portal* page.
2. The request you made in Practice 2-5 should now be shown in the *My Requests* section with a status of `Success`, and your service listed in the *Middleware Services* section with the name that you gave it.
3. Click the name of the service to open its home page where you will see performance and other information.

# Practices for Lesson 3: Common Building Blocks

**Chapter 3**

# Practices for Lesson 3: Overview

## Practices Overview

In this practice, you will pave the way for subsequent practice sessions by putting in place the common Enterprise Manager Cloud Control 12*c* cloud elements.

# Practice 3-1: Setting Up the Common Cloud Elements

## Overview

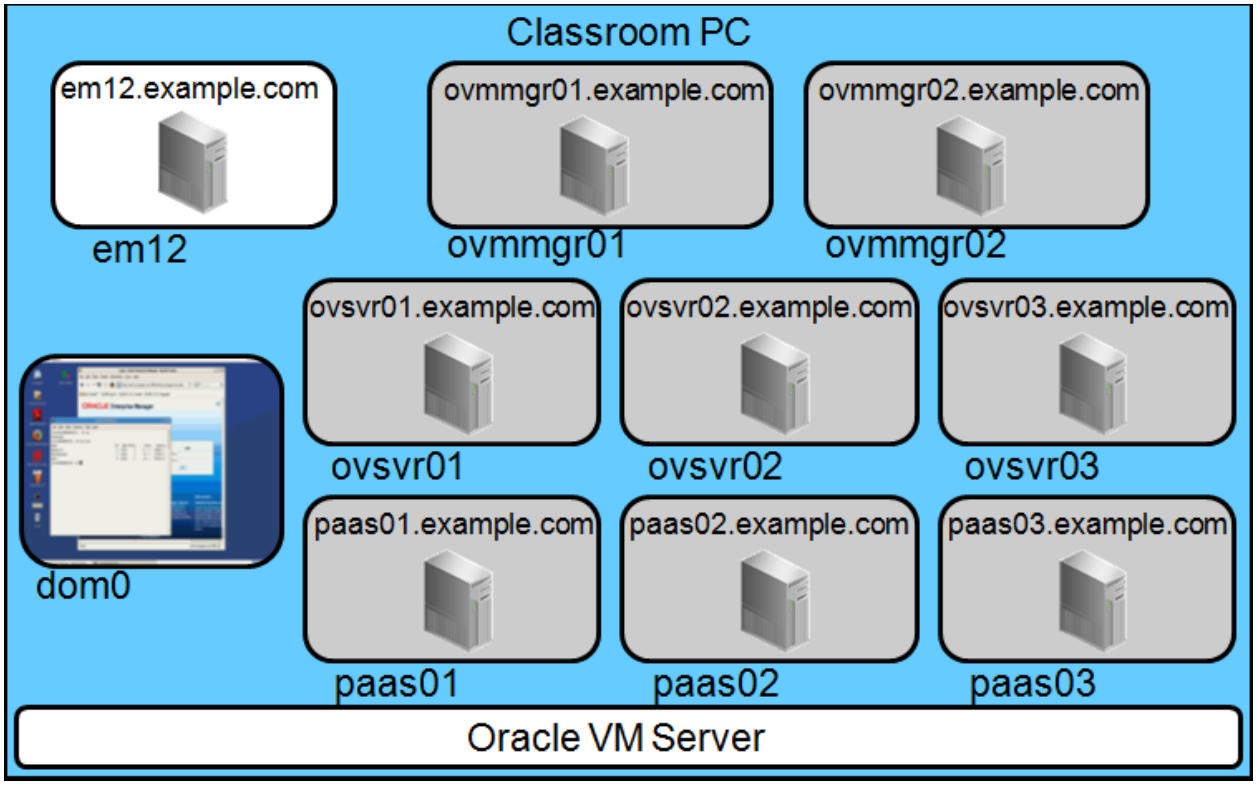
In this practice, you will create Enterprise Manager cloud administration and self service roles and users before creating a software library and finally customizing the branding on the login page for self service users.

## Assumptions

You are logged on to `dom0` and have a terminal session open as root.

## Virtual Machines Used by This Practice

The virtual machines used by this practice are illustrated here with a white background.




## Usernames and Passwords

| Hostname/Application | Username/Passwords |
|---|---|
| Enterprise Manager Cloud Control 12*c* | `sysman/Oracle123` |
| em12.example.com | `root/oracle`<br>`oracle/oracle` |

## Tasks

1. Start a terminal session in `dom0`, switch to the `root` user, and then run the script for this lab to start the required VMs.

```
bash-3.2$ su -
Password: oracle
# startVMs_lab3-1.sh
```

2. Use the `xm list` command to confirm that the virtual machines used by this practice are running.

   Note that your Time and State values may differ from what is shown here.

```
# xm list
Name                                        ID   Mem VCPUs
State   Time(s)
Domain-0                                     0  2048     2
r----- 1256555.6
em12                                       108  4608     2     -
b----     30.9
#
```

3. Create Cloud administrators.
   a. Log in to Enterprise Manager Cloud Control 12*c* as `sysman`.
   b. Navigate to *Setup* > *Security* > *Administrators* to open the *Administrators* page.
   c. Create two administrators with the details shown below.
      1) Click *Create* to open the *Create Administrator: Properties* page and enter *Name*, *Password*, and *E-mail Address*.
      2) Click *Next* to proceed to the *Create Administrator: Roles* page and select the listed roles.
      3) Click *Review* to proceed directly to the *Create Administrator: Review* page and then click *Finish* to create the user.

| **Name** | IAAS_ADMIN |
|---|---|
| **Password** | Oracle123 |
| **E-mail Address** | iaas_admin@example.com |
| **Selected Roles** | EM_CLOUD_ADMINISTRATOR<br>EM_USER<br>PUBLIC |

| **Name** | PAAS_ADMIN |
|---|---|
| **Password** | Oracle123 |
| **E-mail Address** | paas_admin@example.com |
| **Selected Roles** | EM_CLOUD_ADMINISTRATOR<br>EM_USER<br>PUBLIC |

4. Create SSA roles.
   a. Navigate to *Setup* > *Security* > *Roles* to open the *Roles* page.
   b. Create roles with the details listed below.
      1) Click *Create* to open the *Create Role: Properties* page and enter the *Role Name*.
      2) Click *Next* to proceed to the *Create Role: Roles* page and select the listed roles.
      3) Click *Review* to proceed directly to the *Create Role: Review* page and then click *Finish* to create the role.

| Role Name | Selected Roles |
|---|---|
| IAAS_SSA_ROLE | EM_SSA_USER |
| DBAAS_SSA_ROLE | EM_SSA_USER |
| MWAAS_SSA_ROLE | EM_SSA_USER |

5. Create SSA users.
   a. Navigate to Setup > *Security* > *Administrators*.
   b. Create users with the details shown below.
      1) Click *Create* to open the *Create Administrator: Properties* page and enter *Name*, *Password*, and *E-mail Address*.
      2) Click *Next* to proceed to the *Create Administrator: Roles* page and select the listed roles.

         **Tip:** Before assigning the specified role, you can quickly remove the default roles with the *Remove All* button.
      3) Click *Review* to proceed directly to the *Create Administrator: Review* page and then click *Finish* to create the user.

| | |
|---|---|
| **Name** | IAAS_USER |
| **Password** | Oracle123 |
| **E-mail Address** | iaas_user@example.com |
| **Selected Roles** | IAAS_SSA_ROLE |

| | |
|---|---|
| **Name** | DBAAS_USER |
| **Password** | Oracle123 |
| **E-mail Address** | dbaas_user@example.com |
| **Selected Roles** | DBAAS_SSA_ROLE |

| | |
|---|---|
| **Name** | MWAAS_USER |
| **Password** | Oracle123 |
| **E-mail Address** | mwaas_user@example.com |
| **Selected Roles** | MWAAS_SSA_ROLE |

6. **This step is included for reference only**. A software library upload location has already been created on `em12.example.com` but because it is a prerequisite for creating clouds in Enterprise Manager Cloud Control 12*c* the steps are listed here.

   **Note:** Do not execute these steps.

   a. Create the `/u01/app/oracle/swlib` directory at the OS level in `em12.example.com` as `oracle` user.

   b. In Enterprise Manager Cloud Control 12*c*, navigate *to Setup* > *Provisioning and Patching* > *Software Library*.

   c. Select the *Upload File Locations* tab if not already active.

   d. Select *Storage Type* of `OMS Shared Filesystem` and click the *Add* button and enter the following details:

| | |
|---|---|
| **Name** | `local_swlib` |
| **Location** | `/u02/app/oracle/swlib` |

   e. Click *OK* to save the location.

7. Set up a software library referenced location to allow uploads from the HTTP server running in `dom0`.

   a. Navigate to Setup > *Provisioning and Patching* > *Software Library*.

   b. Select the *Referenced File Locations* tab.

   c. Select *Storage Type* of `HTTP` and click the *Add* button and enter the following values:

| | |
|---|---|
| **Name** | `domZero` |
| **Location** | `http://192.0.2.1/` |

   d. Click *OK* to save the location.

8. Create a folder where the SSA user artifacts such as backups will be saved.

   a. Navigate to *Enterprise* > *Provisioning and Patching* > *Software Library*.

   b. From the *Actions* menu, select *Create Folder* and use the following values:

| | |
|---|---|
| **Name** | SSA Artifacts |
| **Description** | Cloud Self Service user items. |
| **Parent Folder** | Software Library |

   c. Click *OK* to create the folder.

9. Customize the SSA login page. Note that because we are unable to separate self service and normal logins with separate URLs in our classroom environment, these changes will take effect for all logins.

a. Copy the SSA logos to `em12`. Four logo images have been staged for you in `dom0` under `/OVS/downloads`. Open a terminal session in `dom0` and copy the four files to `em12` under `/u01/app/oracle/product/middleware/oms/sysman/config`. Accept the RSA key if prompted. Notice the use of the backslash (\) to allow the shell command to continue over multiple lines.

```
$ cd /OVS/downloads
$ ls *png
O_Cloud_clr_200x20.png  O_University_clr_200x20.png
O_Cloud_clrrev.png      O_University_clrrev.png
$ scp *.png \
oracle@em12:/u01/app/oracle/product/middleware/oms/sysman/config
The authenticity of host 'em12 (192.0.2.12)' can't be
established.
RSA key fingerprint is
8e:60:d0:a7:fc:55:6e:d9:81:bb:c9:90:19:f4:a8:11.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'em12,192.0.2.12' (RSA) to the list
of known hosts.
oracle@em12's password: oracle
O_Cloud_clr_200x20.png                        100% 2302
2.3KB/s   00:00
O_Cloud_clrrev.png                            100% 2182
2.1KB/s   00:00
O_University_clr_200x20.png                   100% 2556
2.5KB/s   00:00
O_University_clrrev.png                       100% 2826
2.8KB/s   00:00
$
```

b. Open a secure shell session to `em12` as the `oracle` user to perform the remaining steps in this task.

```
$ ssh oracle@em12
oracle@em12's password: oracle
Last login: Sun Oct 21 19:43:51 2012 from 192.0.2.1
[oracle@em12 ~]$
```

c. Change to the directory where you copied the branding logos. Notice the use of the backslash (\) to allow the shell command to continue over multiple lines.

```
$ cd \
/u01/app/oracle/product/middleware/oms/sysman/config
$
```

d. Rename the branding logos by using the following name mappings:

| Filename in dom0 | Filename in em12 | Purpose |
|---|---|---|
| O_Cloud_clr_200x20.png | cloud_provider_small_brand.png | Post-login provider logo |
| O_Cloud_clrrev.png | cloud_provider_large_brand.png | Login page provider logo |
| O_University_clr_200x20.png | cloud_tenant_small_brand.png | Post-login tenant logo |
| O_University_clrrev.png | cloud_tenant_large_brand.png | Login page tenant logo |

```
$ mv O_Cloud_clr_200x20.png cloud_provider_small_brand.png
$ mv O_Cloud_clrrev.png cloud_provider_large_brand.png
$ mv O_University_clr_200x20.png cloud_tenant_small_brand.png
$ mv O_University_clrrev.png cloud_tenant_large_brand.png
```

e. Change to the OMS bin directory.

```
$ cd /u01/app/oracle/product/middleware/oms/bin
$
```

f. Use `emctl` to set all the branding properties as shown below. The format of the `emctl` command to use is

```
emctl set property –name <property name> -value <property value>
```

| Property name | Property value |
|---|---|
| oracle.sysman.ssa.logon.ssa_oms | true |
| oracle.sysman.ssa.logon.show_cloud_provider_brand | true |
| oracle.sysman.ssa.logon.show_cloud_tenant_brand | true |
| oracle.sysman.ssa.logon.cloud_provider_alt_text | “Oracle EMCC12c" |
| oracle.sysman.ssa.logon.cloud_tenant_alt_text | “Oracle University Class” |
| oracle.sysman.ssa.logon.show_disclaimer_text | true |
| oracle.sysman.ssa.logon.disclaimer_text | “I built this Cloud myself” |
| oracle.sysman.ssa.logon.show_em_branding_text | true |

Notice the use of the backslash (\) to allow the shell command to continue over multiple lines.

```
$ ./emctl set property \
-name oracle.sysman.ssa.logon.ssa_oms \
-value true
Oracle Enterprise Manager Cloud Control 12c Release 2
Copyright (c) 1996, 2012 Oracle Corporation.  All rights
reserved.
SYSMAN password: Oracle123
```

```
Property oracle.sysman.ssa.logon.ssa_oms for oms
em12.example.com:4889_Management_Service has been set to value
true
OMS restart is required to reflect the new property value
$
```

```
$ ./emctl set property \
-name oracle.sysman.ssa.logon.show_cloud_provider_brand \
-value true
Oracle Enterprise Manager Cloud Control 12c Release 2
Copyright (c) 1996, 2012 Oracle Corporation.  All rights
reserved.
SYSMAN password: Oracle123
Property oracle.sysman.ssa.logon.show_cloud_provider_brand has
been set to value true for all Management Servers
OMS restart is required to reflect the new property value
$
```

```
$ ./emctl set property \
-name oracle.sysman.ssa.logon.show_cloud_tenant_brand \
-value true
Oracle Enterprise Manager Cloud Control 12c Release 2
Copyright (c) 1996, 2012 Oracle Corporation.  All rights
reserved.
SYSMAN password: Oracle123
Property oracle.sysman.ssa.logon.show_cloud_tenant_brand has
been set to value true for all Management Servers
OMS restart is required to reflect the new property value
$
```

```
$ ./emctl set property \
-name oracle.sysman.ssa.logon.cloud_provider_alt_text \
-value "Oracle EMCC12c"
Oracle Enterprise Manager Cloud Control 12c Release 2
Copyright (c) 1996, 2012 Oracle Corporation.  All rights
reserved.
SYSMAN password: Oracle123
Property oracle.sysman.ssa.logon.cloud_provider_alt_text has
been set to value Oracle EMCC12c for all Management Servers
OMS restart is required to reflect the new property value
$
```

```
$ ./emctl set property \
-name oracle.sysman.ssa.logon.cloud_tenant_alt_text \
-value "Oracle University Class"
Oracle Enterprise Manager Cloud Control 12c Release 2
Copyright (c) 1996, 2012 Oracle Corporation.  All rights
reserved.
SYSMAN password: Oracle123
Property oracle.sysman.ssa.logon.cloud_tenant_alt_text has been
set to value Oracle University Class for all Management Servers
OMS restart is required to reflect the new property value
$
```

```
$ ./emctl set property \
-name oracle.sysman.ssa.logon.show_disclaimer_text \
-value true
Oracle Enterprise Manager Cloud Control 12c Release 2
Copyright (c) 1996, 2012 Oracle Corporation.  All rights
reserved.
SYSMAN password: Oracle123
Property oracle.sysman.ssa.logon.show_disclaimer_text has been
set to value true for all Management Servers
OMS restart is required to reflect the new property value
$
```

```
$ ./emctl set property \
-name oracle.sysman.ssa.logon.disclaimer_text \
-value "I built this Cloud myself"
Oracle Enterprise Manager Cloud Control 12c Release 2
Copyright (c) 1996, 2012 Oracle Corporation.  All rights
reserved.
SYSMAN password: Oracle123
Property oracle.sysman.ssa.logon.disclaimer_text has been set to
value I built this Cloud myself for all Management Servers
OMS restart is required to reflect the new property value
$
```

```
$ ./emctl set property \
-name oracle.sysman.ssa.logon.show_em_branding_text \
-value true
Oracle Enterprise Manager Cloud Control 12c Release 2
Copyright (c) 1996, 2012 Oracle Corporation.  All rights
reserved.
SYSMAN password: Oracle123
```

```
Property oracle.sysman.ssa.logon.show_em_branding_text has been
set to value true for all Management Servers
OMS restart is required to reflect the new property value
$
```

g. Stop and then start the OMS for the changes to take effect.

```
$ ./emctl stop oms
Oracle Enterprise Manager Cloud Control 12c Release 2
Copyright (c) 1996, 2012 Oracle Corporation.  All rights
reserved.
Stopping WebTier...
WebTier Successfully Stopped
Stopping Oracle Management Server...
Oracle Management Server Successfully Stopped
Oracle Management Server is Down
$
```

```
$ ./emctl start oms
Oracle Enterprise Manager Cloud Control 12c Release 2
Copyright (c) 1996, 2012 Oracle Corporation.  All rights
reserved.
Starting Oracle Management Server...
WebTier Successfully Started
Oracle Management Server Successfully Started
Oracle Management Server is Up
$
```

h. Access the Enterprise Manager Cloud Control 12*c* login URL https://em12.example.com:7799/em in your browser. Instead of the familiar out-of-the-box login page, you should be presented with the Cloud Self Service Portal page displaying the “provider” and “tenant” logos as you specified. Your OMS will now present this login page to all users.

i. Log in as `sysman` and note that nothing has changed on the post-login pages.

j. Log out as `sysman` and then log in as `lab2_user`. You should see the 200x20 pixel versions of the Oracle Cloud and Oracle University logos in the top left-hand corner of the page. If not, try clearing only your browser cache (*Tools … Clear Private Data*) and refresh the page.

k. If you wish to revert to the out-of-the-box login page and self service portal logos, execute the following sequence of commands on `em12`:

```
$ ./emctl set property \
-name oracle.sysman.ssa.logon.ssa_oms \
-value false
Oracle Enterprise Manager Cloud Control 12c Release 2
Copyright (c) 1996, 2012 Oracle Corporation.  All rights
reserved.
SYSMAN password: Oracle123
Property oracle.sysman.ssa.logon.ssa_oms for oms
em12.example.com:4889_Management_Service has been set to value
true
OMS restart is required to reflect the new property value
$
```

```
$ ./emctl stop oms
Oracle Enterprise Manager Cloud Control 12c Release 2
Copyright (c) 1996, 2012 Oracle Corporation.  All rights
reserved.
Stopping WebTier...
WebTier Successfully Stopped
Stopping Oracle Management Server...
Oracle Management Server Successfully Stopped
Oracle Management Server is Down
$
```

```
$ ./emctl start oms
Oracle Enterprise Manager Cloud Control 12c Release 2
Copyright (c) 1996, 2012 Oracle Corporation.  All rights
reserved.
Starting Oracle Management Server...
WebTier Successfully Started
Oracle Management Server Successfully Started
Oracle Management Server is Up
$
```

# Practices for Lesson 4: Setting Up the IaaS Cloud

**Chapter 4**

# Practices for Lesson 4

## Practices Overview

In this practice, you will set up an Enterprise Manager Cloud Control 12*c* IaaS cloud.

# Practice 4-1: Setting Up the IaaS Cloud

## Overview

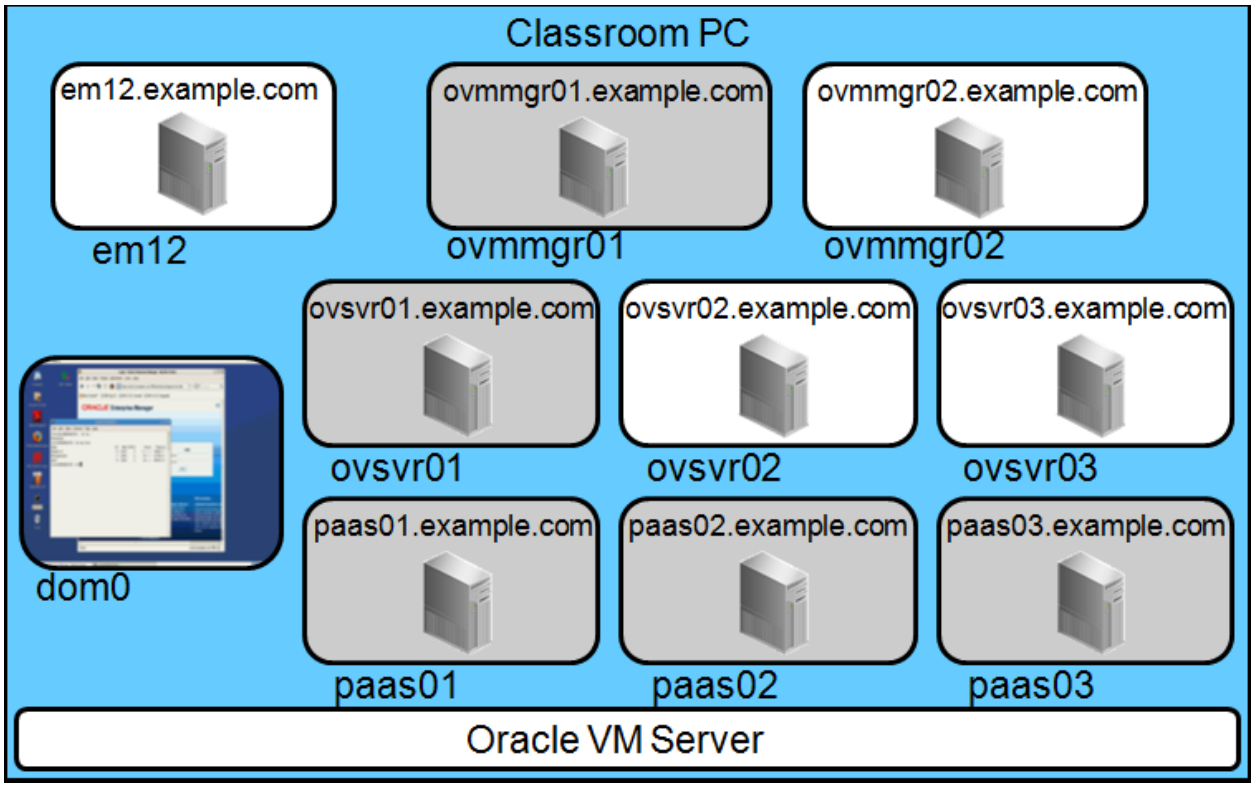
In this practice, you will establish a connection between Enterprise Manager Cloud Control 12*c* and an OVM Manager, and then proceed to discover OVM Servers to be owned by the OVM Manager. Next, you will set up networks for your OVM Servers and create a pool of virtual NICs for use by virtual machines. Your environment includes both a NFS server and iSCSI LUNs that you will add as storage to your OVM Manager before creating a storage repository for IaaS resources. Then, you will create a server pool, before finally creating an IaaS zone.

## Assumptions

You are logged on to `dom0` and have a terminal session open as root.

## Virtual Machines Used by This Practice

The virtual machines used by this practice are illustrated here with a white background.




## Usernames and Passwords

| Hostname/Application | Username/Passwords |
|---|---|
| Enterprise Manager Cloud Control 12*c* | `sysman/Oracle123`<br>`iaas_admin/Oracle123` |
| OVM Manager ovmmgr02 | `admin/Oracle123` |
| OVM Server agent | `oracle/ovsagent` |

## Tasks

1. Start a terminal session in `dom0`, switch to the `root` user, and then run the script for this lab to start the required VMs.

```
# startVMs_lab4-1.sh
```

2. Use the `xm list` command to confirm that the virtual machines used by this practice are running.

   Note that your Time and State values may differ from what is shown here.

```
# xm list
Name                                        ID   Mem VCPUs
State   Time(s)
Domain-0                                     0  2048     2
r----- 1256555.6
em12                                       108  4608     2     -
b----     30.9
ovmmgr02                                   112  2048     1
r-----     57.7
ovsvr02                                    113  3072     2     -
-----     68.0
ovsvr03                                    114  3072     2     -
-----     61.0
#
```

3. The Enterprise Manager Cloud Control 12*c* management agent has been deployed to `ovmmgr02`. This management agent will be used to establish a communication link between the OMS on `em12` and the OVM Manager service on `ovmmgr02` by deploying the virtualization plug-in.
   a. Log in to Enterprise Manager Cloud Control 12*c* as `sysman`.
   b. Navigate to *Setup* > *Extensibility* > *Plug-ins*.
   c. Expand the *Servers, Storage and Network* folder.
   d. Highlight the `Oracle Virtualization` plug-in.
   e. Select *Deploy On* > *Management Agent* from the options across the top of the table of plug-ins to open the *Deploy Plug-in on Management Agent* dialog.
   f. Ensure that `Version 12.1.0.3` is selected for deployment.
   g. In the *Selected Management Agent* section, click the *Add* button to open the *Search and Select: Targets* dialog.
   h. Select the agent on the `ovmmgr02` server and click *Select* to return to the *Deploy Plug-in on Management Agent* dialog.
   i. Click *Continue* to proceed to the *Pre-requisite Checks* page.
   j. Click *Next* to proceed to the *Review* page.
   k. Click *Deploy* to initiate the deployment. Use the *Show Status* button to open the *Deployment Activities* page. Turn on *Auto Refresh* to simplify monitoring the activity.

      Once the status shows as `Success` the plug-in is ready to use.
4. Register the OVM Manager on `ovmmgr02`.

a. Log in to Enterprise Manager Cloud Control 12*c* as `iaas_admin`. If this is the first time login for `iaas_admin`, select an appropriate home page such as the *Infrastructure Cloud*.

b. If you did not choose *Infrastructure Cloud* as your home page, navigate to *Enterprise* > *Cloud* > *Infrastructure Home*.

   Notice that you can see the IaaS components that were configured for Practice 2 by the `lab2_admin` user. This is because cloud administration is based purely upon the `EM_CLOUD_ADMINISTRATOR` role, rather than which user configured the components.

c. Right-click the `Infrastructure Cloud` node in the *Target Navigation* pane and select *Register OVM Manager* from the context menu, *or* select *Register OVM Manager* from the *Infrastructure Cloud* menu on the *Infrastructure Cloud* home page.

d. Enter the values shown below. Note that the *Oracle VM Manager URL* we are using is a secure TCP connection, which is a post-installation setup task for Oracle VM Manager. This has already been executed in your environment, following the steps outlined in the documentation *Chapter 3. Installing Oracle VM Manager, Section 3.9. Enabling Remote Log Ins* http://docs.oracle.com/cd/E27300_01/E27308/html/vmiug-manager-tcps.html.

| | |
|---|---|
| **Name** | ovmmgr02 |
| **Monitoring Agent** | select the ovmmgr02 agent |
| **Oracle VM Manager URL** | tcps://ovmmgr02.example.com:54322 |
| **Monitoring Credentials Username** | `admin` |
| **Monitoring Credentials Password** | `Oracle123` |
| **Oracle VM Manager Console URL** | https://ovmmgr02.example.com:7002/ovm/console |

e. Click *Submit* to initiate the registration process, and then click *Job Details* on the *Confirmation* dialog to monitor the process in the *Job Activity* page.

f. Click the job name or job status to open the *Job Run* page. The `InitRegisterOvmMgr` step is expected to fail.

g. Click the status for that step to determine why.

   You should see an error in the Error Log section:

```
4321: Error getting UUID
…
oracle.sysman.vt.ovm.integration.api.EMOVMCommunicationServiceException: 1014: Error while performing the operation: Unable to set SSL Context
```

   And below that, you should see instructions on how to rectify the problem that you will execute in the next step of this task.

```
Please ensure that OVM Manager certificate is imported to Agent
Keystore


1. Steps for exporting OVM Manager certificate:


  a.  <JAVA_HOME>/bin/keytool -keystore
<OVM_MANAGER_HOME>/ovmmCoreTcps.ks -exportcert -alias ovmm -file
<file_loc_for_certificate>


2. Steps for importing OVM Manager certificate to Agent
Keystore:


  a.  <AGENT_INSTANCE_HOME>/bin/emctl secure
add_trust_cert_to_jks -trust_certs_loc
<file_loc_for_certificate> -alias <alias_name>
```

This error occurred because we specified the secure TCP URL for the OVM Manager. However, the agent on `ovmmgr02` is not able to complete the SSL handshake because it does not know of the certificate used to secure this OVM Manager.

h. Execute the suggested steps to import the certificate into the management agent.

1) Start a terminal session for `dom0` from the GUI or use an existing session.

2) Log on to `ovmmgr02` as the `oracle` user with a secure shell session. Accept the RSA key if asked.

```
# ssh oracle@ovmmgr02.example.com
The authenticity of host 'ovmmgr02 (192.0.2.122)' can't be
established.
RSA key fingerprint is
8e:60:d0:a7:fc:55:6e:d9:81:bb:c9:90:19:f4:a8:11.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'ovmmgr02,192.0.2.122' (RSA) to the
list of known hosts.
oracle@ovmmgr02's password: oracle
$
```

3) Export the certificate by using the command from the error log to create a keystore and export the SSL certificate into it. You will use a simple password to protect the keystore. Notice the use of the backslash (\) to allow the shell command to continue over multiple lines.

```
$ /u01/app/oracle/java/bin/keytool \
-keystore /u01/app/oracle/ovm-manager-3/ovmmCoreTcps.ks \
-exportcert -alias ovmm \
-file /home/oracle/ovmmgr02_keystore.exp
Enter keystore password:  welcome
Certificate stored in file </home/oracle/ovmmgr02_keystore.exp>
$
```

4) Confirm that the file exists. Note that the output you see may differ from what is shown here, particularly the file modification dates.

```
$ ls -l
total 16
drwxr-xr-x 2 oracle oinstall 4096 Oct 18 00:28 bea
drwxr-xr-x 2 oracle oinstall 4096 Oct  4  2011 Desktop
drwxr-xr-x 3 oracle oinstall 4096 Oct 18 00:24 oradiag_oracle
-rw-r--r-- 1 oracle oinstall  597 Oct 25 09:44
ovmmgr02_keystore.exp
$
```

5) Add the OVM Manager certificate to the management agent's trusted certificate store. The password that is provided here is the password to open the OMS's keystore, which has the default value `welcome`. Notice the use of the backslash (\) to allow the shell command to continue over multiple lines.

```
$ /u01/app/oracle/product/agent12c/agent_inst/bin/emctl \
secure add_trust_cert_to_jks \
-trust_certs_loc /home/oracle/ovmmgr02_keystore.exp \
-alias ovmm
Oracle Enterprise Manager Cloud Control 12c Release 2
Copyright (c) 1996, 2012 Oracle Corporation.  All rights
reserved.
Password: welcome

Message   :   Certificate was added to keystore
ExitStatus: SUCCESS

$
```

i. Return to the Enterprise Manager Cloud Control 12*c* console where you will retry the OVM Manager registration process. Navigate to *Enterprise* > *Cloud* > *Infrastructure Home*, or, if you selected the Infrastructure Cloud as your home page, you can use the home page link embedded in the words Enterprise Manager in the page banner title "ORACLE Enterprise Manager Cloud Control 12*c*."

j. Right-click the *Infrastructure Cloud* node in the *Target Navigation* pane and select *Register OVM Manager* from the context menu, or select *Register OVM Manager* from the *Infrastructure Cloud* menu on the *Infrastructure Cloud* home page.

k. Enter the following values:

| | |
|---|---|
| **Name** | ovmmgr02 |
| **Monitoring Agent** | select the ovmmgr02 agent |
| **Oracle VM Manager URL** | tcps://ovmmgr02.example.com:54322 |
| **Monitoring Credentials Username** | `admin` |
| **Monitoring Credentials Password** | `Oracle123` |
| **Oracle VM Manager Console URL** | https://ovmmgr02.example.com:7002/ovm/console |

l. Click *Submit* to initiate the registration process, and then click *Job Details* on the *Confirmation* dialog to monitor the process in the *Job Activity* page.

m. Click the job name or status to open the *Job Run* page. The `InitRegisterOvmMgr` step should succeed now. Turn on *Auto Refresh* to easily monitor the job status.

n. When complete (the status of the job is `Succeeded`), return to the *Infrastructure Cloud* home page. The newly registered OVM Manager will be shown in the *Target Navigation* pane, hierarchically under the `Infrastructure Cloud` node. Click the `ovmmgr02` link in the navigation pane to open the OVM Manager's home page and browse through the information presented.

5. Discover OVM Servers.

a. Open the *Discover Virtual Servers* page by right-clicking the `ovmmgr02` node in the Target Navigation pane and selecting Discover Virtual Server from the context menu, or by selecting *Discover Virtual Server* from the VM Manager menu on the `ovmmgr02` home page.

b. Enter the following values:

| | | |
|---|---|---|
| **Virtual Servers** | ovsvr02.example.com<br>ovsvr03.example.com | |
| **Oracle VM Agent Credentials User Name** | `oracle` | Do not change this field. |
| **Oracle VM Agent Credentials Password** | `ovsagent` | |

c. Click *Submit* to initiate the discovery.

d. Click *Job Details* on the confirmation dialog to monitor the discovery. Click through to the job run page and turn on Auto Refresh to simplify monitoring.

e. When complete (the status of the job is `Succeeded`), return to the Infrastructure Cloud home page or the `ovmmgr02` home page (by using the History menu). The two OVM Servers will be displayed as nodes owned by `ovmmgr02` in the *Target Navigation* hierarchy.

6. Create a network profile that can be used to provide hostname and network details for requested virtual machines.

a. Navigate to *Setup* > *Provisioning and Patching* > *Network Profile* to open the *Network Profile* page.

b. Click *Create* to open the *Create Network Profile* dialog and enter the following values:

| | |
|---|---|
| **Name** | exampleDotCom |
| **Domain Name** | example.com |
| **Netmask** | 255.255.255.0 |
| **Gateway** | 192.168.1.1 |
| **DNS Servers** | 192.168.1.1 |

c. Select *IP Address* of `Range` and click *Add*, then enter the following values to generate hostnames `ssavm1 .. ssavm26` and associated IP addresses. These hostname and IP address pairs have been configured in the DNS running on `dom0` so that all hosts in your environment can resolve the names and perform reverse lookup on the IP addresses, ensuring that requested VMs will be "visible" on the network running on your classroom PC.

| | |
|---|---|
| **Hostname Pattern** | ssavm |
| **Start Value** | 1 |
| **First IP Address** | 192.168.1.25 |
| **Last IP Address** | 192.168.1.50 |

d. Click *OK* to create the hostname and IP address combinations. You will be returned to the *Network Profile* page where the network profile you just created will be listed.

7. Configure networks for `ovmmgr02` and its associated OVM Servers.

a. Open the *Infrastructure Cloud* or `ovmmgr02` home page. Using the menus, navigate to *Enterprise* > *Cloud* > *Infrastructure Home*, use the Enterprise Manager link if you have set *Infrastructure Cloud* as your home page, or use the History drop-down menu and select `ovmmgr02` if it is listed.

b. Open the *Network* page for `ovmmgr02` by selecting *Manage Network* from the right-click menu in the Target Navigation pane, or by selecting *Administration* > *Network* from the VM Manager menu on the `ovmmgr02` home page.

c. Select the *Networks* tab if it is not already open.

d. Create a virtual machine network for requested guests that can use the network profile created in the previous step.

1) Click *Create*.

2) You will be presented with a *Confirmation* dialog asking if you first want to create a VLAN network. VLAN-enabled network infrastructure is not available, so click *Continue Network Creation* to proceed to the *Create Network: General* page.

3) Enter the following information:

| | |
|---|---|
| **Name** | vm_net |
| **Description** | Virtual Machine network using exampleDotCom network profile |
| **Network Type** | Inter-server |
| **Network Roles** | Virtual Machine |

4) Click *Next* to proceed to the *Create Network: Configure Ports and VLAN Interfaces* page.
5) Click *Add* in the *Ports* section to open the *Configure Ports and VLAN Interfaces: Add Ports* page.
6) Click the search icon next to the *Select Virtual Server(s)* field to open the *Search and Select: Targets* dialog. Select `ovsvr02` and `ovsvr03` and click *Select* to return to the *Add Ports* page.

   Tip: Use the left-most square in the table header row to select all displayed rows.
7) Select `EthernetPort(2)` for both `ovsvr02` and `ovsvr03` and click *Continue* to return to the *Create Network: Configure Ports and VLAN Interfaces* page.

   Tip: Use the Ctrl key to make multiple selections.
8) Configure IP addresses for the selected network interfaces by highlighting each row in the *Ports* table and entering the information below.

   **Note:** Be sure to enter the information for the correct host and port combination – the ports may not be listed in the order shown here.

| Port | Address Type | IP Address | Netmask |
|---|---|---|---|
| ovsvr02 EthernetPort(2) | STATIC | 192.168.1.102 | 255.255.255.0 |
| ovsvr03 EthernetPort(2) | STATIC | 192.168.1.103 | 255.255.255.0 |

9) Click *Next* to proceed to the *Create Network: Network Profile and QoS* page.
10) Click *Add* in the *Network Profiles* section to open the *Select Network Profiles for the Network* dialog. Highlight the `exampleDotCom` network profile and click *OK* to return to the *Network Profile and QoS* page. The network profile will be listed in the *Network Profiles* section.
11) Click *Next* to proceed to the *Create Network: Review* page, and then *Finish* to submit a job to create the network.
12) Click the *Job Details* button on the *Confirmation* dialog to track progress of the network creation job. Click the name or status link to see step-by-step details, and turn on *Auto Refresh* or use the refresh icon to see the current status.
13) Once the job has succeeded, return to the `ovmmgr02` network page. You can use the history menu to quickly return to the `ovmmgr02` home page.

e. Create a cluster heartbeat network for your OVM Servers.
1) Click *Create* on the *Networks* tab.
2) You will be presented with a *Confirmation* dialog asking if you first want to create a VLAN network. We do not have VLAN-enabled network infrastructure, so click *Continue Network Creation* to proceed to the *Create Network: General* page.
3) Enter the following information:

| | |
|---|---|
| **Name** | hb_net |
| **Description** | Cluster heartbeat network |
| **Network Type** | Inter-server |
| **Network Roles** | Cluster HeartBeat |

4) Click *Next* to proceed to the *Create Network: Configure Ports and VLAN Interfaces* page.

5) Click *Add* in the *Ports* section to open *the Configure Ports and VLAN Interfaces: Add Ports* page.
6) Click the search icon next to the *Select Virtual Server(s)* field to open *the Search and Select: Targets* dialog. Select `ovsvr02` and `ovsvr03` and click *Select* to return to the *Add Ports* page.

   Tip: Use the left-most square in the table header row to select all displayed rows.
7) Select `EthernetPort(3)` for both `ovsvr02` and `ovsvr03` and click *Continue* to return to the *Create Network: Configure Ports and VLAN Interfaces* page.

   Tip: Use the Ctrl key to make multiple selections.
8) Configure IP addresses for the selected network interfaces by highlighting each row in the *Ports* table and entering the information below.

   **Note:** Be sure to enter the information for the correct host and port combination—the ports may not be listed in the order shown here.

| Port | Address Type | IP Address | Netmask |
|---|---|---|---|
| ovsvr02 EthernetPort(3) | STATIC | 192.168.2.102 | 255.255.255.0 |
| ovsvr03 EthernetPort(3) | STATIC | 192.168.2.103 | 255.255.255.0 |

9) Click *Next* to proceed to the *Create Network: Network Profile and QoS* page. We will *not* be configuring a network profile or QoS.
10) Click *Next* to proceed to the *Create Network: Review* page, and then *Finish* to submit a job to create the network.
11) Click the *Job Details* button on the *Confirmation* dialog to track progress of the network creation job. Click the name or status link to see step-by-step details, and turn on *Auto Refresh* or use the refresh icon to see the current status.
12) Once the job has succeeded, return to the `ovmmgr02` network page. You can use the history menu to quickly return to the `ovmmgr02` home page.

f. Now that we have a dedicated cluster heartbeat network, modify the 192.0.2.0 network to only be used for Server Management and Live Migrate.
   1) On the `ovmmgr02` *Networks* page, select the *Networks* tab, and highlight the `192.0.2.0` network.
   2) Click *Edit* to open the *Edit Network: General* page.
   3) Deselect the `Cluster HeartBeat` role in the *Network Roles* section, and click *Next* to proceed to the *Edit Network: Configure Ports and VLAN Interfaces* page.
   4) No more changes will be made, so click *Next* to proceed directly to the *Network Profile and QoS* page, and again to proceed to the *Review* page.
   5) Click *Finish* to submit the job to perform the changes.
   6) Click the *Job Details* button on the *Confirmation* dialog to track progress of the network creation job. Click the name or status link to see step-by-step details, and turn on *Auto Refresh* or use the refresh icon to see the current status.
   7) Once the job has succeeded, return to the `ovmmgr02` network page. You can use the history menu to quickly return to the `ovmmgr02` home page.

8. Create a pool of Virtual NICs for allocation to requested VMs.
   a. Open the `ovmmgr02` home page, or navigate to the *Infrastructure Cloud* page.

b. Open the `ovmmgr02` network page by right-clicking the `ovmmgr02` node in the *Target Navigation* pane and selecting *Manage Network* from the context menu, or by selecting *Administration* > *Network* from the *VM Manager* menu on the `ovmmgr02` home page.
c. Select the *Virtual Network Interface Card Manager* tab.
d. Click *Generate* to open the *Generate MAC Addresses* dialog.
e. Set the fourth and fifth couplets to `ab` and `cd`, respectively, so that the Initial MAC Address is `00-21-F6-ab-cd-00` and click *Create* to generate the Virtual NIC MAC addresses.
f. Click *Job Details* on the *Confirmation* dialog and then click the job name or status to monitor the progress of the virtual NIC creation. Turn on Auto Refresh to be sure of seeing the current status.
g. Once the job succeeds, navigate back to the `ovmmgr02` network page and select the *Virtual Network Interface Card Manager* tab to see the generated VNICs. These will be allocated at random to requested VMs.

9. Discover the iSCSI storage LUNs in your environment.
   a. Open the `ovmmgr02` home page, or navigate to the *Infrastructure Cloud* page.
   b. Open the *Storage* page by right-clicking the `ovmmgr02` node in the *Target Navigation* pane and selecting *Manage Storage* from the context menu, or by selecting *Administration* > *Storage* from the *VM Manager* menu on the `ovmmgr02` home page.
   c. Click *Register* to open the *Register Storage Server* dialog and enter the following values:

| | |
|---|---|
| **Type** | Storage Array |
| **Name** | iscsi_server |
| **Description** | dom0 iSCSI LUNs |
| **Storage Type** | iSCSI Storage Server |
| **Plugin Name** | Oracle Generic SCSI Plugin |
| **Access Host** | 192.0.2.1 |
| **Access Port** | 3260 |

   d. Click *Continue* to proceed to the *Admin Servers* dialog. Click *Add* and select `ovsvr02.example.com` and `ovsvr03.example.com`.
      Tip: Use the left-most square in the table header row to select all displayed rows.
      Click *Select* to return to the *Register Storage Server* dialog.
   e. Click *Submit* to initiate the registration of the storage array.
   f. Click *Job Details* on the *Confirmation* dialog and then click the job name or status to monitor the repository creation job. Turn on *Auto Refresh* to regularly update the status and wait for the job to succeed.
10. Add Storage Initiators for the newly discovered storage array to allow your OVM servers to access the resources of the array.
    a. Open the `ovmmgr02` home page, or navigate to the *Infrastructure Cloud* page.
    b. Open the *Storage* page by right-clicking the `ovmmgr02` node in the *Target Navigation* pane and selecting *Manage Storage* from the context menu, or by selecting *Administration* > *Storage* from the *VM Manager* menu on the `ovmmgr02` home page.
    c. Expand the *Storage Arrays* row in the storage table.

d. Click `iscsi_server`, the storage array registered in the previous step, to open the *Storage Details* page for this array.
e. Select the *Access Groups* tab and highlight the row for `Default access group @ iscsi_server`.
f. Click *Edit* to open the *Edit Access Group* dialog.
g. Select the initiators for both `ovsvr02.example.com` and `ovsvr03.example.com` and click OK to submit a job to commit the changes.
h. Click *Job Details* on the *Confirmation* dialog and then click the job name or status to monitor the repository creation job. Turn on *Auto Refresh* to regularly update the status and wait for the job to succeed.

11. Give meaningful names to the storage array LUNs.
    a. Open the `ovmmgr02` home page, or navigate to the *Infrastructure Cloud* page.
    b. Open the *Storage* page by right-clicking the `ovmmgr02` node in the *Target Navigation* pane and selecting *Manage Storage* from the context menu, or by selecting *Administration* > *Storage* from the *VM Manager* menu on the `ovmmgr02` home page.
    c. Expand the `Storage Arrays` row in the storage table.
    d. Click `iscsi_server`, the storage array registered earlier, to open the *Storage Details* page for this array.
    e. Select the *Physical Disks* tab.
    f. Highlight the `12.29GB LUN`—probably IET (1)—and click *Edit* to open the *Edit Physical Disk* dialog. Change the name to `serverPoolFS`.
    g. Click *OK* to commit the change. Click *Close* on the confirmation dialog to return to the *Storage Details* page, *Physical Disks* tab.
    h. Highlight the `50.00GB LUN`—probably IET (2)—and click *Edit* to open the *Edit Physical Disk* dialog. Change the name to `repositoryLUN`.
    i. Click *OK* to commit the change. Click *Close* on the confirmation dialog to return to the *Storage Details* page, *Physical Disks* tab.
    j. Click the page refresh icon to update the page. You should now see the new names displayed for each of the physical disks.
12. Create a virtual server pool.
    a. Open the `ovmmgr02` home page, or navigate to the *Infrastructure Cloud* page.
    b. Open the *Create Virtual Server Pool* page by right-clicking the `ovmmgr02` node in the Target Navigation pane and selecting *Create Virtual Server Pool* from the context menu, or by selecting *Administration > Create Virtual Server Pool* from the *VM Manager* menu on the `ovmmgr02` home page.

c. Enter the following values:

| | |
|---|---|
| **Virtual Server Pool Name** | PoolOne |
| **Secure VM Migrate** | unchecked |
| **Activate Cluster** | checked |
| **Type of Pool File System** | Physical Disk |
| **Location** | serverPoolFS |
| **Virtual IP** | 192.0.2.156 |
| **Virtual Servers** | Add `ovsvr02.example.com` and `ovsvr03.example.com` |

d. Click *OK*.

e. Click *Close* on the confirmation dialog to return to the `ovmmgr02` home page. You will see the server pool listed in the *Target Navigation* pane under *Targets Under Creation* when you expand the node for `ovmmgr02`. We are waiting for the server pool's OCFS2 file system to be created. This page does not have an auto refresh function, so use the manual page refresh icon to see the current status until the server pool is created.

13. Create an iSCSI storage repository.

a. Open the `ovmmgr02` home page, or navigate to the *Infrastructure Cloud* page.

b. Open the *Storage Repository* page by right-clicking the `ovmmgr02` node in the *Target Navigation* pane and selecting *Manage Storage Repository* from the context menu, or by selecting *Administration* > *Storage Repository* from the *VM Manager* menu on the `ovmmgr02` home page.

c. Click *Create* to open the *Create Repository* dialog and enter the following values:

| | |
|---|---|
| **Name** | iscsi_repos |
| **Storage Type** | Physical Disk |
| **Location** | repositoryLUN |
| **Server Pool** | PoolOne |
| **Description** | Storage Repository for PoolOne |

d. Click *OK* to initiate the job that will create the repository.

e. Click *Job Details* on the confirmation dialog and then click the job name or status to monitor the repository creation job. Turn on *Auto Refresh* to regularly update the status.

14. Present the storage repository to your virtual server pool.

a. Open the *Storage Repository* page by right-clicking the `ovmmgr02` node in the *Target Navigation* pane and selecting *Manage Storage Repository* from the context menu, or by selecting *Administration* > *Storage Repository* from the *VM Manager* menu on the `ovmmgr02` home page.

b. Click the name for the `iscsi_repos` repository created in the previous task.

c. Select the *Presented Servers* tab and click *Present* to open the *Present Servers* dialog.

d. Use the search icon to open the *Search and Select: Targets* dialog.

e. Highlight `ovsvr02` and `ovsvr03` and click *Select* to return to the *Present Servers* dialog.
f. Click *Present* to initiate a job to mount the storage repository on the selected servers.
g. Click *Job Details* on the confirmation dialog and then click the job name or status to monitor the repository creation job. Turn on *Auto Refresh* to regularly update the status.

15. Create an IaaS zone.
    a. Open the *Create Zone* page by right-clicking the `ovmmgr02` node in the *Target Navigation* pane and selecting *Create Zone* from the context menu, or by selecting *Create Zone* from the *VM Manager* menu on the `ovmmgr02` home page.
    b. Enter the following values:

| | |
|---|---|
| **Name** | IaaS_Zone |
| **Description** | IaaS zone containing PoolOne |
| **Infrastructure Cloud Self Service Zone** | Checked |

    c. In the *Virtual Server Pools* section, click *Add* to open the *Select Virtual Server Pools* dialog.
    d. Select `PoolOne` and click *Select* to return to the *Create Zone* page.
    e. Click *OK* to initiate the zone creation job.
    f. Click *Job Details* on the confirmation dialog, and then click the job name or status to monitor the zone creation job. Turn on *Auto Refresh* to automatically view the latest status. Alternatively, click *Close* on the confirmation dialog to return to the OVM Manager home page where you can monitor the job in *Job Activity* area by manually refreshing the page.

# Practices for Lesson 5: Setting Up the IaaS Self Service Portal

**Chapter 5**

# Practices for Lesson 5

## Practices Overview

In this practice, you will set up the Enterprise Manager Cloud Control 12*c* IaaS self service portal.

# Practice 5-1: Setting Up the IaaS Self Service Portal

## Overview

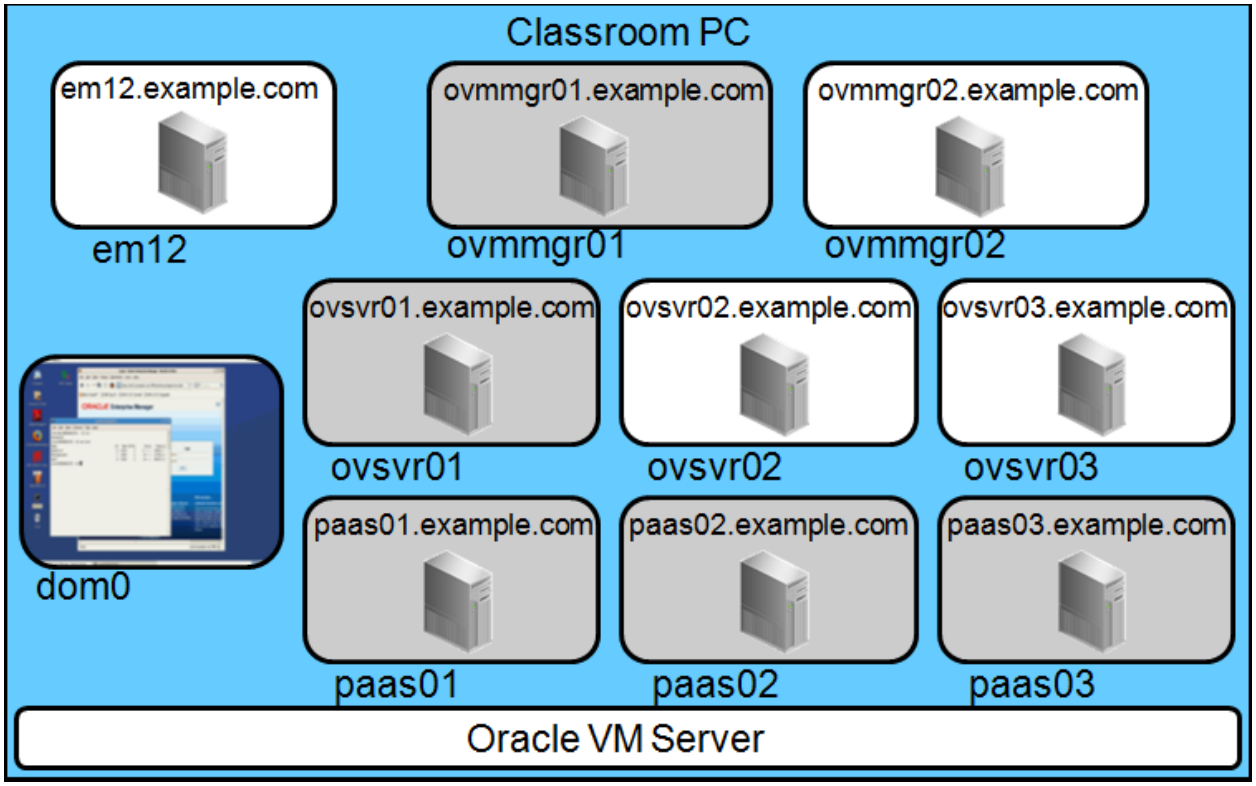
In this practice, you will establish a working IaaS self service portal.

## Assumptions

You have completed the Practices for the lesson titled “Setting Up the IaaS Cloud.”

## Virtual Machines Used by This Practice

The virtual machines used by this practice are illustrated here with a white background.




## Usernames and Passwords

| Hostname/Application | Username/Passwords |
|---|---|
| Enterprise Manager Cloud Control 12*c* | `sysman/Oracle123`<br>`iaas_admin/Oracle123`<br>`iaas_user/Oracle123` |

## Tasks

1. Start a terminal session in `dom0`, switch to the `root` user, and then run the script for this lab to start the required VMs.

```
# startVMs_lab5-1.sh
```

2. Use the `xm list` command to confirm that the virtual machines used by this practice are running.

Note that your Time and State values may differ from what is shown here.

```
# xm list
Name                                        ID   Mem VCPUs
State   Time(s)
Domain-0                                     0  2048     2
r----- 1256555.6
em12                                       108  4608     2     -
b----     30.9
ovmmgr02                                   112  2048     1
r-----     57.7
ovsvr02                                    113  3072     2     -
-----     68.0
ovsvr03                                    114  3072     2     -
-----     61.0
#
```

3. Define a machine size.
   a. Log in to Enterprise Manager Cloud Control 12*c* as `iaas_admin`.
   b. Open the *Infrastructure Cloud Self Service Setup* page by navigating to *Setup* > *Cloud* > *Infrastructure*.
   c. Select *Machine Sizes* in the left pane.
   d. Click *Create* and enter the following values

| | |
|---|---|
| **Name** | Tiny |
| **Description** | Tiny sized machine |
| **VCPUs** | 2 |
| **Memory (MB)** | 1024 |
| **Local Storage (GB)** | 1 |

   e. Click *Save* to return to the *Infrastructure Cloud Self Service Setup* page.
4. Configure request settings.
   a. Select *Request Settings* in the left pane.
   b. Change the following settings:

| | |
|---|---|
| **Request Duration** | Restricted to maximum 2 days with a default of 1 day |
| **Enable Enterprise Manager Agent Configuration** | Checked |
| **Software library top level folder** | /Software Library/SSA Artifacts/ |

   c. Click *Apply* to update the settings with your changes.
   Remain in the *Infrastructure Cloud Self Service Setup* page.

5. Assign quotas to an SSA-enabled role.
   a. Select *Roles* from the left pane.
   b. Click *Assign Quota to Role* and enter the following values:

| | | |
|---|---|---|
| **Select Role** | IAAS_SSA_ROLE | Defining multiple SSA-enabled roles such as development, test, QA, and end-user would allow for fine grained quota definitions |
| **Select Zones** | IaaS_Zone | |
| **Number of Servers** | 4 | |
| **Number of VCPUs** | 8 | The maximum server, VCPU, memory, and local disk values should align. For example, setting Number of VCPUs to 2 is nonsensical if the Number of Servers is 4. |
| **Memory (GB)** | 4 | |
| **Local Disk (GB)** | 25 | Local Disk includes disk images cloned from templates and assemblies as well as any further disk space required to fulfill the SSA request. |
| **Select Network Profiles** | exampleDotCom | |

   c. Click *Save* to return to the *Infrastructure Cloud Self Service Setup* page.
6. Publish a software component.
   a. First, import an assembly to your software library:
      *1)* Logged in as `iaas_admin`, navigate *to Enterprise* > *Provisioning and Patching* > *Software Library*.
      2) Highlight the `Components` folder.
      3) Select *Actions* > *Create Entity* > *Virtualization.*
      4) Select *Subtype* of `Assembly` and click *Continue*.
      5) Enter the following value, and then click *Next*.

| | |
|---|---|
| **Name** | OL5U7 x86-64 OS Only |

      6) Select the *Refer Files* radio button.
      7) Add the `domZero` *Referenced File Location*.
      8) Click the *Add* button and enter the following values, and then click *OK*.

| | |
|---|---|
| **Source file** | downloads/OVM_OL5U7_x86_64_PVM.ova |
| **Name** | OVM_OL5U7_x86_64_PVM |

      9) Click *Next* to view the assembly details.
      10) Click *Next* to review the component details.
      11) Click *Save and Upload* to create the entity and upload it to the software library.

7. Set the CLOUD_SWLIB_USER password, used when importing software components into storage repositories from the software library.
   a. Navigate to *Enterprise* > *Cloud* > *Infrastructure Home* to open the *Infrastructure Cloud* home page.
   b. Select *Setup* from the *Infrastructure Cloud* menu.
   c. Select *Software Library User Configuration* and enter the following values:

| | |
|---|---|
| **Password** | `CloudSwlib123` |
| **Confirm Password** | `CloudSwlib123` |

   d. Click *Apply*. You should see an Information dialog with the message "Cloud Software Library User credential applied successfully."
8. Next, publish the assembly to the IaaS cloud:
   a. Navigate to *Setup* > *Cloud* > *Infrastructure* to open the *Infrastructure Cloud Self Service Setup* page.
   b. Select *Software Components* from the left navigation pane.
   c. In the *Publish Software Components* section, click *Add Components* to open the *Publish Assemblies/Templates to Roles* dialog.
   d. Click *Add* in the *Select Software Components* section and select the assembly uploaded to the software library earlier.
   e. Click *Add* in the *Select Roles* section and select the `IAAS_SSA_ROLE` role.
   f. Click *Publish* to make the assembly available to SSA users with the role of `IAAS_SSA_ROLE`.

      Notice that the assembly is listed with a red cross in the *Configured* column. This is because we specified in the *Request Settings* that we wanted the Enterprise Manager Agent to be pushed out to virtual machines requested by SSA users.
   g. Highlight the assembly and click the *Configure* button to open the Configure dialog.
   h. In the Configure EM Agent section enter the following values:

| | |
|---|---|
| **Platform** | `Linux x86-64` |
| **Password** | `oracle` |

   i. In the *Tier Configuration*, set the *Product and Network* configuration timeouts to 15 minutes and **uncheck** the *Enable EM Agent Push* for the tier.
   j. Click *OK* to return to the *Infrastructure Cloud Self Service Setup* page.
9. Import the assembly into our IaaS zone so that SSA users will not have to wait for the files to be transferred from the Enterprise Manager software library to the zone's storage repository before deployment of their request can commence.
   a. Highlight the assembly in the *Publish Software Components* section and click the Import button to open the *Select Zones* dialog.
   b. Select the `IaaS_Zone` zone and click *Import*. Use the *Job Details* button on the confirmation dialog to monitor the job import job's progress. Turn on auto-refresh to ensure you see the current status, and click *Expand All* to see all the steps.

      **Note:** This operation will import the assembly into every storage repository presented to the OVM Servers in the chosen zone(s). If you want to import to a specific storage repository, initiate the task from the storage repository's pages instead.
10. Test the assembly by making a request as an IaaS user.
    a. Log in as `IAAS_USER`.

b. You will be taken to the *Infrastructure Cloud Self Service Portal* page with the *My Servers* radio button selected. Because `IAAS_USER` only has the `EM_SSA_USER` role and they cannot view any "standard" Enterprise Manager Cloud Control 12*c* pages.

c. Click *Request Servers* in the *10 Last Requested Servers* section to open the *New Server Request: General* page and enter the following details:

| | |
|---|---|
| **Name** | Practice 5-1 Deployment Test |
| **Destination** | IaaS_Zone |
| **Source** | OL5U7 x86-64 OS Only |
| **Assembly Instance Name** | Practice 5-1 OS VM |

d. Click *Next* to progress to the *New Server Request: Deployment Configuration* page.

e. Highlight the row for `OVM_OL5U7_x86_64_PVM:Practice 5-1 OS VM` and select *Server Size* of `Tiny`.

f. In the *Server Configuration* tab, enter a root password for your virtual machine:

| | |
|---|---|
| **Root Password** | `oracle` |
| **Confirm Root Password** | `oracle` |

g. Expand the *Network* section, highlight `eth0`, and click *Edit* to open the *Edit Network Interface Card* dialog. Make the following selections:

| | |
|---|---|
| **IP Assignment** | Network Profile |
| **Network Profile Name** | exampleDotCom |

h. Click *OK* to return to the *New Server Request: Deployment Configuration* page.

i. Click *Next* to proceed to the *New Server Request: Schedule* page and set the following values:

| | |
|---|---|
| **Start Date** | Immediately |
| **End Date** | Until two days from today |

j. Click *Next* to proceed to the *New Server Request: Review* page.

k. Click *Next* to progress to the *Review* page. You will receive an error indicating that the End Date cannot be longer than the two-day limit we imposed in the Quota settings for the `IAAS_SSA_ROLE` role. Dismiss the error and select an End Date within the next two days.

l. Click *Next* to progress to the *Review* page, and then *Finish* to initiate the deployment.

11. Monitor the request from the perspective of the cloud administrator.

a. Log in as `iaas_admin`.

b. Navigate to *Enterprise* > *Cloud* > *Infrastructure Request Dashboard* to open the *Infrastructure Cloud Requests Dashboard* page.

c. In the *10 Last Failed Requests* section, click *View All Requests* to open the *All Infrastructure Cloud Requests* page.

d. Click the request name for the server request that was just issued as the `iaas_user`.

e. Open the *Deployment* tab and click the start job name to observe the request as it progresses.

f. Wait until the job has succeeded.

# Practices for Lesson 6: PaaS Fundamentals

**Chapter 6**

# Practices for Lesson 6: Overview

## Practices Overview

In this practice, you will set up an Enterprise Manager Cloud Control 12*c* PaaS infrastructure zone in preparation for setting up DBaaS and MWaaS clouds.

# Practice 6-1: Creating a PaaS Infrastructure Zone

## Overview

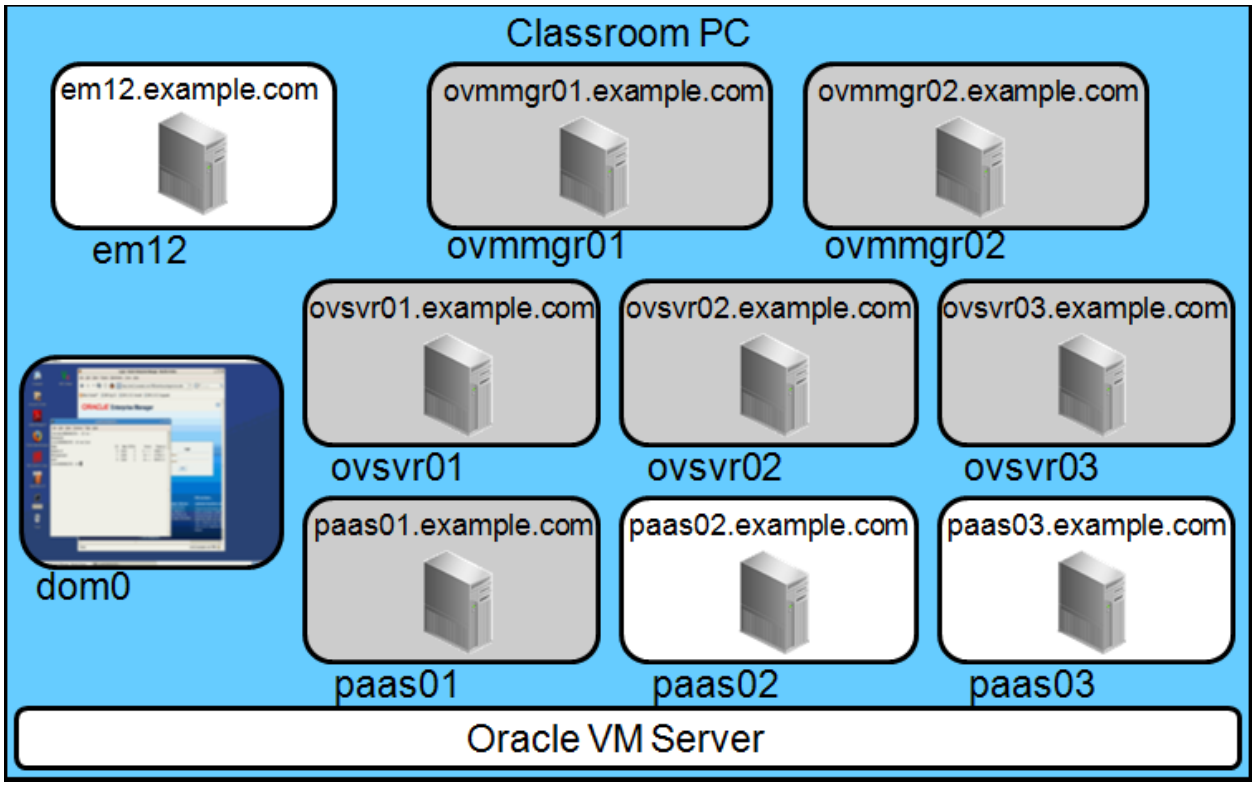
In this practice, you establish a PaaS infrastructure zone with the host credentials and privilege delegation settings that will be used to deploy self service user requests into the zone.

## Assumptions

You are logged on to `dom0` and have a terminal session open as root.

## Virtual Machines Used by This Practice

The virtual machines used by this practice are illustrated here with a white background.




## Usernames and Passwords

| Hostname/Application | Username/Passwords |
|---|---|
| Enterprise Manager Cloud Control 12*c* | `sysman/Oracle123`<br>`paas_admin/Oracle123` |

## Tasks

1. Start a terminal session in `dom0`, switch to the root user, and then run the script for this lab to start the required VMs.

```
# startVMs_lab6-1.sh
```

2. Use the `xm list` command to confirm that the virtual machines used by this practice are running.

   Note that your Time and State values may differ from what is shown here.

```
# xm list
Name                                        ID   Mem VCPUs
State   Time(s)
Domain-0                                     0  2048     2
r----- 1256555.6
em12                                       108  4608     2     -
b----     30.9
paas02                                     115  4096     2    --
----     68.0
paas03                                     116  4096     2    --
----     61.0
#
```

3. Configure privilege delegation for the hosts that will form the PaaS infrastructure zone by using a template that can be used as required.
   a. Log in to Enterprise Manager Cloud Control 12*c* as `sysman`.
   b. Navigate to *Setup* > *Security* > *Privilege Delegation* to open the *Manage Privilege Delegation Settings* page.
   c. Click the Manage *Privilege Delegation Setting Templates* link in the *Related Links* section.
   d. Select `Sudo` in the *Create* select list, click *Go* to open the *Create 'Sudo' Setting Template* page, and enter the following values:

| | |
|---|---|
| **Template Name** | PaaS Infra Zone Sudo template |
| **Sudo Command** | /usr/bin/sudo –E –u %RUNAS% %COMMAND% |

   e. Click *Save* to create the template and return to the *Manage Privilege Delegation Settings* page.
   f. Select the template that you just created, and click *Apply* to open the *Apply 'Sudo' Setting* page.
   g. Click *Add Targets* to open the *Search and Select: Targets* page.
   h. Select the PaaS infrastructure hosts, and then click *Select* to confirm your selection and return to the *Apply 'Sudo' Setting* page.
   i. Click *Apply* on the *Apply 'Sudo' Setting* page to complete the process. You will be shown the *Past Apply Operations* page, and the status of applying your template to the selected host(s) will probably be *Scheduled*. Click *Go* in the search section to refresh the page and see an updated status.
   j. Use the breadcrumb navigation below the Enterprise Manager Cloud Control 12*c* menus to return to the Manage Privilege Delegation Settings page.

      Notice that a template select list is shown above the list of available hosts in the *Apply* section. So, for new hosts, you can visit this page, select the host, choose the template to apply, and click *Go*.

4. Create provisioning credentials that can be used when deploying to your PaaS infrastructure zone.

a. Log in to Enterprise Manager Cloud Control 12*c* as `paas_admin`. If this is the first time login for iaas_admin, select an appropriate home page such as the *Middleware and Database Cloud*.
b. Navigate to *Setup* > *Security* > *Named Credentials* to open the *Named Credentials* page.
c. Click *Create* to open the *Create Credential* page, and enter the following values:

| | |
|---|---|
| **General Properties** | |
| **Credential name** | `PAAS_NC_GLOBAL` |
| **Credential description** | Named Credentials for PaaS provisioning |
| **Authenticating Target Type** | Host |
| **Credential type** | Host Credentials |
| **Scope** | Global |
| **Credential Properties** | |
| **UserName** | `oracle` |
| **Password** | `oracle` |
| **Confirm Password** | `oracle` |
| **Run Privilege** | None |

d. Click *Test and Save* to open the *Test options* dialog.
e. Choose one of the hosts (`paas02` or `paas03`) that will be part of the PaaS infrastructure zone to confirm the credentials are valid, and click *Test and Save* to initiate the credential test. Assuming the test is successful, the credentials will be created and you will be returned to the *Named Credentials* page.
f. Highlight the `PAAS_NC_GLOBAL` named credential, and click the *Manage Access* button to open the *Manage Access* page.
g. Click *Add Grant* to open the *Search and Select – Administrators* dialog and highlight the following users (use the Ctrl key to make multiple selections):

| |
|---|
| **DBAAS_USER** |
| **MWAAS_USER** |

h. Click *Select* to return to the *Manage Access* page.
i. Click *Save* to finalize granting access to the selected users.

5. Create a PaaS Infrastructure Zone.
a. Log in to Enterprise Manager Cloud Control 12*c* as `paas_admin` if you have logged out since the last step.
b. If Middleware and Database Cloud is not set as the home page for `paas_admin`, navigate to *Enterprise* > *Cloud* > *Middleware and Database Home*.
c. Select *Create PaaS Infrastructure Zone* from the *Middleware and Database Cloud* menu to open the *Create PaaS Infrastructure Zone: General* page and enter the following information:

| | |
|---|---|
| **Name** | PaaS Zone |

d. Click *Next* to progress to the *Create PaaS Infrastructure Zone: Targets* page and enter the information below. Use the *Add* button in the *Targets* section to search for and select hosts targets.

| | |
|---|---|
| **Named Credentials to use for this PaaS Infrastructure Zone** | PAAS_NC_GLOBAL |
| **Targets** | paas02.example.com<br>paas03.example.com |

e. Click *Next* to progress to the *Create PaaS Infrastructure Zone: Roles* page and enter the following information:

| | |
|---|---|
| **Roles** | DBAAS_SSA_ROLE<br>MWAAS_SSA_ROLE |

f. Click *Next* to progress to the *Create PaaS Infrastructure Zone: Review* page, and then click *Submit* to create the PaaS infrastructure zone. You will be returned to the *Middleware and Database Cloud* home page where you should notice that the *General* section now indicates that you have two PaaS Infrastructure Zones, and you can click on the "2" to open the PaaS Infrastructure Zones page and see your new zone along with the zone that was used in Practices 2-n.

# Practices for Lesson 7: Setting Up The DBaaS Cloud

**Chapter 7**

# Practices for Lesson 7: Overview

## Practices Overview

In this practice, you will set up an Enterprise Manager Cloud Control 12*c* DBaaS cloud.

# Practice 7-1: Setting Up the DBaaS Cloud

## Overview

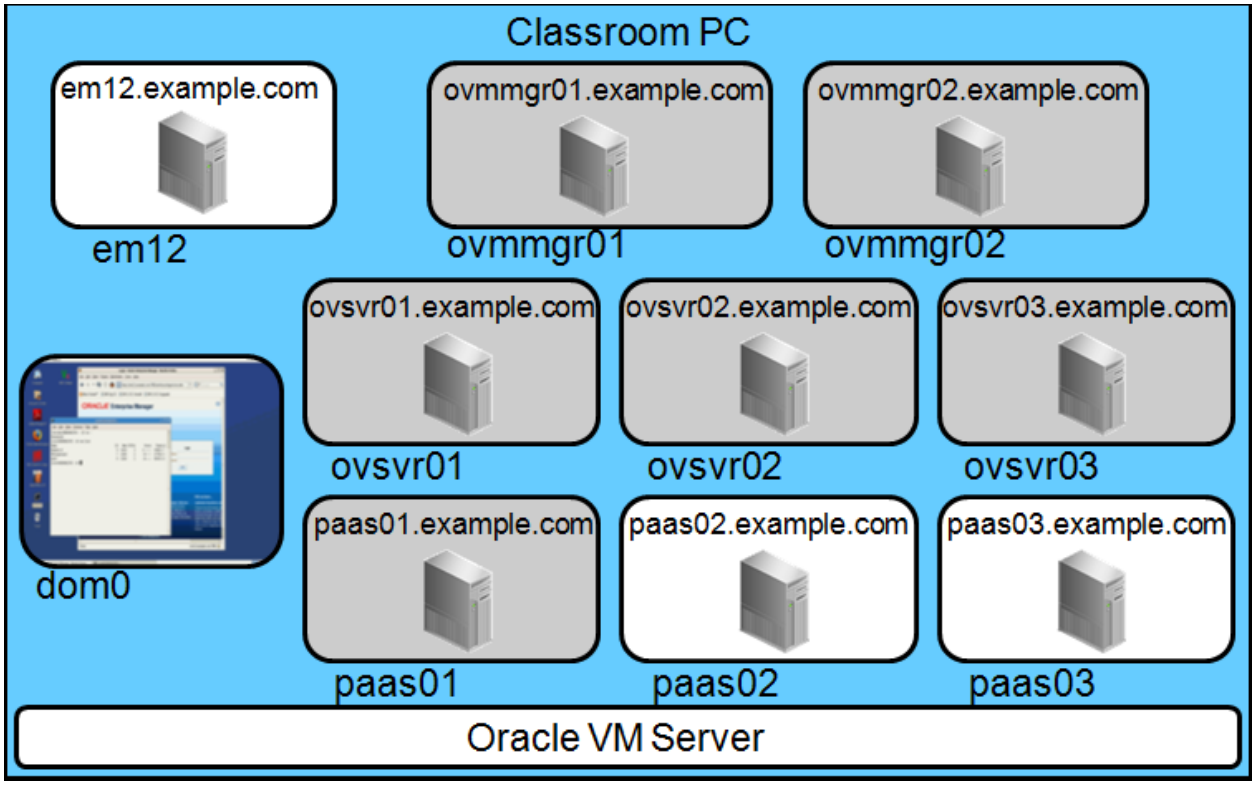
In this practice, you will add Oracle Database Home and Listener targets to Enterprise Manager Cloud Control 12*c* from the hosts in your PaaS infrastructure zone. Then, you will use those Oracle Database Home targets to create a DBaaS pool.

## Assumptions

You have completed Practice 6-1.

## Virtual Machines Used by This Practice

The virtual machines used by this practice are illustrated here with a white background.




## Usernames and Passwords

| Hostname/Application | Username/Passwords |
|---|---|
| Enterprise Manager Cloud Control 12*c* | `sysman/Oracle123`<br>`paas_admin/Oracle123` |
| paas02, paas03 | `root/oracle`<br>`oracle/oracle` |

## Tasks

1. Start a terminal session in `dom0`, switch to the root user, and then run the script for this lab to start the required VMs.

```
# startVMs_lab7-1.sh
```

2. Use the `xm list` command to confirm that the virtual machines used by this practice are running.

   Note that your Time and State values may differ from what is shown here.

```
# xm list
Name                                        ID   Mem VCPUs
State   Time(s)
Domain-0                                     0  2048     2
r----- 1256555.6
em12                                       108  4608     2     -
b----     30.9
paas02                                     115  4096     2    --
----     68.0
paas03                                     116  4096     2    --
----     61.0
#
```

3. Ensure the database listener is running on `paas02` and `paas03` as this is where your self service database requests will be fulfilled.

   a. Log on to `paas02` as the `root` user with a secure shell session. Accept the RSA key if asked.

```
# ssh paas02
root@paas02's password:
Last login: Tue Dec  4 17:45:19 2012 from 192.0.2.1
```

   b. Switch to the `oracle` user and set the environment to point to the Oracle Database home.

```
# su - oracle
$ . oraenv
ORACLE_SID = [oracle] ? <enter>
ORACLE_HOME = [/home/oracle] ?
/u01/app/oracle/product/11.2.0/dbhome_1
The Oracle base has been set to /u01/app/oracle
```

   c. Start the listener.

```
$ lsnrctl start

LSNRCTL for Linux: Version 11.2.0.2.0 - Production on 05-DEC-
2012 16:48:14

Copyright (c) 1991, 2010, Oracle.  All rights reserved.
```

```
Starting /u01/app/oracle/product/11.2.0/dbhome_1/bin/tnslsnr:
please wait...

TNSLSNR for Linux: Version 11.2.0.2.0 - Production
System parameter file is
/u01/app/oracle/product/11.2.0/dbhome_1/network/admin/listener.o
ra
Log messages written to
/u01/app/oracle/diag/tnslsnr/paas02/listener/alert/log.xml
Listening on:
(DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=paas02.example.com)(PO
RT=1521)))
Listening on:
(DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(KEY=EXTPROC1521)))

Connecting to
(DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=paas02.example.com)(PO
RT=1521)))
STATUS of the LISTENER
------------------------
Alias                     LISTENER
Version                   TNSLSNR for Linux: Version 11.2.0.2.0
- Production
Start Date                05-DEC-2012 16:48:14
Uptime                    0 days 0 hr. 0 min. 0 sec
Trace Level               off
Security                  ON: Local OS Authentication
SNMP                      OFF
Listener Parameter File
/u01/app/oracle/product/11.2.0/dbhome_1/network/admin/listener.o
ra
Listener Log File
/u01/app/oracle/diag/tnslsnr/paas02/listener/alert/log.xml
Listening Endpoints Summary...

(DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=paas02.example.com)(PO
RT=1521)))
  (DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(KEY=EXTPROC1521)))
The listener supports no services
The command completed successfully
$
```

d. Exit as the `oracle` user and then log out from `paas02`.

```
[oracle@paas02 ~]$ exit
logout
You have new mail in /var/spool/mail/root
[root@paas02 ~]# exit
logout

Connection to paas02 closed.
[root@EDQ1R5P0 ~]#
```

e. Repeat steps a to d for `paas03`.

4. Only the Management Agent has been deployed to your PaaS Infrastructure Zone hosts, not the management plug-ins because we have not yet discovered any non-host targets. You must now deploy the Oracle Database Plug-in to the hosts in your PaaS Infrastructure Zone that will be included in your DBaaS pool.
   f. Log in to Enterprise Manager Cloud Control 12*c* as `paas_admin`.
   g. Navigate to *Setup* > *Extensibility* > *Plug-ins* to open the *Plug-ins* page.
   h. Expand the `Databases` folder and highlight the `Oracle Database` plug-in.
   i. From the *Deploy On* drop-down menu, choose `Management Agent` to open the *Deploy Plug-in on Management Agent* dialog.
   j. Add the management agents on your `paas02` and `paas03` DBaaS servers and click *Continue*.
   k. Prerequisite checks will be performed. Assuming the checks pass, click *Next* to proceed to the *Review* page.
   l. Click Deploy to commence the deployment. You will be shown a confirmation dialog where you can click *Show Status* to monitor progress of the deployment activities.
5. Add non-host targets for the Oracle Database Homes on the hosts in your PaaS Infrastructure Zone that will be included in your DBaaS pool. Your environment has single instance 11.2.0.2 Linux x86-64 binaries already installed on the `paas02` and `paas03` PaaS hosts.
   a. Log in to Enterprise Manager Cloud Control 12*c* as `paas_admin`.
   b. Navigate to *Setup* > *Add Target* > *Add Targets Manually* to open the *Add Targets Manually* page.
   c. Select *Add Non-Host Targets by Specifying Target Monitoring Properties*, select *Target Type* of `Oracle Home` and select `paas02.example.com`. Then, click *Add Manually* to proceed to the *Add Oracle Home* page.

d. Enter the following information (adjust the entries to suit your chosen host if necessary):

| | | |
|---|---|---|
| **Target Name** | ORA_DB_OH_11202_SI_paas02 | The name indicates this is an Oracle Database Home, version 11.2.0.2, Single Instance on host paas02. |
| **OUI Inventory this home belongs to** | /u01/app/oraInventory | |
| **Oracle Home Type** | O | |
| **Path to Oracle Home** | /u01/app/oracle/product/11.2.0/dbhome_1 | |

e. Click *OK* to save the target.

f. Repeat the *Add Target Manually* process for `paas03`.

6. Check whether the installed product information has been collected for the newly added Database home targets, and if not, force the collection to occur.
   a. Navigate to *Targets* > *All Targets*.
   b. Expand the *Others* node in the left *Refine Search* pane, and select the *Oracle Home* link.
   c. The main pane will be refreshed to only show *Oracle Home* targets.
   d. Click the link for the database Oracle Home on `paas02` to open its home page.
   e. View the currently known configuration of this Oracle Home by navigating to *Oracle Home* > *Configuration* > *Last Collected*.
   f. If no information is displayed in the left pane other than the name of the Oracle Home target, force more information to be collected by selecting *Actions* > *Refresh*.
   g. Once refreshed, the left navigation pane will show a hierarchy of information nodes. Select the *Components installed in Oracle Home* node to see information about the Oracle Database installation.
   h. Repeat this process for the Oracle Home you added in Step 4 for `paas03`.
7. Add non-host targets for the Oracle Database Listeners that are running on your DBaaS hosts.
   a. If the *Add Targets Manually* page is not open, navigate to *Setup* > *Add Target* > *Add Targets Manually* to open the *Add Targets Manually* page.
   b. Select *Add Non-Host Targets by Specifying Target Monitoring Properties*, select *Target Type* of `Listener`, and select `paas02.example.com`. Then, click *Add Manually* to proceed to the *Add Listener* page.

c. Enter the following information (adjust the entries to suit your chosen host if necessary):

| | | |
|---|---|---|
| **Target Name** | LSNR_11202_LISTENER_paas02 | The name indicates this is an Oracle Listener, version 11.2.0.2, named LISTENER, on host paas02. |
| **Listener Name** | LISTENER | |
| **Listener.ora Directory** | `/u01/app/oracle/product/11.2.0/dbhome_1/network/admin` | |
| **Machine Name** | paas02.example.com | |
| **Oracle Home** | `/u01/app/oracle/product/11.2.0/dbhome_1` | |
| **TCP Port Number** | 1521 | |

d. Click *OK* to save the target.

e. Repeat the *Add Target Manually* process for the listener on `paas03`.

8. Create a DBaaS pool from the servers and associated Oracle Database Homes in your PaaS Infrastructure Zone.

a. Still logged in as `paas_admin`, navigate *to Setup* > *Cloud* > *Database* to open the *Database Cloud Self Service Portal Setup* page.

b. Select *Database Pools* in the left navigation panel.

c. Click *Create* to open the *Create Software Pool: General* page and enter the following information:

| | |
|---|---|
| **Name** | 11202_Linux_x86_64_SI_Pool |
| **Description** | Oracle Database 11.2.0.2 Single Instance on Linux x86-64 |
| **Maximum Number of Database Instances (per host)** | 2 |

d. Click *Next* to progress to the *Create Software Pool: Targets* page and enter the following information:

| | |
|---|---|
| **PaaS Infrastructure Zone Name** | PaaS Zone |
| **Database Configuration** | Single Instance Database |
| **Platform** | Linux x86-64 |
| **Version** | 11.2.0.2 |

e. Click *Add* and select all Oracle Database Homes that match the pool criteria – that is, the Oracle Database Home targets that you manually created earlier.

f. Click *Submit* to create the pool and return to the *Database Cloud Self Service Portal Setup* page.

# Practices for Lesson 8: Setting Up the DBaaS Self Service Portal

**Chapter 8**

# Practices for Lesson 8

## Practices Overview

In this practice, you will set up the Enterprise Manager Cloud Control 12*c* DBaaS cloud self service portal.

# Practice 8-1: Setting Up the DBaaS Self Service Portal

## Overview

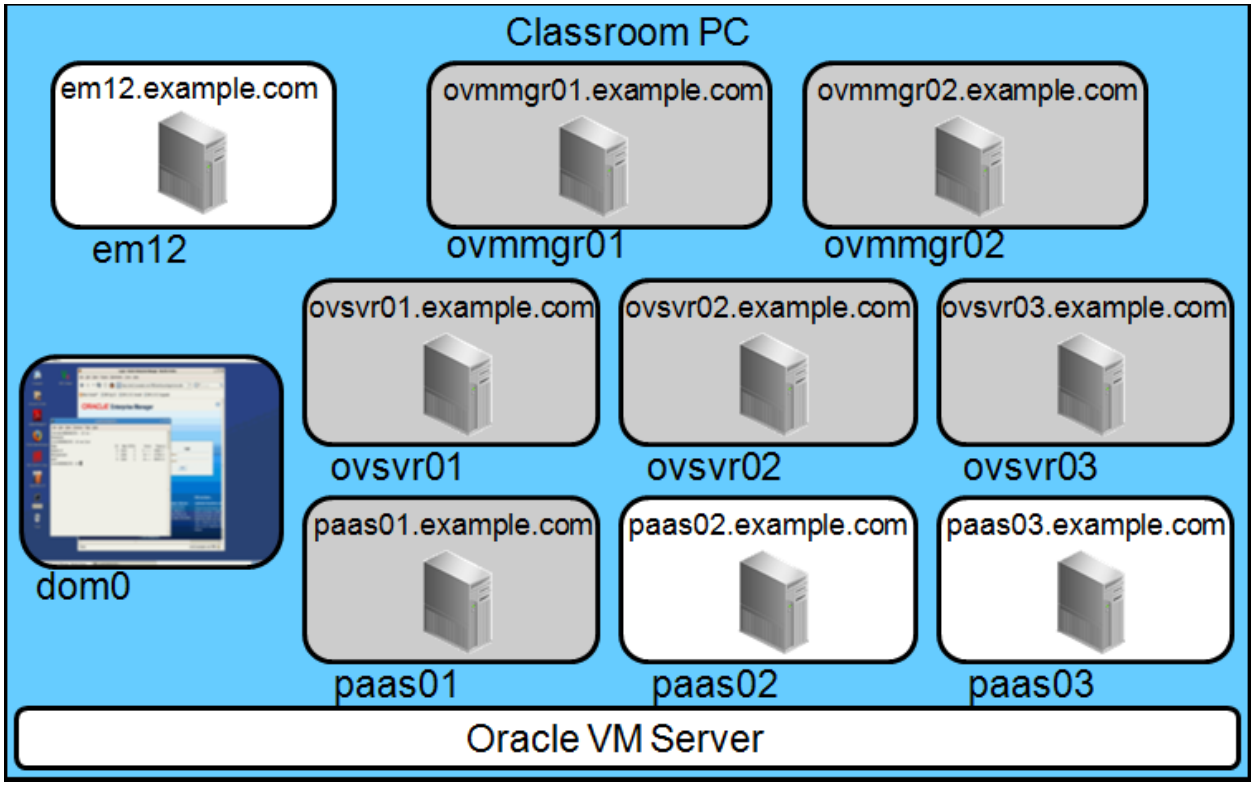
In this practice, you will establish a working DBaaS self service portal.

## Assumptions

You have completed Practice 7-1.

## Virtual Machines Used by This Practice

The virtual machines used by this practice are illustrated here with a white background.




## Usernames and Passwords

| Hostname/Application | Username/Passwords |
|---|---|
| Enterprise Manager Cloud Control 12*c* | `sysman/Oracle123`<br>`paas_admin/Oracle123`<br>`dbaas_user/Oracle123` |
| paas02, paas03 | `root/oracle`<br>`oracle/oracle` |

## Tasks

1. Start a terminal session in `dom0`, switch to the root user, and then run the script for this lab to start the required VMs.

```
# startVMs_lab8-1.sh
```

2. Use the `xm list` command to confirm that the virtual machines used by this practice are running.

   Note that your Time and State values may differ from what is shown here.

```
# xm list
Name                                        ID   Mem VCPUs
State   Time(s)
Domain-0                                     0  2048     2
r----- 1256555.6
em12                                       108  4608     2     -
b----     30.9
paas02                                     115  4096     2    --
----     68.0
paas03                                     116  4096     2    --
----     61.0
#
```

3. Configure the DBaaS self service portal request settings.
   a. Log in to Enterprise Manager Cloud Control 12*c* as `paas_admin`.
   b. Navigate to *Setup* > *Cloud* > *Databa*se to open the *Database Cloud Self Service Portal Setup* page.
   c. Select *Request Settings* in the left navigation panel.
   d. Change the following settings:

| | |
|---|---|
| **Request Archive Retention** | Restricted to maximum 1 day |
| **Request Duration** | Restricted to a maximum 2 days |

   e. Click the *Apply* button to update the settings with your changes.
   f. Remain in the *Database Cloud Self Service Setup* page.
4. Assign quotas to SSA-enabled roles against your DBaaS self service.
   a. Select *Quotas* in the left navigation panel.
   b. Click the *Create* button to open the *Create Quota* dialog and enter the following information:

| | |
|---|---|
| **Role Name** | DBAAS_SSA_ROLE |
| **Memory (GB)** | 2 |
| **Storage (GB)** | 40 |
| **Databases** | 3 |

   c. Click *OK* to create the quota.
5. Create a deployment procedure that can be used with your DBaaS Pool by launching an out-of-the-box deployment procedure and saving it as a new procedure instead of executing it.
   a. Navigate to *Enterprise* > *Provisioning and Patching* > *Database Provisioning* to open the *Database Provisioning* page.
   b. Highlight the `Create Oracle Database` entry in the table of *Deployment Procedures* and click *Launch*.

c. On the *Database Version and Type* page, set the following values:

| | | |
|---|---|---|
| **Version** | 11.2.0.2.0 | Locked |
| **Select database type** | Oracle Single Instance Database | Locked |
| **Hosts** | Add one of your DBaaS servers | This is required only to be able to continue the launch process and will not be saved with the new procedure. |
| **Oracle Home** | /u01/app/oracle/product/11.2.0/dbhome_1 | |
| **Host Credentials** | PAAS_NC_GLOBAL | |

d. Click *Next* to progress to the *Create Database: Database Template* page and set the following values:

| | | |
|---|---|---|
| **Select Template From Oracle Home** | General Purpose or Transaction Processing | Locked |

e. Click *Next* to progress to the *Create Database: Identification and Placement* page and enter the following values:

| | | |
|---|---|---|
| **Identification** | | Unlocked |
| **Global Database Name** | dummy.example.com | This will be assigned at the time of fulfilling a SSA request. |
| **SID** | Dummy | This will be assigned at the time of fulfilling a SSA request. |
| **Database Credentials** | Use the same administrative password for all accounts | Locked |
| **Password** | `oracle_4U` | |
| **Confirm Password** | `oracle_4U` | |

f. Click *Next* to progress to the *Create Database: Storage Locations* page and set the following values:

| | | |
|---|---|---|
| **Storage Type** | File System | Locked |
| **Database Files Location** | | Unlocked |
| **Use Common Location For Database Files** | {ORACLE_BASE}/oradata | |
| **Recovery Files Location** | | Locked |
| **Use same storage type as database files location** | Checked | |
| **Use Fast Recovery Area** | Checked | |
| **Recovery Area Location** | {ORACLE_BASE}/flash_recovery_area | |
| **Fast Recovery Area Size (MB)** | 2048 | |
| **Enable Archiving** | Checked | |

g. Click *Next* to progress to the *Create Database: Initialization Parameters* page and set the following values:

| | | |
|---|---|---|
| **Memory Parameters** | | Locked |
| **Memory Management** | Automatic Memory Management | |
| **Specify Memory Settings as Percentage of Available Memory** | Unchecked | |
| **Total Memory for Oracle (MB)** | 640 MB | |
| **Database Sizing** | Accept defaults | Locked |
| **Host CPU Count** | 1 | Locked |
| **Character Sets** | | Locked |
| **Database** | AL32UTF8 | |
| **National** | AL16UTF16 | |
| **Database Connection Mode** | Dedicated Server Mode | Locked |

h. Click *Next* to progress to the *Create Database: Additional Configuration Options* page and set the following values:

| | | |
|---|---|---|
| **Listener Configuration** | Select LISTENER | Locked |
| **Custom Scripts** | leave blank | Locked |

i. Click *Next* to progress to the *Create Database: Schedule* page. This page is of no interest as it would only be used if we were about to create a database.

j. Click *Next* to progress to the *Create Database: Review* page. DO **NOT** SUBMIT THE JOB. Instead, click *Save* and enter the following name in the *Save Deployment Procedure Configuration* dialog:

| **Name** | DBAAS_Tiny_11202_SI_Linux_x86_64 | |
|---|---|---|

Click *Save* to return to the *Create Database: Review* page.

k. Click *Cancel*. You will be presented with the *Deployment Procedure Manager* page where the procedure you just created will be listed alongside the out-of-the-box procedures.

6. Publish the deployment procedure to your DBaaS self service portal.

a. Navigate to *Setup* > *Cloud* > *Database* to open the *Database Cloud Self Service Portal Setup* page.

b. Select *Service Templates* in the left navigation panel.

c. Click *Create* to open the *Create Service Template: General* page and enter the following information:

| **Name** | Tiny 11.2.0.2 Single Instance Linux x86-64 Database |
|---|---|
| **Description** | DBEE 11.2.0.2, Single Instance, 640 MB AMM, 1 CPU, Linux x86-64 |
| **Deployment Procedure** | Select the deployment procedure created in the previous step (DBAAS_Tiny_11202_SI_Linux_x86_64) |

d. Click *Next* to progress to the *Create Service Template: Configuration* page. SSA users should specify their own username and password values. Therefore, these fields are left blank.

e. Click *Next* to progress to the *Create Service Template: PaaS Infrastructure Zones* page. Click *Add* to open the *Search and Select: Targets* dialog. Select the `PaaS Zone` target and click *Select* to return to the *Create Service Template: PaaS Infrastructure Zones* page. The selected zone will now be shown in a row in the *PaaS Infrastructure Zones* table.

f. Click the search icon in the *Software Pool* column for the `PaaS Zone` to open the *Search and Select: Targets* dialog. Select the `11202_Linux_x86_64_SI_Pool` target and click *Select* to return to the *Create Service Template: PaaS Infrastructure Zones* page.

g. Click *Next* to progress to the *Create Service Template: Roles* page. Click the *Add* button and select the `DBAAS_SSA_ROLE`.

h. Click *Next* to progress to the *Create Service Template: Review* page, and then click Submit to create the template. You will be returned to the *Database Cloud Self Service Portal Setup* page where your service template will be shown in the *Service Templates* table.

7. Test the service template by issuing a request as a DBaaS SSA user.

a. Log in to Enterprise Manager Cloud Control 12*c* as `dbaas_user`.

b. Click the *Manage My Databases* radio button.

c. Click *Request Database* to open the *Select Service Template* dialog. Select the `Tiny 11.2.0.2 Single Instance Linux x86-64` template and click *Select* to proceed to the *New Database Request: General* page and enter the following information:

| | |
|---|---|
| **Request Name** | dbaas_service_template_test |
| **Destination Zone** | PaaS Zone |

d. Click *Next* to progress to the *New Database Request: Deployment Inputs* page and enter the following information:

| | |
|---|---|
| **User Name** | dbaas_ssa |
| **User Password** | `Oracle` |

e. Click *Next* to progress to the *New Database Request: Schedule* page and set the following values:

| | |
|---|---|
| **Start Date** | Immediately |
| **Duration** | Until one day from today |

f. Click *Next* to progress to the *New Database Request: Review* page, and then click *Submit* to initiate the deployment. You will be returned to the *Database Cloud Self Service Portal* home page where your database creation request will be shown the table of requests, along with a scheduled database deletion job to run at the end of the nominated duration.

8. Monitor the request from the perspective of the cloud administrator.
   a. Log in as `paas_admin`.
   b. Navigate to *Enterprise > Cloud > Middleware and Database Request Dashboard* to open the *Middleware and Database Cloud Requests Dashboard* page.
   c. In the *10 Last Failed Requests* section, click *View All Requests* to open the *All Requests* page.
   d. Click the request name for the server request that was just issued as the `dbaas_user`.
   e. Open the *Deployment* tab and click the job name to observe the request as it progresses.
   f. Wait until the job has succeeded (approximately 10 minutes).

# Practices for Lesson 9: Setting Up The MWaaS Cloud

**Chapter 9**

# Practices for Lesson 9: Overview

## Practices Overview

In this practice, you will set up an Enterprise Manager Cloud Control 12*c* MWaaS cloud.

# Practice 9-1: Setting Up the MWaaS Cloud

## Overview

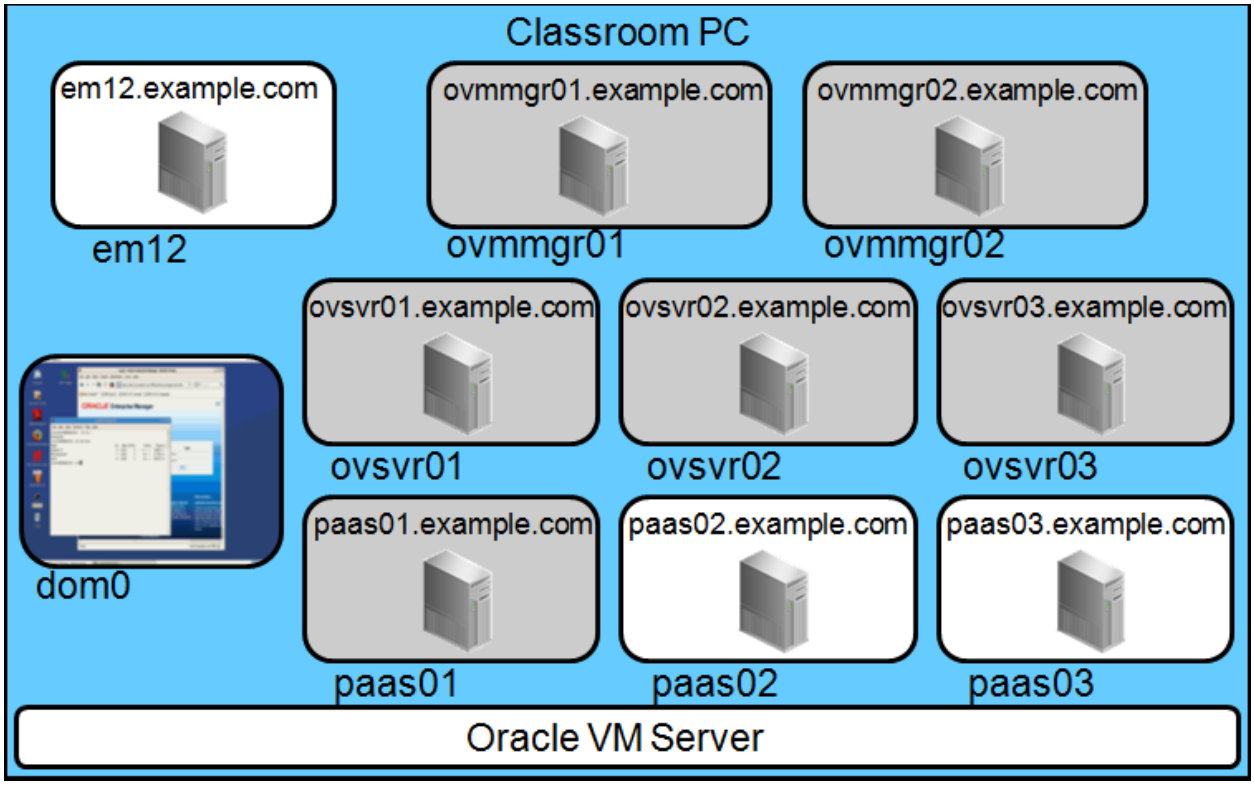
In this practice, you will add Oracle Middleware Home targets to Enterprise Manager Cloud Control 12*c* from the hosts in your PaaS infrastructure zone. Then, you will use those Oracle Middleware Home targets to create a MWaaS pool.

## Assumptions

You have completed Practice 6-1.

## Virtual Machines Used by This Practice

The virtual machines used by this practice are illustrated here with a white background.




## Usernames and Passwords

| Hostname/Application | Username/Passwords |
|---|---|
| Enterprise Manager Cloud Control 12*c* | `sysman/Oracle123`<br>`paas_admin/Oracle123` |

## Tasks

1. Start a terminal session in `dom0`, switch to the `root` user, and then run the script for this lab to start the required virtual machines (VMs).

```
# startVMs_lab9-1.sh
```

2. Use the `xm list` command to confirm that the VMs used by this practice are running. Note that your Time and State values may differ from what is shown here.

```
# xm list
Name                                        ID   Mem VCPUs
State   Time(s)
Domain-0                                     0  2048     2
r----- 1256555.6
em12                                       108  4608     2     -
b----     30.9
paas02                                     115  4096     2    --
----     68.0
paas03                                     116  4096     2    --
----     61.0
#
```

3. Only the Management Agent has been deployed to your PaaS Infrastructure Zone hosts, and not the management plug-ins because we have not yet discovered any non-host targets. You must now deploy the Oracle Fusion Middleware Plug-in to the hosts in your PaaS Infrastructure Zone that will be included in your MWaaS pool.
   a. Log in to Enterprise Manager Cloud Control 12*c* as `paas_admin`.
   b. Navigate to *Setup* > *Extensibility* > *Plug-ins* to open the *Plug-ins* page.
   c. Expand the `Middleware` folder and highlight the `Oracle Fusion Middleware` plug-in.
   d. From the *Deploy On* drop-down menu, choose `Management Agent` to open the *Deploy Plug-in on Management Agent* dialog.
   e. Add the management agents on your `paas02` and `paas03` MWaaS servers and click *Continue*.
   f. Prerequisite checks will be performed. Assuming the checks pass, click *Next* to proceed to the *Review* page.
   g. Click *Deploy* to commence the deployment. You will be shown a confirmation dialog where you can click *Show Status* to monitor progress of the deployment activities.
4. Add non-host targets for the Oracle Middleware Homes on the hosts in your PaaS Infrastructure Zone that will be included in your MWaaS pool. Your environment has WebLogic Server 10.3.6 Linux x86-64 binaries with Java Required Files already installed on the `paas02` and `paas03` PaaS hosts.
   h. Log in to Enterprise Manager Cloud Control 12*c* as `paas_admin`.
   i. Navigate to *Setup* > *Add Target* > *Add Targets Manually* to open the *Add Targets Manually* page.
   j. Select *Add Non-Host Targets by Specifying Target Monitoring Properties*, select *Target Type* of `Oracle Home`, and select `paas02.example.com`. Then, click *Add Manually* to proceed to the *Add Oracle Home* page.

k. Enter the following information (adjust the entries to suit your chosen host if necessary):

| | | |
|---|---|---|
| **Target Name** | WLS_OH_1036_paas02 | The name indicates this is an Oracle Middleware Home, version 10.3.6, on host paas02. |
| **BEA Home this home belongs to** | /u01/app/oracle/product/middleware | |
| **OUI Inventory this home belongs to** | /u01/app/oraInventory | |
| **Oracle Home Type** | W | |
| **Path to Oracle Home** | /u01/app/oracle/product/middleware/wlserver_10.3 | |

l. Click *OK* to save the target.

m. Repeat the *Add Target Manually* process for `paas03.example.com`.

5. Check whether the installed product information has been collected for the newly added Middleware home targets, and if not, force the collection to occur.
   a. Navigate to *Targets* > *All Targets*.
   b. Expand the *Others* node in the left *Refine Search* pane, and select the *Oracle Home* link.
   c. The main pane will be refreshed to only show *Oracle Home* targets.
   d. Click the link for middleware Oracle Home on `paas02` to open its home page.
   e. View the currently known configuration of this Oracle Home by navigating to *Oracle Home* > *Configuration* > *Last Collected*.
   f. If no information is displayed in the left pane other than the name of the Oracle Home target, force more information to be collected by selecting *Actions* > *Refresh*.
   g. Once refreshed, the left navigation pane will show a hierarchy of information nodes. Select the *Components installed in Oracle Home* node to see information about the WebLogic Server installation.
   h. Repeat this process for the middleware Oracle Home on `paas03`.
6. Create a MWaaS pool from the servers and associated Oracle Middleware Homes in your PaaS Infrastructure Zone.
   a. Still logged in as `paas_admin`, navigate to *Setup* > *Cloud* > *Middleware* to open the *Middleware Cloud Self Service Portal Setup* page.
   b. Select *Middleware Pools* in the left navigation panel.
   c. Click *Create* to open the *Create Software Pool: General* page and enter the following information:

| | |
|---|---|
| **Name** | WLS_1036_Linux_x86_64_Pool |
| **Description** | Oracle Middleware 10.3.6 on Linux x86-64 |
| **Maximum Number of Java Servers (per host)** | 3 |

d. Click *Next* to progress to the *Create Software Pool: Targets* page and enter the following information:

| | |
|---|---|
| **PaaS Infrastructure Zone Name** | PaaS Zone |
| **Version** | 10.3.6.0 |

e. Click *Add* and select all Oracle Middleware Homes that match the pool criteria.

f. Click *Submit* to create the pool and return to the *Middleware Cloud Self Service Portal Setup* page.

# Practices for Lesson 10: Setting Up the MWaaS Self Service Portal

**Chapter 10**

# Practices for Lesson 10

## Practices Overview

In this practice, you will set up the Enterprise Manager Cloud Control 12*c* MWaaS cloud self service portal.

# Practice 10-1: Setting Up the MWaaS Self Service Portal

## Overview

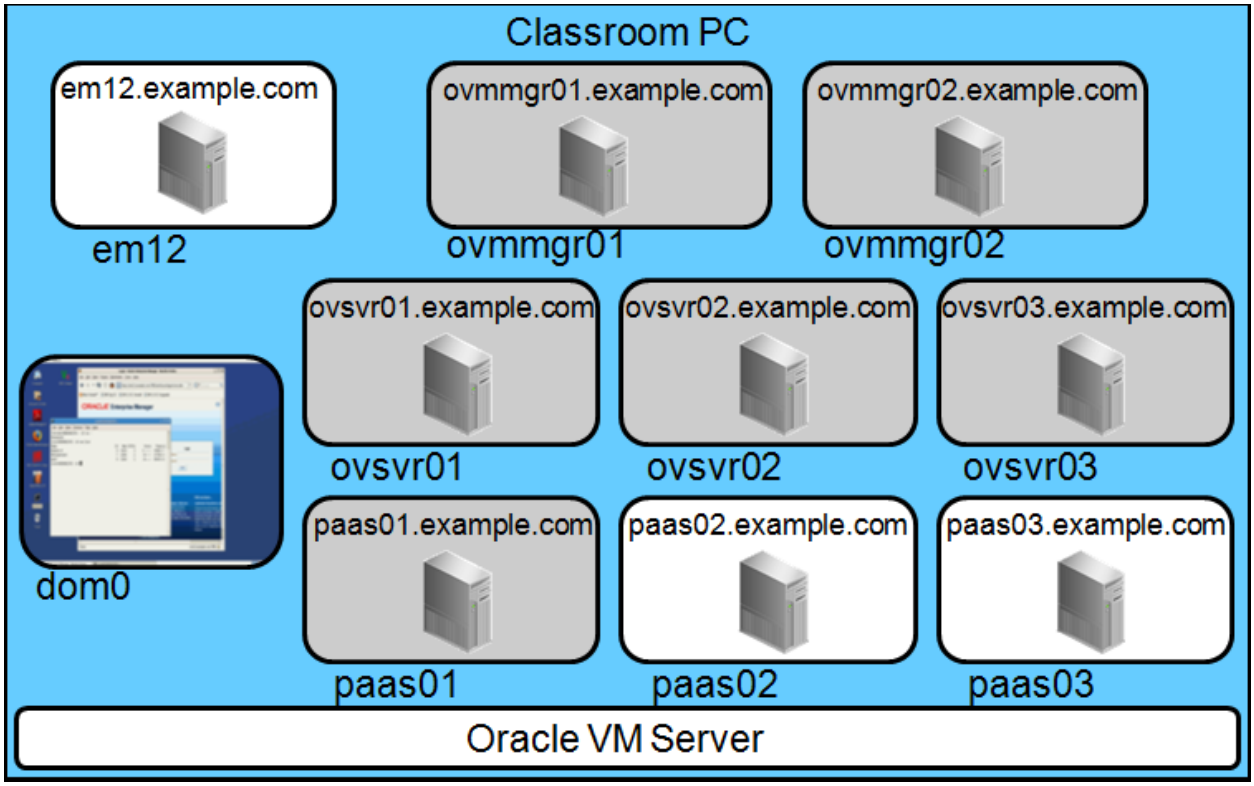
In this practice, you will establish a working MWaaS self service portal.

## Assumptions

You have completed Practice 9-1.

## Virtual Machines Used by This Practice

The virtual machines used by this practice are illustrated here with a white background.




## Usernames and Passwords

| Hostname/Application | Username/Passwords |
|---|---|
| Enterprise Manager Cloud Control 12c | `sysman/Oracle123`<br>`paas_admin/Oracle123`<br>`mwaas_user/Oracle123`<br>`dbaas_user/Oracle123` |

## Tasks

1. Start a terminal session in `dom0`, switch to the `root` user, and then run the script for this lab to start the required virtual machines (VMs).

```
# startVMs_lab10-1.sh
```

2. Use the `xm list` command to confirm that the VMs used by this practice are running. Note that your Time and State values may differ from what is shown here.

```
# xm list
Name                                        ID   Mem VCPUs
State   Time(s)
Domain-0                                     0  2048     2
r----- 1256555.6
em12                                       108  4608     2     -
b----     30.9
paas02                                     115  4096     2    --
----     68.0
paas03                                     116  4096     2    --
----     61.0
#
```

3. Configure the MWaaS self service portal request settings.
   a. Log in to Enterprise Manager Cloud Control 12*c* as `paas_admin`.
   b. Navigate to *Setup* > *Cloud* > *Middleware* to open the *Middleware Cloud Self Service Portal Setup* page.
   c. Select *Request Settings* in the left navigation panel.
   d. Change the following settings:

| | |
|---|---|
| **Request Archive Retention** | Restricted to maximum 1 day |
| **Request Duration** | Restricted to a maximum 2 days |

   e. Click the *Apply* button to update the settings with your changes.
   f. Remain in the *Middleware Cloud Self Service Setup* page.
4. Assign quotas to SSA-enabled roles against your MWaaS self service portal.
   a. Select *Quotas* in the left navigation panel.
   b. Click *Create* to open the *Create Quota* dialog and enter the following information:

| | |
|---|---|
| **Role Name** | MWAAS_SSA_ROLE |
| **Memory (GB)** | 4 |
| **Number of Java Servers** | 4 |

   c. Click *OK* to create the quota.
5. Create a deployment procedure that can be used with your MWaaS Pool by launching an out-of-the-box deployment procedure and saving it as a new procedure instead of executing it.
   a. Log in to Enterprise Manager Cloud Control 12*c* as `paas_admin`.
   b. Navigate to *Enterprise* > *Provisioning and Patching* > *Middleware Provisioning* to open the *Middleware Provisioning* page.
   c. Highlight the `Provision Middleware` entry in the table of *Deployment Procedures* and click *Launch*.
   d. On the *Middleware Provisioning: Source* page, elect to *Provision from WebLogic Domain Provisioning Profile* and use the search icon to open the *Search and Select:*

*Entities* dialog listing the provisioning profiles. Highlight the `Small_WLS_1036` profile and click *Select* to return to the *Middleware Provisioning: Source* page. Do not lock the Source.

e. Click *Next* to proceed to the *Middleware Provisioning: Destinations* page. There is no need to enter any information here or on the remaining pages as the MWaaS deployment process will provide the values.

f. Click *Save* and give the procedure a meaningful name and description and then click *Save* to save it.

| | |
|---|---|
| **Name** | MWAAS_SMALL_WLS_1036_Linux_x86_64 |
| **Description** | Based on the Small_WLS_1036 deployment profile needs 1.5GB |

g. Click *OK* on the *Information* dialog informing you that the data has been saved to the procedure. You will be returned to the *Middleware Provisioning: Destinations* page.

h. Click *Cancel*. You will be returned to the *Middleware Provisioning* page where the procedure you just created will be listed alongside the out-of-the-box procedures.

6. Publish the deployment procedure to your MWaaS self service portal.

a. Navigate to *Setup* > *Cloud* > *Middleware* to open the *Middleware Cloud Self Service Portal Setup* page.

b. Select *Service Templates* in the left navigation panel.

c. Click *Create* to open the *Create Service Template: General* page and enter the following information:

| | |
|---|---|
| **Name** | Small WLS 10.3.6 Linux x86-64 |
| **Description** | WLS 10.3.6 Linux x86-64 1.5GB Heap |
| **Deployment Procedure** | Select the deployment procedure created in the previous step (MWAAS_SMALL_WLS_1036_Linux_x86_64) |

d. Click *Next* to progress to the *Create Service Template: Configuration* page. Leave all values blank to accept the defaults apart from:

| | |
|---|---|
| **Expected Memory Consumption** | 1.5 |

e. Click *Next* to progress to the *Create Service Template: PaaS Infrastructure Zones* page. Click *Add* to open the *Search and Select: Targets* dialog. Select the `PaaS Zone` target and click *Select* to return to the *Create Service Template: PaaS Infrastructure Zones* page. The selected zone will now be shown in a row in the *PaaS Infrastructure Zones* table.

f. Click the search icon in the *Software Pool* column for the `PaaS Zone` to open the *Search and Select: Targets* dialog. Select the `WLS_1036_Linux_x86_64_Pool` target and click *Select* to return to the Create *Service Template: PaaS Infrastructure Zones* page.

g. Click *Next* to progress to the *Create Service Template: Roles* page. Click the *Add* button and select the `MWAAS_SSA_ROLE` role.

h. Click *Next* to progress to the *Create Service Template: Review* page, and then click *Submit* to create the template. You will be returned to the *Middleware Cloud Self Service Portal Setup* page where your service template will be shown in the *Service Templates* table.

7. Test the service template by issuing a request as a MWaaS SSA user.
   a. Log in to Enterprise Manager Cloud Control 12*c* as `mwaas_user`.
   b. Click the *Manage My Middleware* radio button.
   c. Click *Request Service* to open the *Select Service Template* dialog. Select the `Small WLS 10.3.6 Linux x86-64` template and click *Select* to proceed to the *New Service Request* page and enter the following information:

| | |
|---|---|
| **Request Name** | mwaas_service_template_test |
| **PaaS Infrastructure Zone** | PaaS Zone |
| **Schedule** | |
| **Start Date** | Immediately |
| **End Date** | Two days from today |

   d. Click *Submit* to initiate the deployment. You will be returned to the *Middleware Cloud Self Service Portal* home page where your service creation request will be shown the table of requests, along with a scheduled service deletion job to run at the end of the nominated duration.
8. Monitor the request from the perspective of the cloud administrator.
   a. Log in as `paas_admin`.
   b. Navigate to *Enterprise* > *Cloud* > *Middleware and Database Request Dashboard* to open the *Middleware and Database Cloud Requests Dashboard* page.
   c. In the *10 Last Failed Requests* section, click *View All Requests* to open the *All Requests* page.
   d. Click the request name for the server request that was just issued as the `mwaas_user`.
   e. Open the *Deployment* tab and click the job name to observe the request as it progresses.
   f. Wait until the job has succeeded.
9. Import an application to your SSA user's library and deploy it to your requested service.
   a. Log in to Enterprise Manager Cloud Control 12*c* as `mwaas_user`.
   b. Click the *Manage My Middleware* radio button.
   c. Select the *My Library* tab and click the *Upload* button to open the *Upload to Software Library* page. Enter the following information:

| | |
|---|---|
| **Application Component** | riddles |

   d. With the *Upload Files Individually* radio button selected, click *Browse* and highlight `Riddles.ear` from the `/OVS/downloads` directory. Click *Open* to return to the *Upload to Software Library* page.
   e. Click the *Upload* button to upload the application archive to your software library. The application will be shown in the table of applications on the *My Library* tab.
   f. Select the *Home* tab to see your list of services, and then click the link for the service you created earlier to open its home page.

g. You will now deploy the application from your library to this service. Click *Deploy* in the *Applications* section and enter the following information:

| | |
|---|---|
| **Application Name** | riddles |
| **Application Component** | Select the riddles component uploaded earlier. |

h. Click *Deploy* to initiate the deployment. You will be returned to the service's home page where the deployment request will be listed in the *My Requests* section.

i. Use the Enterprise Manager Cloud Control 12c *Refresh* button (next to the *Page Refreshed* time stamp) at regular intervals to track progress of the deployment. When completed, the application will be shown in the *Applications* section.

j. Click the *Test* button for the application to see a URL that can be used to access the application. By clicking the URL, you can open a new browser tab showing the output from the application. Refresh the browser page to send a new HTTP request to the application so that you can see what the application does.

10. Create a data source that points to a SSA-requested database instance.

a. Log in as `dbaas_user`.

b. Select the *Manage My Databases* radio button to open the *Database Cloud Self Service Portal* page.

c. Click the name of the database created by your self service request earlier to open its home page where you will see the connect descriptor that can be used to connect to the database.

d. Open a terminal session in `dom0` as any user, and start a `vi` editor session.

```
# vi connect_desc
```

e. Copy the connect descriptor from the Enterprise Manager Cloud Control 12*c* browser session (highlight and use the right-click context menu to copy).

f. Switch your `vi` editor session into insert mode by pressing the i key.

g. Use the right-click context menu to paste the connect descriptor string.

h. Switch out of insert mode by pressing the Esc key.

i. Log out as `dbaas_user`.

j. Log in as `mwaas_user`.

k. Click the *Manage My Middleware* radio button.

l. Select the *Home* tab to see your list of services, and then click the link for the service you created earlier to open its home page.

m. Click *Create* in the *Data Sources* section and enter the following values:

| | |
|---|---|
| **Datasource Name** | lab10_ds |
| **Database Driver Class** | oracle.jdbc.OracleDriver |
| **Connect String** | jdbc:oracle:thin:@<paste your connect descriptor here> |
| **Database User Name** | dbaas_ssa |
| **Password** | `oracle` |
| **Confirm Password** | `oracle` |

n. Click *Test Connection* to confirm that the information can be used to connect to the database.

o. Click *Create* to create the data source and return to the home page for your Middleware service where you will see a job listed in the *My Requests* section to create the data source. After some time, it will be created and shown in the *Data Sources* section.

# Practices for Lesson 11: Chargeback

**Chapter 11**

# Practices for Lesson 11

## Practices Overview

In these practices, you will set up chargeback.

# Practice 11-1: Setting Up Chargeback

## Overview

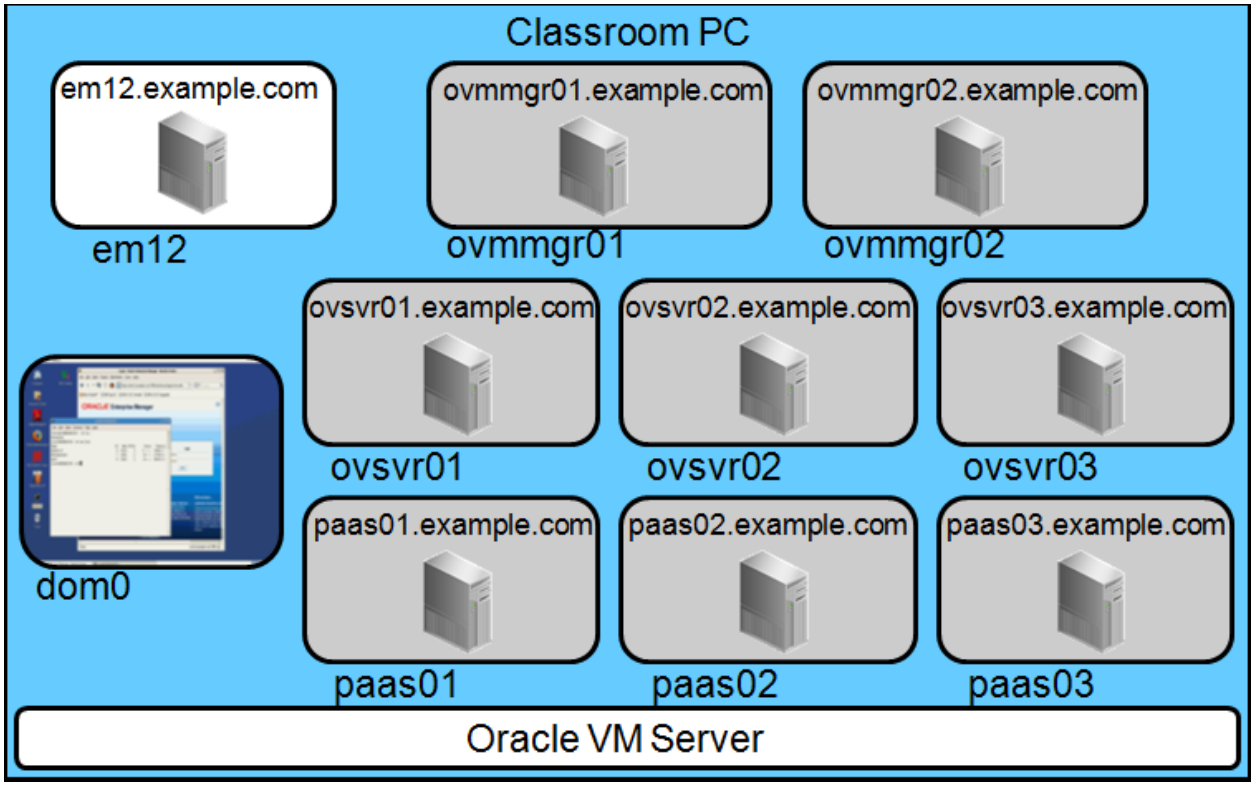
In this practice, you will set up chargeback for the targets you have created and view chargeback information for them.

## Assumptions

You have successfully completed most previous practices.

## Virtual Machine Used by This Practice

The virtual machine used by this practice is illustrated here with a white background.




## Usernames and Passwords

| Hostname/Application | Username/Password |
|---|---|
| Enterprise Manager Cloud Control 12*c* | `sysman/Oracle123` |

## Tasks

1. Start a terminal session in `dom0`, switch to the `root` user, then run the script for this lab to start the required VMs.

```
# startVMs_lab11-1.sh
```

2. Use the `xm list` command to confirm that the virtual machines used by this practice are running.

   Note that your Time and State values may differ from what is shown here.

```
# xm list
Name                                        ID   Mem VCPUs
State   Time(s)
Domain-0                                     0  2048     2
r----- 1256555.6
em12                                       108  4608     2     -
b----     30.9
#
```

3. Log in to Enterprise Manager Cloud Control 12*c* as `sysman`.
4. Navigate to *Enterprise* > *Chargeback* to open the *Chargeback* home page. Notice that the Actions section lists all the mandatory and optional steps for setting up chargeback.
5. Add your IaaS and PaaS zones as chargeback targets.
   a. Select the *Targets* tab.
   b. Click *Add Targets* in the *Cost Center and Charge Plan Assignment for Targets* panel to open the *Add Targets* dialog.
   c. Click *Target Selector* to open the *Search and Select: Targets* dialog.
   d. Open the *Target Type* drop-down and deselect the *All* option, and then select `Oracle VM Zone` and `PaaS Infrastructure Zone`. Click away from the option list to close it.
   e. Click *Search* to look for matching targets. The results should include `lab2IaaS_Zone`, `Lab2 PaaS Zone`, `IaaS_Zone`, and `PaaS Zone`.
   f. Select all listed zones and click *Select* to return to the *Add Targets* dialog where your selected zones will be shown.
   g. Click *OK* to add the zones to chargeback and return to the *Targets* tab.
6. Force an initial data collection. This will populate lists of values used in conditional charges, as well as make chargeback aware of active SSA users and add them to the default cost center.
   a. Select the *Targets* tab if you have navigated away from it.
   b. Select *On-demand data collection* from the *Action* menu in the *Cost Center and Charge Plan Assignment for Targets* panel. Click *Yes* on the *Confirmation* dialog to create the data collection job. You will be returned to the *Chargeback* page.
   c. An information message at the top of the *Chargeback* page will be displayed informing you that the data collection job has been submitted with a link to the job itself. Click the link to monitor the status of the job.
   d. If the job is still executing, click the job name or the status to see more details about the job. Manually refresh the page or turn on auto refresh to see the current status.

      Once the job has succeeded, return to the *Chargeback* page (*Enterprise* > *Chargeback*).
7. Select the *Charge Plans* tab where you will setup the rates for the Universal and Extended Charge Plans. Notice that three metrics are already defined for the Universal Charge Plan (CPU Usage, memory allocation and storage allocation) but that the rates for all three are zero dollars, meaning there is no universal charge at the moment.

8. Set the charge rate for CPU Usage to $3 per CPU per hour.
   a. Highlight the row for `CPU Usage of Default CPU Architecture` and click *Edit* to open the *Default CPU Architecture* dialog and enter the following values:

| | |
|---|---|
| **Rate ($)** | 3 |
| **Per Time Period** | Hour |

   b. Click *OK* to confirm the new rate and return to the *Charge Plans* tab.
9. Set the charge rate for Memory Allocation to $2 per GB per day.
   a. Highlight the row for `Memory Allocation` and click *Edit* to open the *Edit Memory Usage* dialog and enter the following values:

| | |
|---|---|
| **Rate ($)** | 2 |
| **Per Time Period** | Day |

   b. Click *OK* to confirm the new rate and return to the *Charge Plans* tab.
10. Set the charge rate for Storage Allocation to $5 per GB per day.
   a. Highlight the row for `Storage Allocation` and click *Edit* to open the *Edit Storage Usage* dialog and enter the following values:

| | |
|---|---|
| **Rate ($)** | 5 |
| **Per Time Period** | Day |

   b. Click *OK* to confirm the new rate and return to the *Charge Plans* tab.
11. Create an extended charge plan to use with your PaaS infrastructure zone. Charge $5 per day for any Oracle Database instances with a specific charge of $4 per day for an Enterprise Edition database instance and a usage charge of 0.1 cents per DB time second. Charge $5 per day for any WebLogic Server instance with a specific charge of $2 per day for any Version 10.3.6 instance.
   a. Click *Create* in the *Extended Charge Plans* section to open the *Extended Plan* dialog (you may have to first expand the *Extended Charge Plans* section to see the *Create* button) and enter the following information:

| | |
|---|---|
| **Plan Name** | Lab 11 PaaS Extended CP |

   b. Click *OK* to proceed to the *Edit Extended Charge Plan* page where you will add the target-specific charges.
   c. Click *Add* to open the *Add Target Type Specific Charges* dialog and make the following selection:

| | |
|---|---|
| **Target Type** | Database Instance |
| **Default (Applies when no Condition is matched)** | selected |

   d. Click *OK* to return to the *Edit Extended Charge Plan* page. The conditionless Database Instance charges you just created will be displayed as a row in the *Target Type Specific Charges* and should be selected—if not, select it now.

      The panel below *Target Type Specific Charges* will reflect the selected row, and in this case will show *Database Instance (Default)* charges, of which there are none yet.

e. Create the charge of $5 per day per instance.

1) Click *Add* in the *Database Instance (Default) Charge Items* tab to open the *Add* Item dialog and enter the following values:

| | |
|---|---|
| **Item Name** | Base Charge |
| **Rate ($)** | 5 |
| **Time Unit** | Day |

2) Click *OK* to return to the *Edit Extended Charge Plan* page where the `Base Charge` you created will be displayed in the *Database Instance (Default)* panel.

f. Create the $4 per day charge for Enterprise Edition database instances.

1) Click *Add* in the *Database Instance (Default) Charge Items* tab to open the *Add Item* dialog and enter the following values:

| | |
|---|---|
| **Item Name** | Edition |
| **Rate ($)** | 4 |
| **Time Unit** | Day |
| **Use Condition** | |
| **Condition Operator** | Equals |
| **Condition Value** | Enterprise Edition (use the search button to select from a list of values) |

2) Click *OK* to return to the *Edit Extended Charge Plan* page where the `Edition` charge you created will be displayed in the *Database Instance (Default)* panel.

g. Create the usage charge of 0.1 cents per DB time second.

1) Click *Add* in the *Database Instance (Default) Charge Items* tab to open the *Add Item* dialog and enter the following values:

| | |
|---|---|
| **Item Name** | DB Time |
| **Charge Type** | Usage |
| **Rate ($)** | 0.001 |

2) Click *OK* to return to the *Edit Extended Charge Plan* page where the `DB Time` charge you created will be displayed in the *Database Instance (Default)* panel.

h. Click *Add* to open the *Add Target Type Specific Charges* dialog and make the following selection:

| | |
|---|---|
| **Target Type** | Oracle WebLogic Server |
| **Default (Applies when no Condition is matched)** | selected |

i. Click *OK* to return to the *Edit Extended Charge Plan* page. The conditionless WebLogic Server charges you just created will be displayed as a row in the Target Type Specific Charges and should be selected—if not, select it now.

The panel below *Target Type Specific Charges* will reflect the selected row, and in this case will show *Oracle WebLogic Server (Default)* charges, of which there are none yet.

j. Create the charge of $5 per day per instance.

1) Click *Add* in the *Oracle WebLogic Server (Default) Charge Items* tab to open the *Add Item* dialog and enter the following values:

| | |
|---|---|
| **Item Name** | Base Charge |
| **Rate ($)** | 5 |
| **Time Unit** | Day |

2) Click *OK* to return to the *Edit Extended Charge Plan* page where the `Base Charge` you created will be displayed in the *Oracle WebLogic Server (Default)* panel.

k. Create the $2 per day charge for version 10.3.6 instances.

1) Click *Add* in the *Oracle WebLogic Server (Default) Charge Items* tab to open the *Add Item* dialog and enter the following values:

| | |
|---|---|
| **Item Name** | Version |
| **Rate ($)** | 2 |
| **Time Unit** | Day |
| **Use Condition** | |
| **Condition Operator** | Equals |
| **Condition Value** | 10.3.6 (use the search button to select from a list of values) |

2) Click *OK* to return to *the Edit Extended Charge Plan* page where the `Version` charge you created will be displayed in the *Oracle WebLogic Server (Default)* panel.

l. Click *Save* to save the extended charge plan and return to the *Chargeback* page.

12. Create a cost center hierarchy. The hierarchy is for an imaginary Development group made up of three departments—Coding, Testing, and Operations. The three SSA users you created earlier will belong to the three departments as shown here:

| Top level (Root) | Second level | Users in Cost Center |
|---|---|---|
| Development (DEV) | | |
| | Coding (COD) | DBAAS_USER |
| | Testing (TST) | MWAAS_USER |
| | Operations (OPS) | IAAS_USER |

a. Select the *Cost Centers* tab on the *Chargeback* home page.

b. Create the Development cost center.

1) Click *Add* to open the *New Cost Center* dialog and enter the following information:

| | |
|---|---|
| **Cost Center** | DEV |
| **Display Name** | Development |
| **Level** | Top Level (Root) |

2) Click *OK* to save the cost center and return to the *Cost Centers* tab.

c. Create the Coding cost center.

1) Highlight the `DEV` cost center that you just created and click *Add* to open the *New Cost Center* dialog and enter the following information. Notice that by having the `DEV` cost center highlighted when electing to add a new cost center, Enterprise Manager Cloud Control 12*c* assumes you want to add a subordinate cost center.

| | |
|---|---|
| **Cost Center** | COD |
| **Display Name** | Coding |
| **Level** | Member of.. Development |

2) Click *OK* to save the cost center and return to the *Cost Centers* tab.

d. Create the Testing cost center.

1) Highlight the `DEV` cost center and click *Add* to open the *New Cost Center* dialog and enter the information below. Notice that by having the `DEV` cost center highlighted when electing to add a new cost center, Enterprise Manager Cloud Control 12*c* assumes you want to add a subordinate cost center.

| | |
|---|---|
| **Cost Center** | TST |
| **Display Name** | Testing |
| **Level** | Member of.. Development |

2) Click *OK* to save the cost center and return to the *Cost Centers* tab.

e. Create the Operations cost center.

1) Highlight the `DEV` cost center and click *Add* to open the *New Cost Center* dialog and enter the information below. Notice that by having the `DEV` cost center highlighted when electing to add a new cost center, Enterprise Manager Cloud Control 12*c* assumes you want to add a subordinate cost center.

| | |
|---|---|
| **Cost Center** | OPS |
| **Display Name** | Operations |
| **Level** | Member of.. Development |

2) Click *OK* to save the cost center and return to the *Cost Centers* tab.

13. Add SSA users to the cost centers in your hierarchy. All SSA users are initially assigned to the Default Cost Center.

a. Highlight the `Default` cost center and expand the *Users in Cost Center* panel in the bottom half of the *Cost Centers* pane if it is currently collapsed (if this is the case you will see the title bar of the panel labeled *Users in Cost Center: Default Cost Center* at the bottom of the screen with a right-pointing arrow to the left of it—clicking the arrow will expand the panel). The four SSA-enabled users you have been using to request resources should be listed (`LAB2_USER`, `IAAS_USER`, `DBAAS_USER`, and `MWAAS_USER`).

b. Assign `DBAAS_USER` to the Coding cost center.

1) Highlight `DBAAS_USER` and click *Assign to Cost Center* to open the *Assign DBAAS_USER to* dialog.

2) Expand the `Development` node and then select the `Coding` node.

3) Click *OK* to confirm the assignment.

4) The `DBAAS_USER` will no longer be listed in the *Users in Cost Center: Default Cost Center* panel.

c. Assign the `IAAS_USER` to the Operations cost center.
   1) Highlight `IAAS_USER` and click *Assign to Cost Center* to open the *Assign IAAS_USER to* dialog.
   2) Expand the `Development` node and then select the `Operations` node.
   3) Click *OK* to confirm the assignment.
   4) The `IAAS_USER` will no longer be listed in the *Users in Cost Center: Default Cost Center* panel.

d. Assign `MWAAS_USER` to the Testing cost center.
   1) Highlight `MWAAS_USER` and click *Assign to Cost Center* to open the *Assign MWAAS_USER to* dialog.
   2) Expand the `Development` node and then select the `Coding` node.
   3) Click *OK* to confirm the assignment.
   4) The `MWAAS_USER` will no longer be listed in the *Users in Cost Center: Default Cost Center* panel.

e. Verify the cost center assignments for your SSA-enabled users by highlighting each of the three cost centers in the *Cost Center* panel and observing the rows in the *Users in Cost Center* panel.

14. Assign charge plans to your IaaS and PaaS zones. Until you assign a charge plan to a target, no charges will be calculated for that target.
    a. Select the *Targets* tab.
    b. Expand the *Servers, Storage and Network* node and all the nodes under it.
       Tip: Use *View* > *Expand All* to quickly expand the entire target hierarchy.
    c. Assign the Universal Charge Plan to the `lab2IaaS_Zone` and `IaaS Zone` IaaS zones.
       1) Select both `lab2IaaS_Zone` and `IaaS Zone` by first highlighting one and then pressing the Ctrl key when highlighting the second.
       2) Click *Assign Plan* to open the *Assign Plan* dialog.
       3) Highlight `Universal Charge Plan` and click OK to make the assignment and return to the *Targets* tab. You will see `Universal Charge Plan` listed in the *Charge Plan* column for the IaaS zones.
    d. Assign the Extended Charge Plan that you created earlier to the `Lab2 PaaS Zone` and `PaaS Zone` PaaS zones.
       1) Select both `Lab2 PaaS Zone` and `PaaS Zone` by first highlighting one and then pressing the Ctrl key when highlighting the second.
       2) Click *Assign Plan* to open the *Assign Plan* dialog.
       3) Highlight `Lab 11 PaaS Extended CP` and click OK to make the assignment and return to the *Targets* tab. You will see `Lab 11 PaaS Extended CP` listed in the *Charge Plan* column for the PaaS zones.
15. Force another data collection. This will collect charge information based upon your charge plan and cost center assignments.
    e. Select the *Targets* tab if you have navigated away from it.

f. Select *On-demand data collection* from the *Action* menu in the *Cost Center and Charge Plan Assignment for Targets* panel. Click *Yes* on the *Confirmation* dialog to create the data collection job. You will be returned to the *Chargeback* page.

g. An information message at the top of the *Chargeback* page will be displayed informing you that the data collection job has been submitted with a link to the job itself. Click the link to monitor the status of the job.

h. If the job is still executing, click the job name or the status to see more details about the job. Manually refresh the page or turn on auto refresh to see the current status.

   Once the job has succeeded, return to the *Chargeback* page (*Enterprise* > *Chargeback*).

16. View the chargeback reports.

    a. Select the *Reports* tab. The default Summary report will be displayed. Experiment with the controls at the top of the tab and click *View Report* to see a report matching your selections.

# Practices for Lesson 12: Consolidation Planner

**Chapter 12**

# Practices for Lesson 12: Overview

## Practices Overview

In these practices, you will use Consolidation Planner to investigate various consolidation scenarios.

# Practice 12-1: Using Consolidation Planner

## Overview

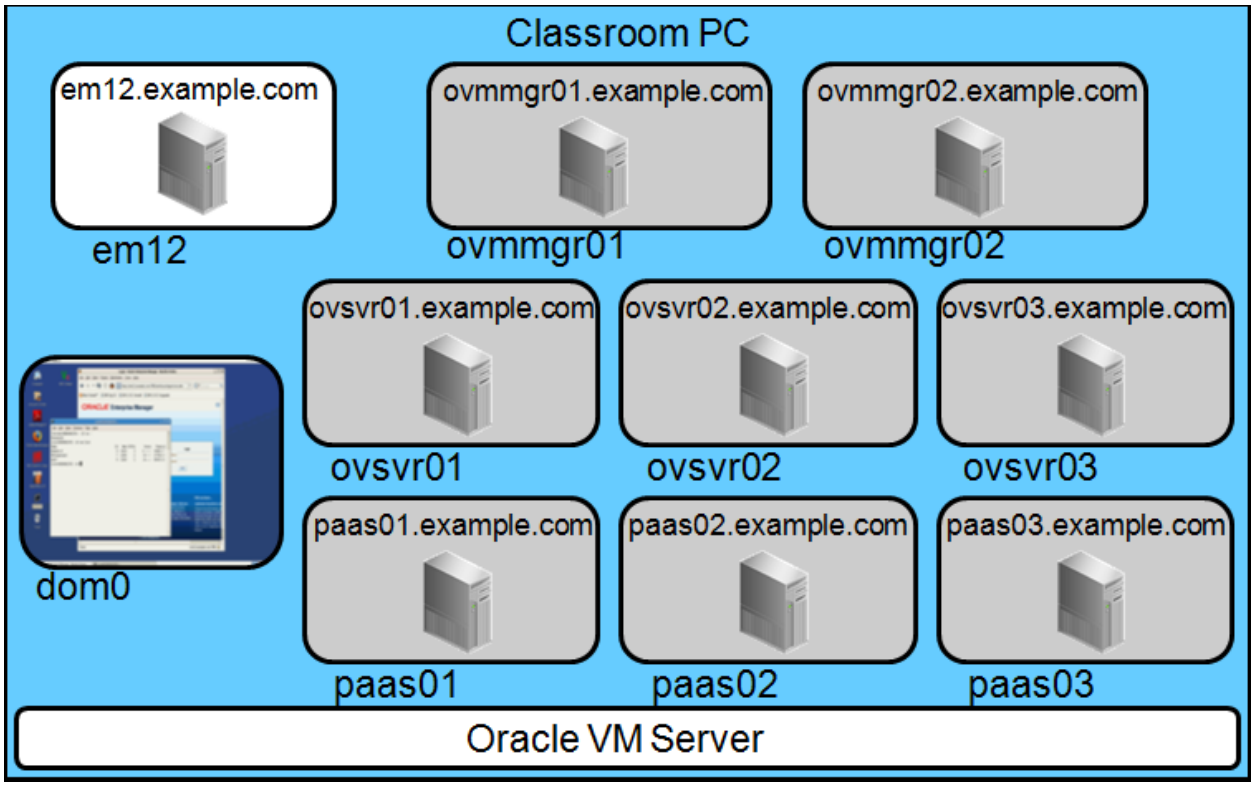
In this practice, you will create Consolidation Planner projects, view the data that is collected for the source servers, create consolidation scenarios, and view scenario results.

## Assumptions

You are logged on to `dom0` and have a terminal session open as root.

## Virtual Machine Used by This Practice

The virtual machine (VM) used by this practice is illustrated here with a white background.




## Usernames and Passwords

| Hostname/Application | Username/Password |
|---|---|
| em12.example.com | `root/oracle`<br>`oracle/oracle` |
| em12rep database | `sysman/Oracle123` |
| Enterprise Manager Cloud Control 12*c* | `sysman/Oracle123` |

## Tasks

1. Start a terminal session in `dom0`, switch to the `root` user, and then run the script for this lab to start the required VMs.

```
# startVMs_lab12-1.sh
```

2. Use the `xm list` command to confirm that the VMs used by this practice are running.

   Note that your Time and State values may differ from what is shown here.

```
# xm list
Name                                        ID   Mem VCPUs
State   Time(s)
Domain-0                                     0  2048     2
r----- 1256555.6
em12                                       108  4608     2     -
b----     30.9
#
```

3. Because Consolidation Planner depends upon a body of metrics data, you will execute some packaged PL/SQL routines to generate dummy targets with historical metrics data of randomized workloads that can be used for the rest of this practice.

   a. Copy the PL/SQL package and data creation scripts from `dom0` to the `oracle` user's home directory on `em12.example.com`.

```
# cd /OVS/downloads
# ls cp*
cp_generator.sql  cp_lab12_maker.sql
# scp cp*.sql oracle@em12:~
oracle@em12's password: oracle
cp_generator.sql                              100%   45KB
44.9KB/s   00:00
cp_lab12_maker.sql                            100%  311
0.3KB/s   00:00
#
```

   b. Log on to `em12` as the `oracle` user with a secure shell. Accept the RSA key if asked.

```
# ssh oracle@em12
oracle@em12's password: oracle
Last login: Mon Oct 22 04:21:57 2012 from 192.0.2.1
$
```

   c. Set the environment to use the `em12rep` database.

```
$ . oraenv
ORACLE_SID = [oracle] ? em12rep
The Oracle base has been set to /u01/app/oracle
$
```

d. Log in to SQL*Plus as `sysman`.

```
$ sqlplus sysman/Oracle123

SQL*Plus: Release 11.2.0.2.0 Production on Wed Dec 5 22:07:57
2012

Copyright (c) 1982, 2010, Oracle.  All rights reserved.



Connected to:
Oracle Database 11g Enterprise Edition Release 11.2.0.2.0 -
64bit Production
With the Partitioning, OLAP, Data Mining and Real Application
Testing options
```

e. Execute the `cp_generator` script you copied earlier to create the package that generates dummy data.

```
SQL> @cp_generator

Sequence created.



Package created.



Package body created.

SQL>
```

f. Execute the `cp_lab12_maker` script you copied earlier to create dummy targets and metrics data that we can work with. This will create two stand-alone hosts, a two-node database machine, a two-node RAC cluster, and a two-server OVM server pool.

```
SQL> @cp_lab12_maker

PL/SQL procedure successfully completed.

SQL>
```

g. Exit from SQL*Plus.

```
SQL> exit
Disconnected from Oracle Database 11g Enterprise Edition Release
11.2.0.2.0 - 64bit Production
With the Partitioning, OLAP, Data Mining and Real Application
Testing options
$
```

h. Log in to Enterprise Manager Cloud Control 12*c* as the `sysman` user to see the targets that have been created.
   1) Log in to Enterprise Manager Cloud Control 12*c*.
   2) Search for targets named `cp-%` to confirm that the dummy targets were created.

      **Tip:** Use the *Search Target Name* field in the top right corner of the Cloud Control 12*c* page.

      You should see a number of targets all with *Target Status* of `Agent Unreachable`. The names of the targets indicate the type of target:

| Name | Target Type |
|---|---|
| cp-demo-host-% | Simple host target |
| cp-demo-dbm-% | Oracle Exadata Database Machine (DBM) |
| cp-demo-comp-node-% | DBM compute node |
| cp-demo-rac-cluster-% | RAC database cluster |
| cp-demo-rac-host-% | RAC database cluster host |
| cp-demo-rac-db-% | RAC database instance |
| cp-demo-vsp-% | OVM Virtual Server Pool |
| cp-demo-ovsvr-% | OVM Server |

4. There are two 3-node RAC clusters in your environment called `cp-demo-rac-cluster-%`, and you also have a quarter-rack Oracle Exadata Database Machine called `cp-demo-dbm-%`. You will investigate whether the workload of the two RAC clusters could be transferred to the database machine.

   **Note:** In theory, you should not even be investigating this consolidation as the quarter-rack DBM has only two compute nodes, so your three RAC nodes in each cluster could not be distributed without two being on one compute node. But we will add another scenario that may be practical after this.

   a. Create a consolidation planner project and add the two RAC clusters and database machine to it.
      1) Still logged in to Enterprise Manager Cloud Control 12*c* as `sysman`, navigate to *Enterprise* > *Consolidation Planner* to open the *Consolidation Planner* home page.
      2) Click *Create Project* to open the *Create Consolidation Project* page.
      3) Enter the following information in the *Project Details* section:

| | |
|---|---|
| **Project Name** | RAC to DBM |
| **Description** | 2 x 3-node RAC cluster to existing quarter rack DBM |

      4) Select *Consolidation Type* of *From physical servers to physical servers (P2P)*.
      5) Click *Add Servers …* in the *Servers to be involved in Consolidation* section to open the *Search and Select: Targets* dialog.
      6) Highlight the six `cp-demo-rac-host-%` targets and click *Select* to return to the *Create Consolidation Project* page.

         **Tip:** Search for targets with the name `cp-demo-rac-%` to filter the list.

**Tip:** Use the select-all control at the top of the left-most column in the table of results to select all rows.

The hosts will be listed in the *Servers to be Involved in Consolidation* section along with summaries of their resource utilization.

7) Click *Add Existing Database Machines as Destinations …* to open the *Search and Select: Targets* dialog.
8) The list is automatically filtered to only display database machines. Highlight the database machine target `cp-demo-dbm-%` and click *Select* to return to the *Create Consolidation Project* page.

   The two compute nodes of the database machine will be added to the list of source servers.
9) To tell Consolidation Planner to use existing metrics data, scroll down and expand the *Data Collection* section. Set the following values:

| | |
|---|---|
| **Minimum Days for Which Data to Be Collected for All Targets** | 0 |
| **Start** | Immediately |

10) Add the preconfigured scenarios so you can get an indication of the possibility of consolidating as soon as the project is created.
    a) Expand the *Pre-configured Scenarios* section.
    b) Click *Add Pre-Configured Scenarios* to open the *Add Pre-Configured Scenarios* dialog.
    c) Highlight all three scenarios.
    d) Elect to *Use Existing Servers Specified in This Project* as the *Destination candidates for the Conservative, Medium, and Aggressive Pre-configured Scenarios*.
    e) Click *Select* to return to the *Create Consolidation Project* page.

    **Tip:** Use the select-all control at the top of the left-most column in the table of results to select all rows.
11) Click *Submit* at the top right of the page to submit a job to create the consolidation project. You will be returned to the *Consolidation Planner* home page and a confirmation dialog will be displayed along with information about your project. The project will have a status of `Scheduled` and the three preconfigured scenarios will be shown as `Waiting for data`.
12) Look at the *Source Workload* tab to examine the heat maps for your selected hosts. Notice that there appears to be an increase in workload most days around 6 pm (Hour 18).

b. Use the refresh button of the Enterprise Manager Cloud Control 12*c* page to see the current status until the project status is `Collecting over minimum` and scenario's status are `Analysis completed`.

   **Note:** It is possible that the scenario analyses will complete even though their status is still shown as `Collecting over minimum`. You can check by highlighting a scenario in the project pane and checking the details in the pane below.

c. Look at the summary lines for the three preconfigured scenarios. It should be the case that all the three have been *unsuccessful* with a number of exclusions listed.

d. Click the number of exclusions for the `Aggressive` scenario to have the bottom panel display the *Exclusions* tab for that scenario. All six hosts will be listed with a limitation at a particular hour, meaning that the workload at that time could not be satisfied by the destination server. This is because we are attempting to consolidate to an existing database machine that already has a known workload, and Consolidation Planner is attempting to accommodate both the existing workload and the workload of the source servers.

5. Add a new scenario to the `RAC to DBM` project to investigate whether the workload of the two RAC clusters could be transferred to a half-rack Oracle Exadata Database Machine if you purchased one.
   a. Highlight the `RAC to DBM` project and click *Create Scenario* to open the *Create Scenario for Project: Resources* page and enter the following information:

| | |
|---|---|
| **Scenario Name** | RAC to half-rack DBM |
| **Description** | Existing 2 x 3-node RAC clusters to phantom half-rack DBM |

   b. Click *Next* to proceed to the *Create Scenario for Project: Constraints* page and enter the following information:

| | |
|---|---|
| **Mutually Exclusive Servers Condition** | All |

   c. Click *Preview The Effect Of Constraints* to see if any of your RAC nodes cannot be located. You should see that none of the nodes in an existing RAC cluster can be collocated with the other nodes in the same cluster.
   d. Click *OK* to return to the *Create Scenario for Project: Constraints* page.
   e. Click *Next* to proceed to the *Create Scenario for Project: Targets Planning* page and make the following selections:

| | |
|---|---|
| **Use New (Phantom) Servers** | selected |
| **Use Oracle Exadata Database Machines** | selected |
| **Configuration** | Oracle Exadata Database Machine X2-2 (Half Rack) |

   f. Click *Next* to proceed to the *Create Scenario for Project: Server Mapping* page where you will see that we are relying on automatic mapping.
   g. Click *Next* to proceed to the *Create Scenario for Project: Review* page, and then *Submit* to create the scenario. You will be returned to the *Consolidation Planner* home page where your new scenario will be listed.
   h. Highlight the `RAC to half-rack DBM` scenario to see the current status in the bottom panel. If the status is `Analysis Completed`, review the various tabs including workload and exclusions. This should be a successful scenario.

6. There are four hosts in your environment called `cp-demo-host%` and one OVM virtual server pool called `cp-demo-vsp%` with two OVM Servers in it. You will investigate whether the workload of the four hosts can be virtualized on your existing OVM server pool.

   **Note:** P2V scenarios are always performed with existing OVM server pools as the targets because when working with phantom targets, Consolidation Planner creates as many

phantom targets as are required, and under those circumstances every workload can be virtualized.

a. Create a consolidation planner project and add the four hosts and the OVM server pool to it.

1) Still logged in to Enterprise Manager Cloud Control 12*c* as `sysman`, navigate to *Enterprise* > *Consolidation Planner* to open the *Consolidation Planner* home page if you have navigated away from it.
2) Click *Create Project* to open the *Create Consolidation Project* page.
3) Enter the following information in the *Project Details* section:

| | |
|---|---|
| **Project Name** | Hosts to OVM |
| **Description** | 4 x hosts to existing OVM server pool with two OVM Servers |

4) Select *Consolidation Type* of *From physical servers to virtual servers (P2V)*.
5) Click *Add Source Servers …* in the *Servers to be involved in Consolidation* section to open the *Search and Select: Targets* dialog.
6) Highlight the four `cp-demo-host-%` targets and click Select to return to the Create Consolidation Project page.

   **Tip:** Search for targets with the name `cp-demo-host-%` to filter the list.

   **Tip:** Use the select-all control at the top of the left-most column in the table of results to select all rows.

   The hosts will be listed in the *Servers to be Involved in Consolidation* section along with summaries of their resource utilization.
7) Click *Add Existing Virtual Servers as Destinations …* to open the *Search and Select: Targets* dialog.
8) The list is automatically filtered to only display virtual server pools. Highlight the virtual server pool target `cp-demo-vsp-%` and click *Select* to return to the *Create Consolidation Project* page.

   The two OVM Servers of the OVM Server Pool will be added to the list of source servers.
9) To tell Consolidation Planner to use existing metrics data, scroll down and expand the *Data Collection* section. Set the following values:

| | |
|---|---|
| **Minimum Days for Which Data to Be Collected for All Targets** | 0 |
| **Start** | Immediately |

10) Add the preconfigured scenarios so you can get an indication of the possibility of consolidating as soon as the project is created.
    a) Expand the *Pre-configured Scenarios* section.
    b) Click *Add Pre-Configured Scenarios* to open the *Add Pre-Configured Scenarios* dialog.
    c) Highlight all three scenarios.

d) Elect to *Use Existing Servers Specified in This Project* as the *Destination candidates for the Conservative, Medium, and Aggressive Pre-configured Scenarios*.

e) Click *Select* to return to the *Create Consolidation Project* page.

**Tip:** Use the select-all control at the top of the leftmost column in the table of results to select all rows.

11) Click *Submit* at the top right of the page to submit a job to create the consolidation project. You will be returned to the *Consolidation Planner* home page and a confirmation dialog will be displayed along with information about your project. The project will have a status of `Scheduled` and the three preconfigured scenarios will be shown as `Waiting for data`.

12) Look at the *Source Workload* tab to examine the heat maps for your selected hosts. Notice that there appears to be an increase in workload most days around 6 pm (Hour 18).

b. Use the page refresh button to see the current status until the project status is `Collecting over minimum` and scenario's status are `Analysis completed`.

c. Look at the summary lines for the three preconfigured scenarios. It should be the case that the aggressive scenario has been successful, but the medium and conservative scenarios have not been successful with four exclusions listed.

d. Click the number of exclusions for the `Medium` scenario to have the bottom panel display the *Exclusions* tab for that scenario. All four hosts will be listed with a limitation at a particular hour, meaning that the workload at that time could not be satisfied by the destination server.

e. Highlight the `Aggressive` scenario and review each tab. The *Mappings* tab will show you how the scenario distributed the hosts across the server pool, and the *Confidence* tab will show you the workload as agglomerated from the four sources and projected on the destination server pool.