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HOL10003
Deploy and Manage a Private Cloud with Oracle VM and Oracle Enterprise Manager Cloud Control 12c

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CONTENTS

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1 INTRODUCTION

1.1 LAB OBJECTIVE

This document details all actions that we will be run during Oracle OpenWorld 2013 session Hands On Lab HOL10003.

This hands-on lab takes you through private cloud management in Enterprise Manager Cloud Control 12c (EMCC) in an Infrastructure as a service (IaaS) model. You will first configure the IaaS cloud as the cloud administrator and then deploy guest virtual machines as a self service user.

Enterprise Manager Cloud Control 12c is much more than a virtual machines manager. It enables monitoring and management of many Oracle products (database, middleware and applications). It can manage other types of cloud service models: Platform as a Service (PaaS), Database as a Service (DBaaS) and even Software as a Service (SaaS). However, these features are outside the scope of this lab.

During this lab, we will use a demo environment built on a single x86 laptop and containing 3 virtual servers (Oracle VM VirtualBox virtual machines): Oracle VM Server, Oracle VM Manager and Enterprise Manager 12c.

1.2 PREPARATION (DONE BEFORE LAB)

To save time and fit in the one hour slot of Oracle OpenWorld labs, some actions were made before the actual lab.

Here is a quick list of these actions:

- Install Oracle Linux 6.4 (64 bits) on all the laptops.
- Install Oracle VM VirtualBox 4.2.16 + extensions on all the laptops.
- Install Oracle Java JRE 7 update 25 on all the laptops. (needed to get Oracle VMs console)
- Install an Oracle VM Manager 3.2.4 server in a VirtualBox virtual machine.
- Install an Oracle VM Server 3.2.4 server in a VirtualBox virtual machine.
- Install an Oracle Enterprise Manager Cloud Control 12c R3 server in a VirtualBox virtual machine.
- Deploy an Oracle EM12c agent on the Oracle VM Manager.
- Deploy the Oracle VM plugin on the Oracle EM12c server.
- Deploy the Oracle VM plugin on the Oracle EM12c agent.
- Configure HTTPS/TCPS security between the Oracle EM12c server and the Oracle EM12c agent installed on the Oracle VM Manager.
- Create users in Enterprise Manager (cloud administrator and self service users)
- Pre-configure Chargeback in Enterprise Manager (charge plans and cost centers)

Note: to run this lab at home of office

- Requirements:
  - X86 machine with at least 16GB of RAM and 4 CPU cores.
  - Any X86 Operating System supported by Oracle VM VirtualBox is OK (Microsoft Windows, Most linux distributions, Oracle Solaris X86, Apple Mac OSX, …)
- Read appendix A

1.3 SUMMARY OF STEPS

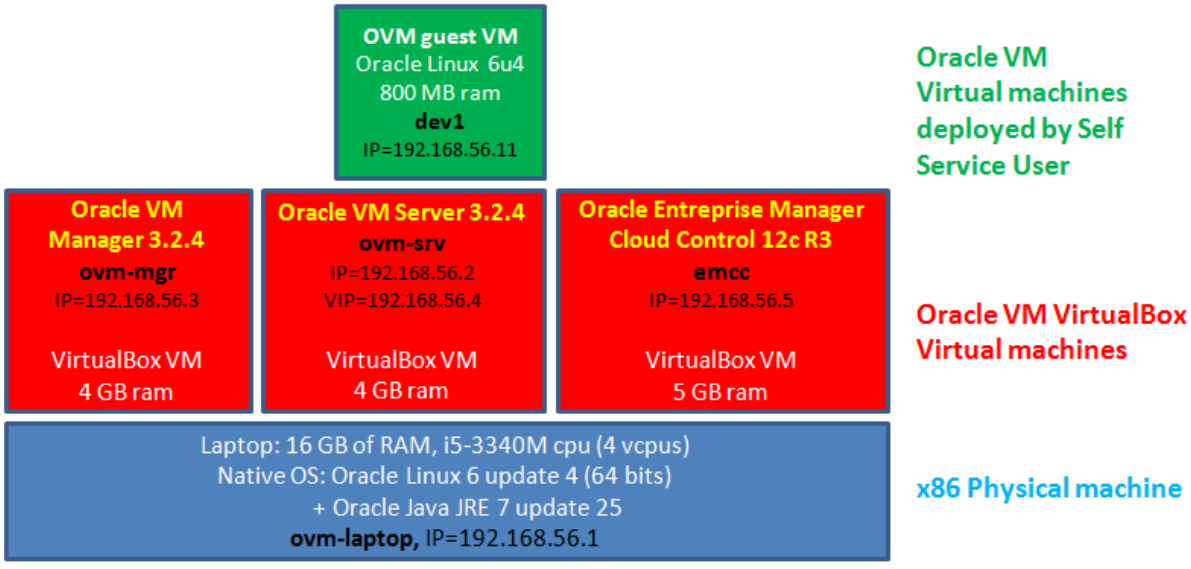
In this lab, you will execute the following steps in Enterprise Manager Cloud Control 12c :

As the Cloud administrator, setup the IaaS environment:
1) Discover the Oracle VM Manager.
2) Discover the Oracle VM Server.
3) Configure network and VNICs (Virtual Network Interface Cards).
4) Create a non clustered server pool.
5) Create a zone.
6) Create a storage repository.
7) Import an Oracle VM assembly in the repository.
8) Setup the IaaS Self Service Portal
9) Configure the Chargeback feature

As a Self Service user:
10) Deploy an Oracle VM virtual machine from the imported assembly.
11) Get the VM console

1.4 GLOBAL PICTURE

The following picture shows all the components (VirtualBox and Oracle VM virtual machines) with their names and configuration (memory, IP addresses, …)



2 INFRASTRUCTURE CLOUD SETUP BY THE CLOUD ADMINISTRATOR

2.1 START THE 3 SERVERS (VIRTUALBOX VMS)

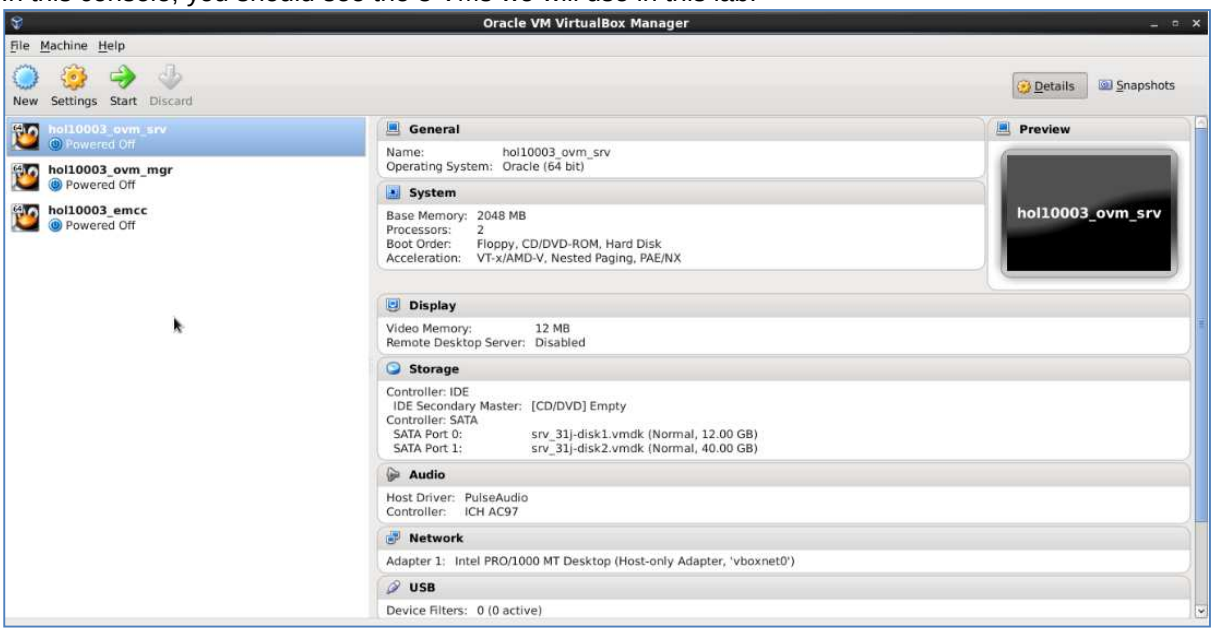
IMPORTANT: Since the VMs startup take about 15 minutes on our laptops, we advise you to start the 3 VMs as soon as possible when you arrive in the room if they are not already started.

As previously explained, we will use Oracle VM VirtualBox to host the 3 servers (Oracle VM Server, Oracle VM Manager and Oracle Enterprise Manager Cloud Control) on a single laptop.

Those 3 servers were pre-installed and preconfigured before this lab to save time. Thus, you just have to start them here.

a) Start the Oracle VM VirtualBox console if not yet started by clicking on icon 

b) In this console, you should see the 3 VMs we will use in this lab.



c) Select the 3 VMs called "**hol10003_emcc**", "**hol10003_ovm_mgr**" and "**hol10003_ovm_srv**"

d) Click on the icon  to start them

e) Wait for the 3 VMs to be ready (This will take a few minutes)
   - Wait for the prompt "**emcc login:**" on "**hol10003_emcc**" VM console
   - When this prompt is displayed, all VMs are ready (since EMCC is the longest to start)

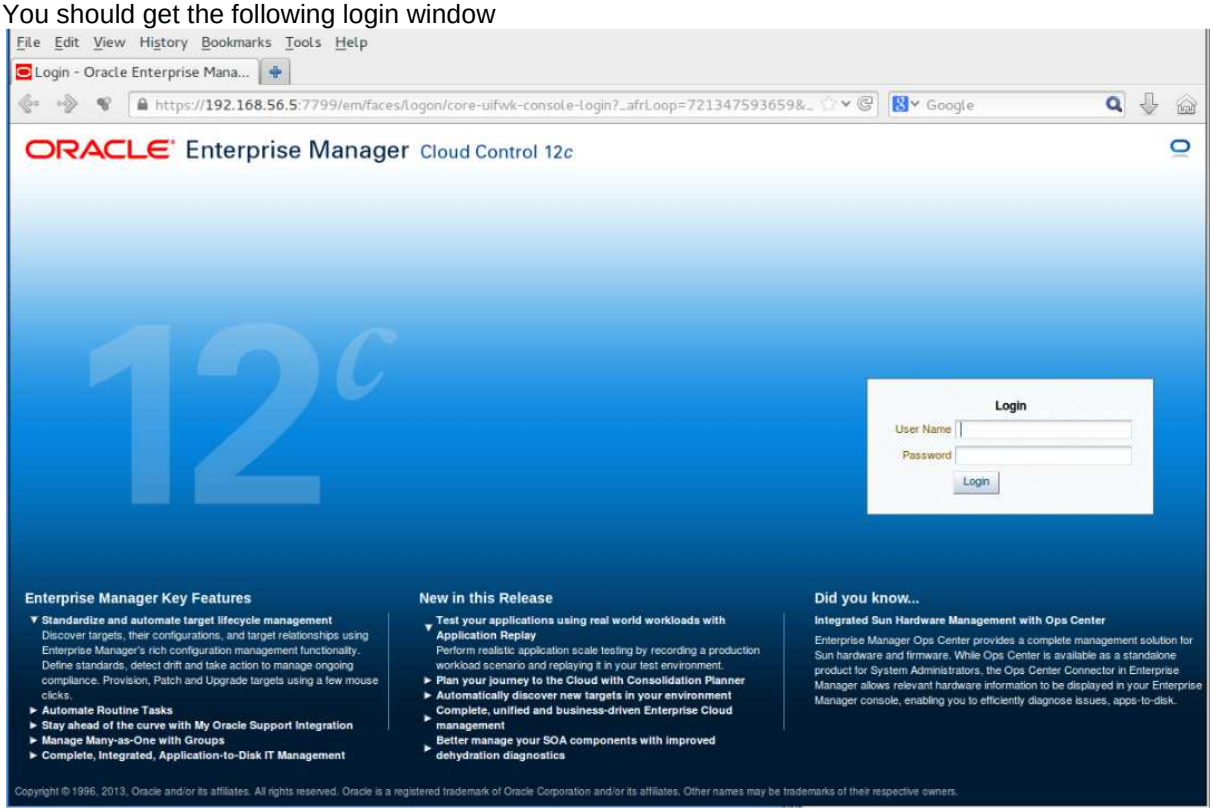
2.2 CONNECT TO THE ENTERPRISE MANAGER CLOUD CONTROL 12C CONSOLE

a) On your Linux laptop open a Firefox web browser and connect to the **Oracle Enterprise Manager Cloud Control 12c** console using URL https://192.168.56.5:7799/em

Note: Firefox Security warning:

Firefox may raise a security warning ("**This Connection is Untrusted**") since the SSL certificated are self-signed. If so, ignore the warning (Expand "**I understand the Risks**", then click on "**Add Exception**", and then finally click on "**Confirm Security Exception**").

You should get the following login window



b) Log in using the following credentials:
   - o Login : **cloudadm** (Oracle Enterprise Manager 12c Cloud Administrator)
   - o Password : **cloud**

Note: EMCC users.

In this lab, we will use 2 different users in Enterprise Manager:

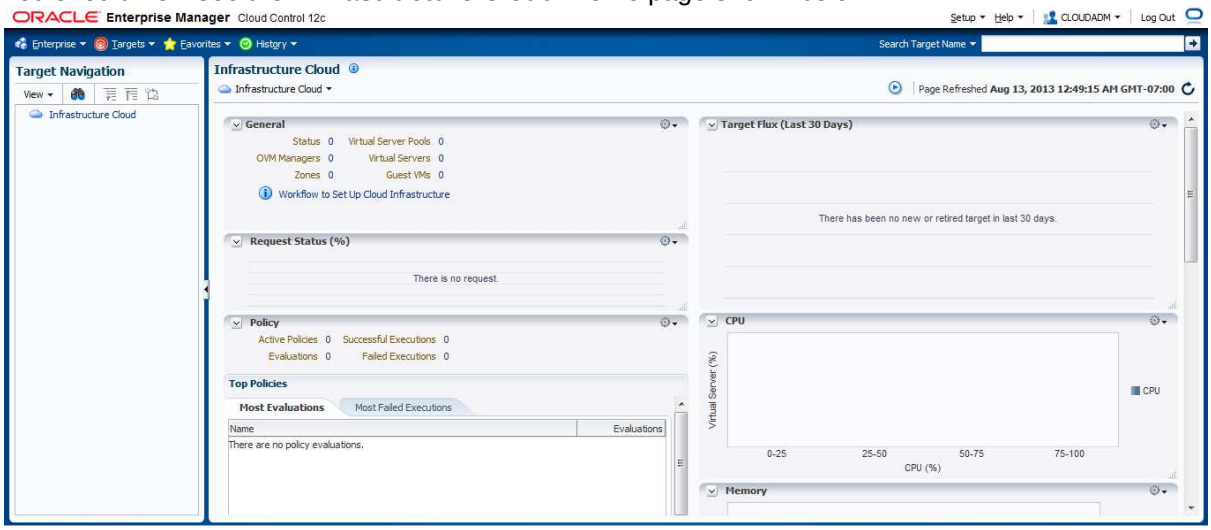
- **cloudadm** : the Cloud Administrator
- **paris_user1** : a Self Service user representing a developer.

Both users were created by the EMCC Super Administrator (SYSMAN) during the preparation of lab environment to save time (see details in Appendix A)

2.3 REGISTER THE ORACLE VM MANAGER

a) Once logged in the EM12c console, go to the "**Infrastructure Cloud**" by clicking on **Enterprise**, then **Cloud**, then **Infrastructure Home**

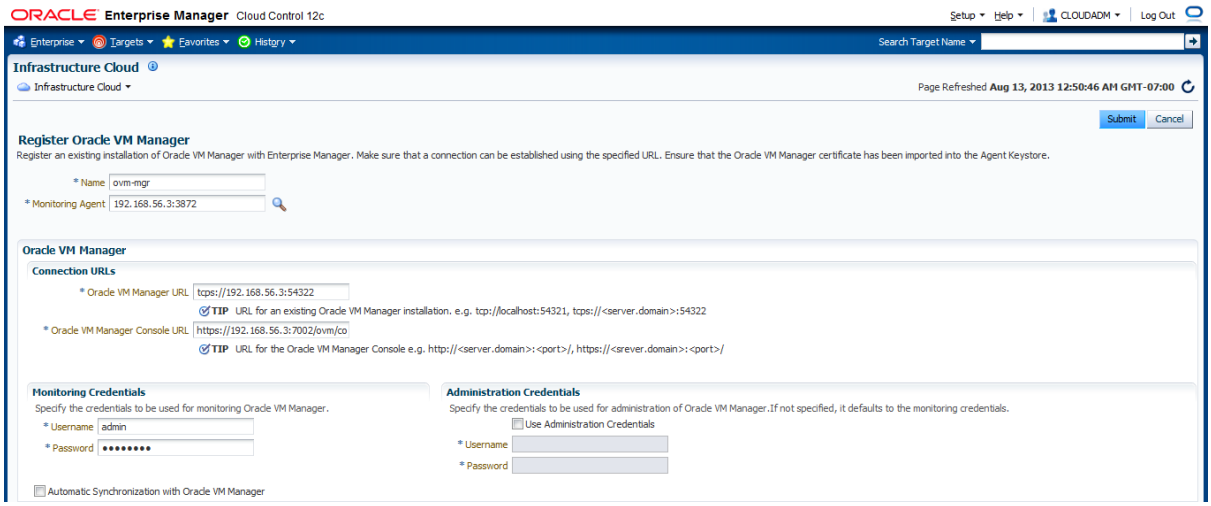
You should now see the "**Infrastructure Cloud**" home page shown below



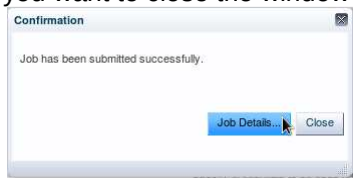
b) Right click on "**Infrastructure Cloud**" then click on "**Register OVM Manager**"

c) Enter the following information:
- Name : **ovm-mgr**
- Monitoring Agent : **192.168.56.3:3872**
- Oracle VM Manager URL : **tcps://192.168.56.3:54322**
- Oracle VM Manager Console URL : **https://192.168.56.3:7002/ovm/console**
- Username : **admin**
- Password : **Welcome1**

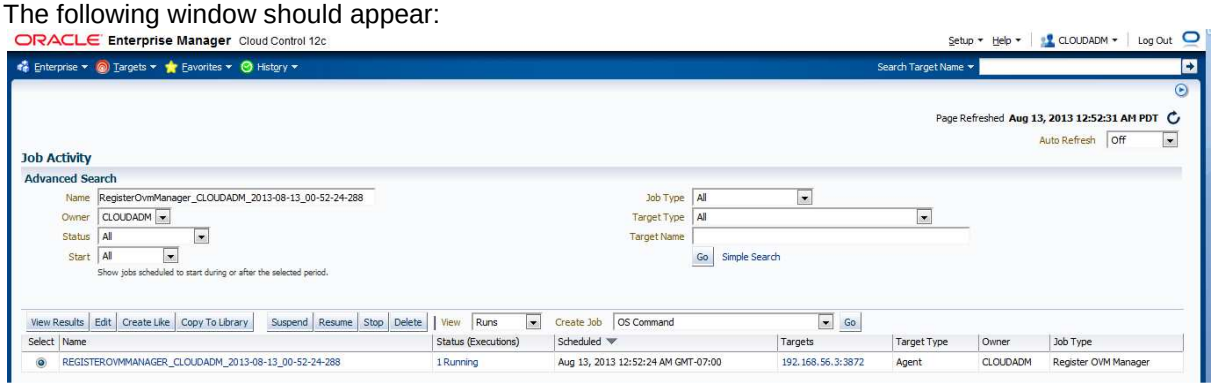
Then click on "**Submit**"



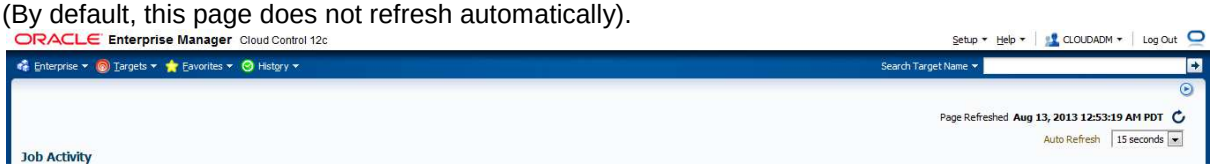
A confirmation window should pop-up to say that a job has been submitted and ask whether you want to close the window or display the job details.



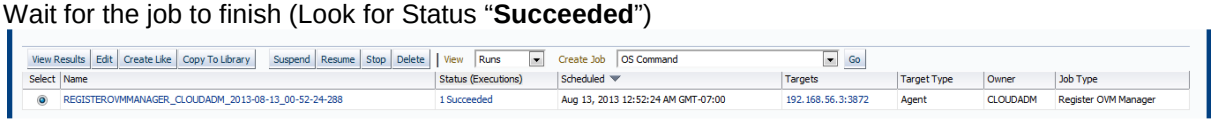
d) Click on "**Job Details…**" to follow the job's progression
The following window should appear:



e) Select "**15 seconds**" in the "**Auto Refresh**" drop down menu
(By default, this page does not refresh automatically).



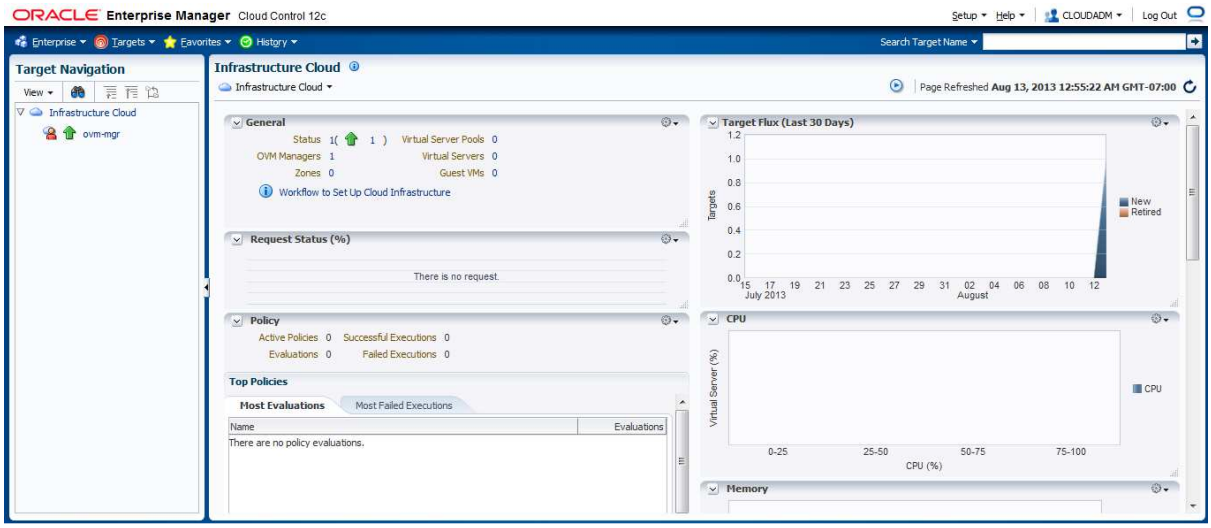
f) Wait for the job to finish (Look for Status "**Succeeded**")



If it fails, start again from step a), you might have entered incorrect information.

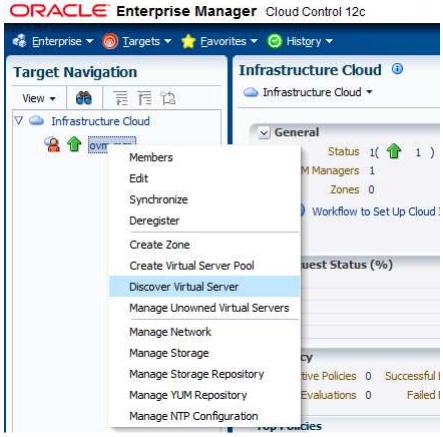
g) Go back to the "**Infrastructure Cloud**" home page by clicking on **Enterprise**, then **Cloud**, then **Infrastructure Home**

You should now see the Oracle VM Manager called "**ovm-mgr**"



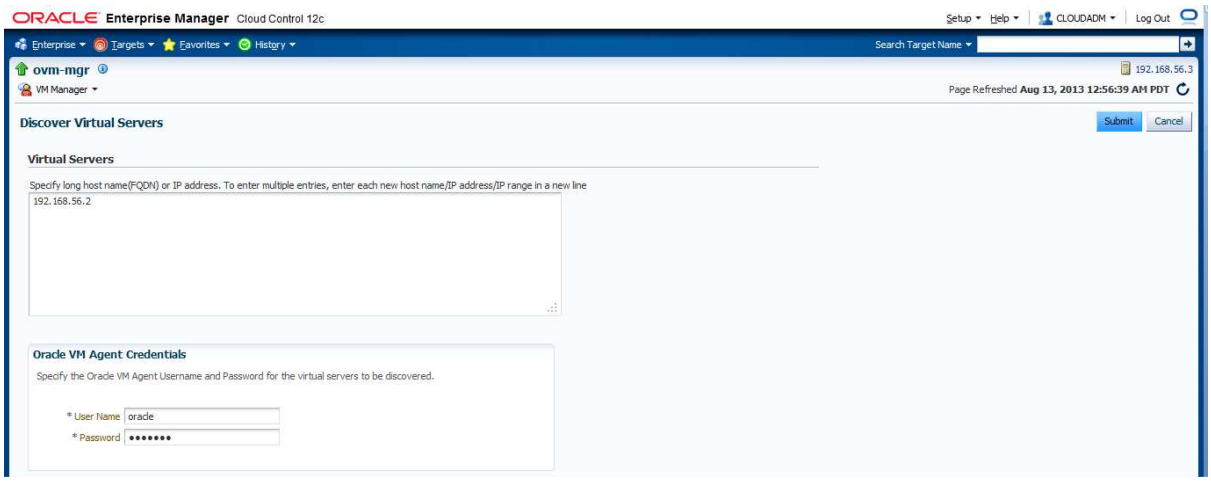
2.4 DISCOVER THE ORACLE VM SERVER

a) Right click on the "**ovm-mgr**" server shown on the "**Infrastructure Cloud**" home page, then click on "**Discover Virtual Server**"



b) Enter the following information in the new window:
   - o Virtual Servers : **192.168.56.2**
   - o Oracle VM Agent Credentials (The Oracle VM Agent runs on the Oracle VM Server)
     - User Name : **oracle**
     - Password : **ovsroot**

   Then click on "**Submit**"



c) In the window "**Confirmation**", click on "**Job Details…**" to follow the job's progression.

d) Wait for the job to finish (Look for Status "**Succeeded**")

2.5 CONFIGURE THE NETWORK

A basic network configuration was automatically done during the Oracle VM Server discovery.

A single network called "**192.168.56.0**" was created with the following roles:

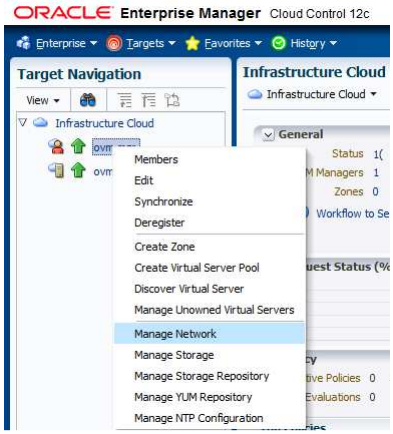
- Server Management
- Cluster HeartBeat
- Live Migration

The "**Storage"** role is used when accessing storage with IP protocol (NFS or ISCSI). In our case, we will use a physical disk, so we don't need the storage role.

The "**Virtual Machine**" role gives access to network(s) to the virtual machines, so we need to have at least one network with this role. In our case, for simplicity, we will add this role to this existing network.

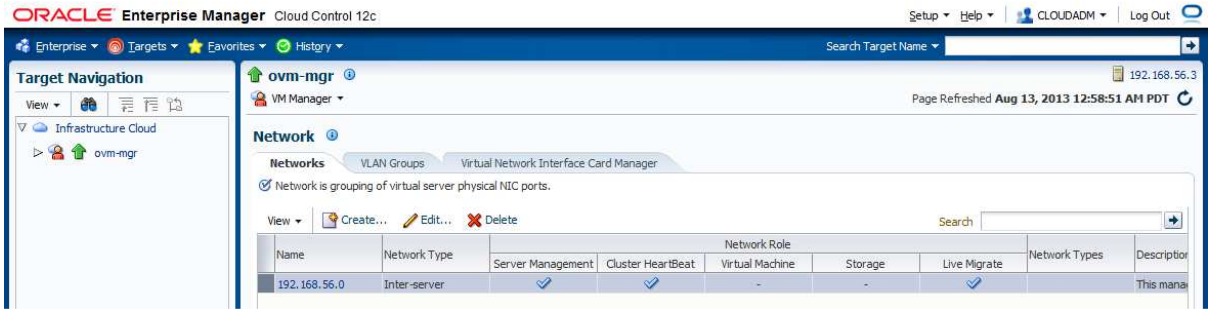
a) Go back to the "**Infrastructure Cloud**" home page by clicking on **Enterprise**, then **Cloud**, then **Infrastructure Home**

b) Right click on "**ovm-mgr**" then click on "**Manage Network**"

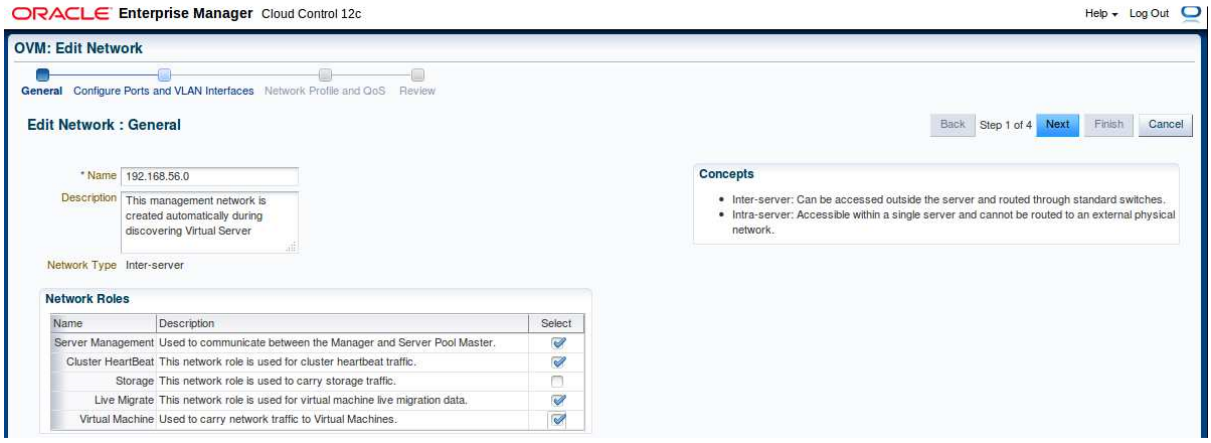


c) Select the line correspondind to network "**192.168.56.0**" network, but don't click on the hyperlink "**192.168.56.0**"

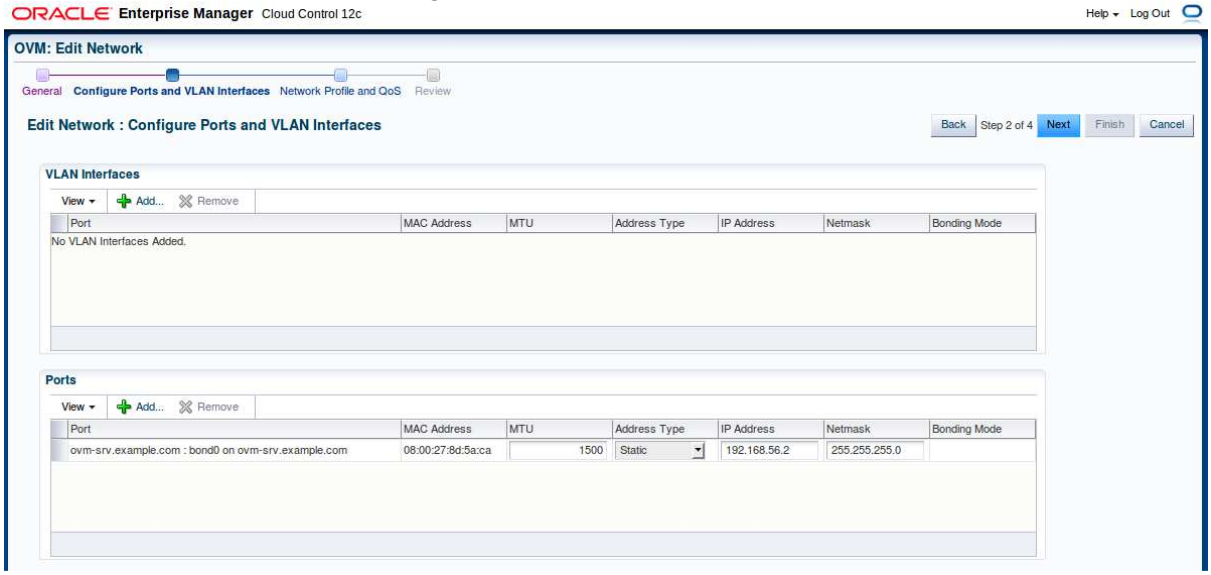
d) Click on the "**Edit**" icon



e) Add role "**Virtual Machine**" to this network using the corresponding checkbox. Then click on "**Next**"



f) In the window "**Edit Network: Configure Ports and VLAN interfaces**" window, click on **Next**



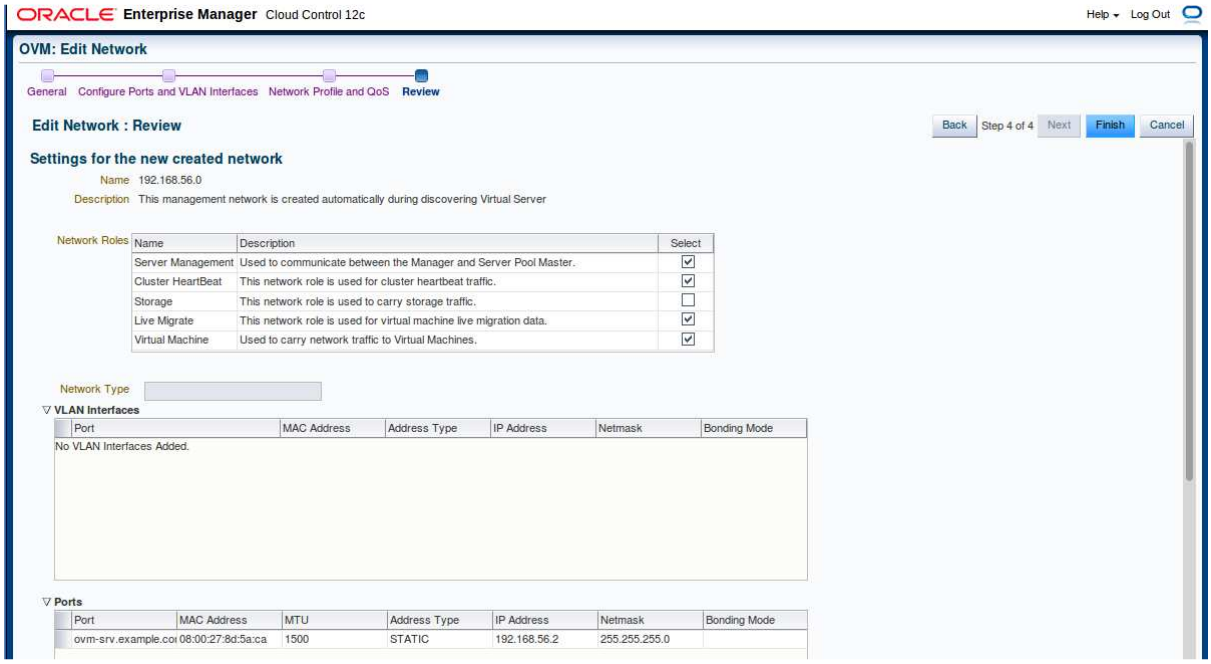
g) In the window "**Edit Network: Network Profile and QoS**":

- Click on icon to select the network type

- Select "**Non Internet Routable**" and click on **Select**
- In the section "**Network Profile**", click on **Add**
- Select profile "**dev_netprofile**" and click **OK**

o Click on **Next**

h) In the window "**Edit Network: Review**", click on **Finish**



i) In the window "**Confirmation**", click on "**Job details…**" to follow the job's progression.

j) Make sure that "**Auto Refresh**" is set to "**15 Seconds**".
Wait for the job to finish (Look for Status "**Succeeded**")

Note: network profile

A network profile is used to automate assignment of IP addresses to guest virtual machines. A network profile is a list of IP address along with host names. It defines a set of IP addresses, their associated host-names, and common networking attributes for them.

During the preparation of the lab, we created a network profile called **dev_netprofile** with the following parameters:

- o IP addresses : **192.168.56.11** to **192.168.56.20** (range of 10 addresses)
- o Netmask : **255.255.255.0**
- o Hostnames : **dev1** to **dev10**
- o Domain name : **example.com**
- o Gateway : **192.168.56.1**
- o DNS : **192.168.56.1**

2.6 CREATE THE VNICS

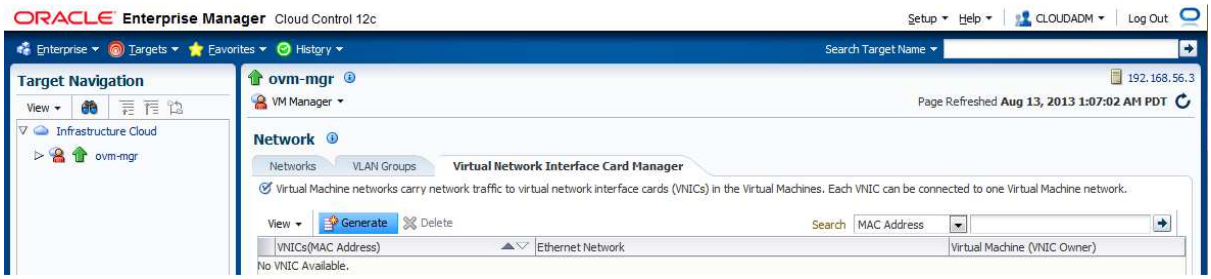
We will now create some VNICs (Virtual Network Interface Cards) that will be used later by the Oracle VM virtual machines.

a) Go back to the "**Infrastructure Cloud**" home page by clicking on **Enterprise**, then **Cloud**, then **Infrastructure Home**

b) Right click on "**ovm-mgr**" then click on "**Manage Network**"

c) Click on tab "**Virtual Network Interface Card Manager**"

d) Click on "**Generate**" to create VNICs.



e) Leave default values for the initial MAC Address (00:21:F6:00:00:00) and for the number of addresses (25) and click on "**Create**"

Note: Since the VirtualBox virtual machines network connections are "host only", they cannot have access to external network, so we can use the same MAC addresses for the VNICs on the different laptops.

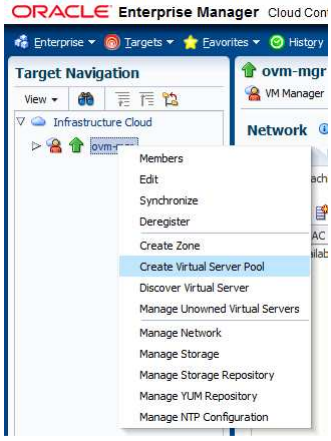
f) In the window "**Confirmation**", click on "**Close**".
(We will save time here by not following job's progression)

2.7 CREATE A SERVER POOL

A **virtual server pool** contains one or more virtual servers and guest virtual machines. A virtual server can belong to one and only one virtual server pool at a time. Guest virtual machines and resources are also associated with the server pools. A **clustered server pool** may contain several virtual servers sharing a storage system. VMs within a clustered server pool may be live migrated from a virtual server to another.

We will now create a non-clustered server pool using the single Oracle VM server we have.
(we cannot create a clustered server pool since we don't have a shared storage system here).

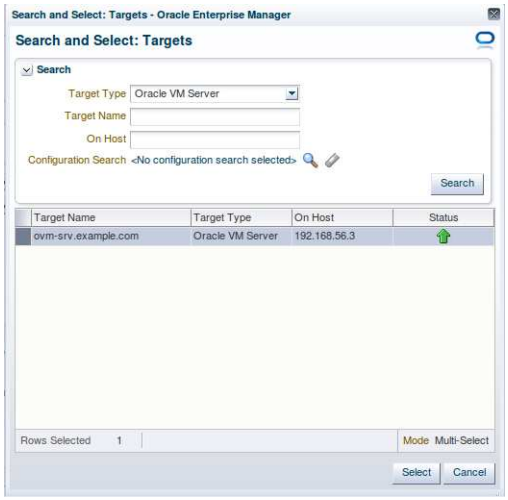
a) In the "**Infrastructure Cloud**" home page, right click on "**ovm-mgr**" and then click on "**Create Virtual Server Pool**"



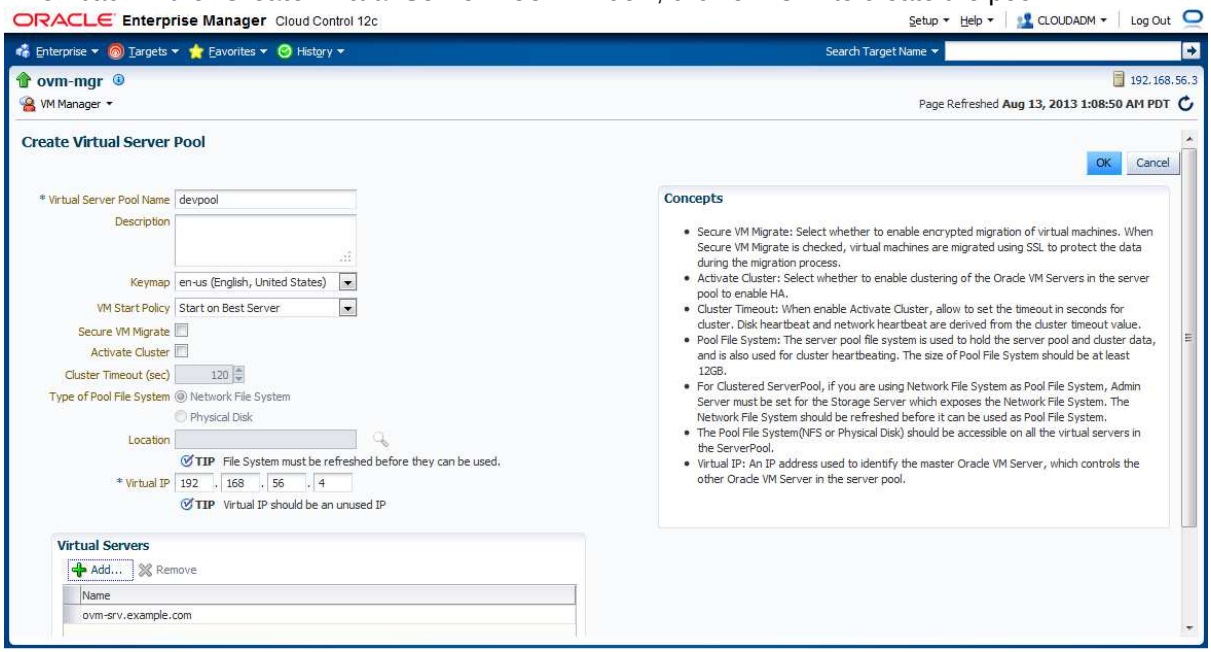
b) In the "**Create Virtual Server Pool**" window, enter the following information
- Virtual Server Pool Name : **devpool**
- Activate Cluster : **<unchecked>** (non-clustered pool)
- Virtual IP : **192.168.56.4**

c) In the "**Virtual Servers**" section, click on Add... to choose the server to add to the pool

d) In the "**Search and Select: Targets**" window, select the target "**ovm-srv.example.com"** and click on "**Select**"



e) When back in the "**Create Virtual Server Pool**" window, click on "**OK**" to create the pool

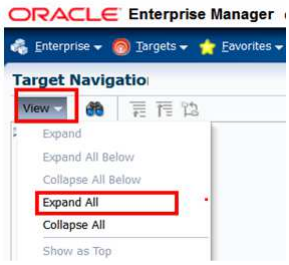


f) In the window "**Confirmation**", click on "**Job details…**" to follow the job's progression.

g) Make sure that "**Auto Refresh**" is set to "**15 Seconds**".
Wait for the job to finish (Look for Status "**Succeeded**")

h) Go back to the "**Infrastructure Cloud**" home page by clicking on **Enterprise**, then **Cloud**, then **Infrastructure Home**

Click on "**View**", "**Expand All**" to see all components

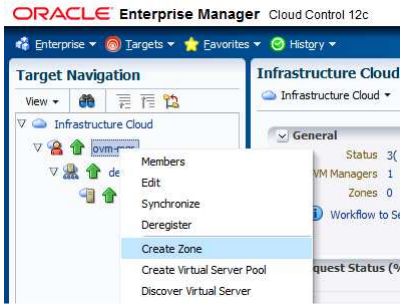


You should now see the newly created pool called "**devpool**"

2.8 CREATE A ZONE

A zone is used to group related cloud resources together. Cloud zones can be created based on location, software lifecycle status, for grouping resources according to a cost center or for metering and chargeback purposes. Typically, a zone can cover a department or possibly a small data center.

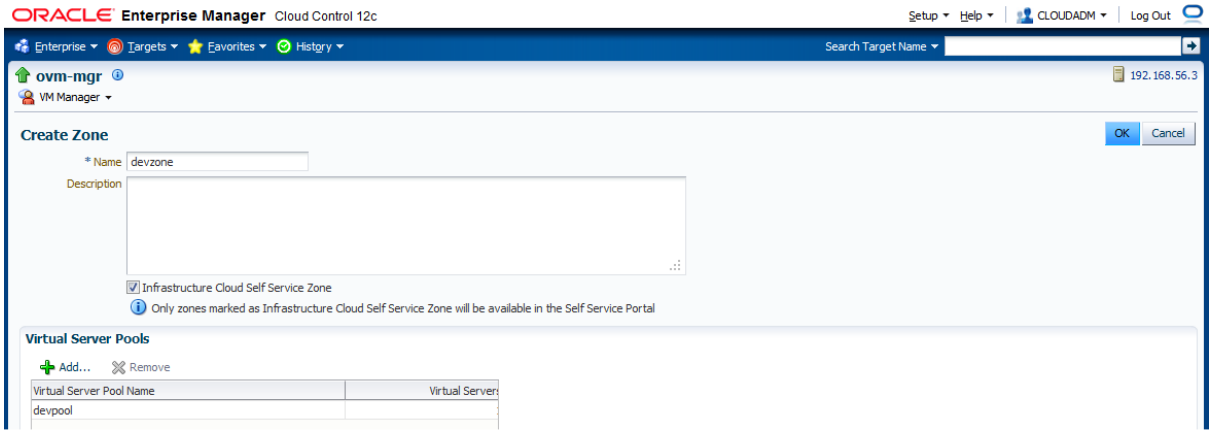
a) In the "**Infrastructure Cloud**" home page, right click on "**ovm-mgr**", then click on "**Create Zone**"



b) In the window "**Create Zone**":
- o Enter **devzone** as the Name
- o Check the box "**Infrastructure Cloud Self Service Zone**"
- o click on Add... to add a pool to the zone
- o In the window "**Select Virtual Server Pools**":
  - Select the line **devpool**

  - Click on **Select**

- o Click on **OK** to actually create the zone



c) In the window "**Confirmation**", click on "**Job details…**" to follow the job's progression.

d) Make sure that "**Auto Refresh**" is set to "**15 Seconds**".
Wait for the job to finish (Look for Status "**Succeeded**")

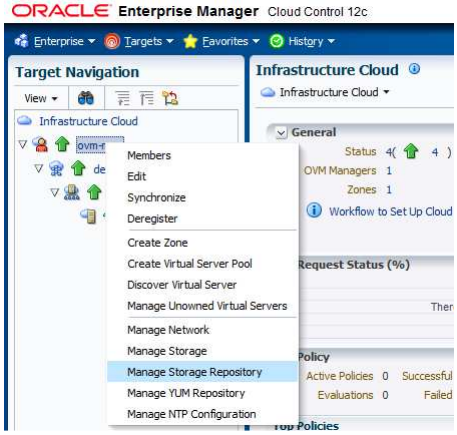
2.9 CREATE A STORAGE REPOSITORY

A **storage repository** is virtual disk space on top of physical storage hardware, made available to the Oracle VM Servers in a server pool or various server pools. It defines where Oracle VM resources may reside. Resources include virtual machines, templates for virtual machine creation, virtual machine assemblies, ISO images, shared virtual disks, and so on.

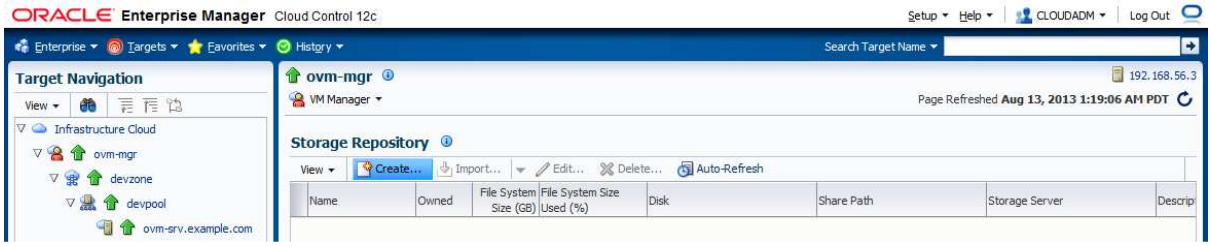
We will create a storage repository for Oracle VM on a local HDD (40 GB) on the Oracle VM Server.
Reminder: when creating repository on physical disk, you can only use unused/unpartionned disks.

a) Go back to the "**Infrastructure Cloud**" home page by clicking on **Enterprise**, then **Cloud**, then **Infrastructure Home**

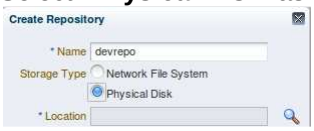
b) Right click on "**ovm-mgr**", then click on "**Manage Storage Repository**"



c) In the "**Storage Repository**" window, click on "**Create**"



d) In the "**Create Repository**" window,
   - Enter "**devrepo**" as the name of the repository
   - Select "**Physical Disk**" as the storage type



   - Click on the icon  next to "**Location**" to choose the physical disk to use
     This will open the "**LUN Selector**" window
   - Select the 40 GB local HDD and click on "**OK**"

- Click on the icon next to "**Server Pool**" to choose the server pool to use
  This will open the "**Search and Select: Targets**" window
- Select the target "**devpool**" and click on "**Select**"

- Finally, click on "**OK**" to create the repository

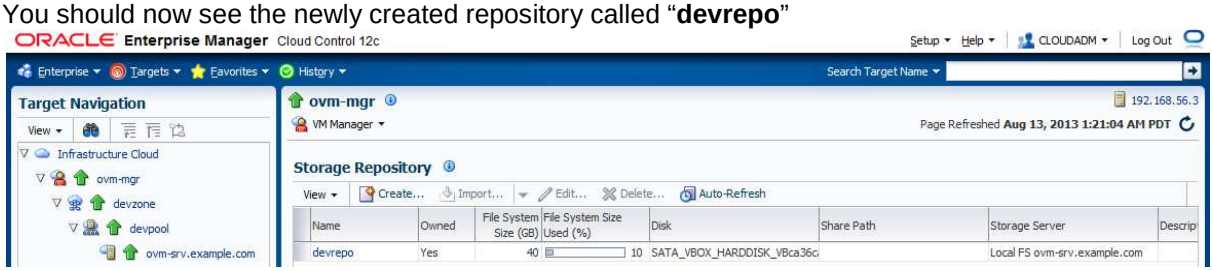
d) In the window "**Confirmation**", click on "**Job details…**" to follow the job's progression.

e) Make sure that "**Auto Refresh**" is set to "**15 Seconds**".
Wait for the job to finish (Look for Status "**Succeeded**")

f) Go back to the "**Infrastructure Cloud**" home page by clicking on **Enterprise**, then **Cloud**, then **Infrastructure Home**

g) Right click on "**ovm-mgr**", then click on "**Manage Storage Repository**"

You should now see the newly created repository called "**devrepo**"



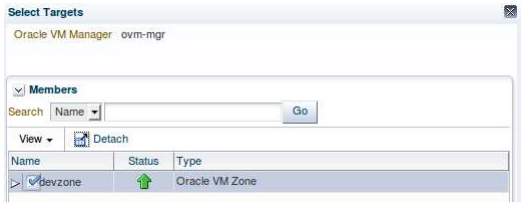
2.10 PRESENT THE REPOSITORY TO THE ORACLE VM SERVER

a) In the window "**Storage Repository**", click on the repository "**devrepo**"

b) In the window "**Storage Repository Details: devrepo**", click on "**Present**"

c) In the window "**Present Servers**", click on "**Select Servers**"

d) In the window "**Select Targets**",
- Click on the checkbox in front of "**devzone**"
- Then click on "**Select**"



e) In the "**Present Servers**" window, you should now see the server "**ovm-srv.example.com**" Click on "**Present**"

f) In the window "**Confirmation**", click on "**Job Details…**" to follow the job's progression.

g) Wait for the job to finish (Look for Status "**Succeeded**")

2.11 IMPORT AN ORACLE VM ASSEMBLY INTO THE STORAGE REPOSITORY

An **assembly** is a collection of virtual machine instances. You can use assemblies provided by Oracle or create your own assemblies using Oracle Virtual Assembly Builder (OVAB).

Self Service Users can only deploy assemblies that are stored in an Oracle VM Storage Repository and in the Enterprise Manager Software Library.

To save time, we will use a very small and very simple template (Oracle Linux 6 Update 4 PVM). This assembly was imported into EM Software Library before the lab. We will now import it to the Storage Repository.

Note: PVM guests. (PVM = ParaVirtualized Machine)
When running Oracle VM Server into a VirtualBox virtual machine, only PVM guest VMs can be created because the Oracle VM Server does not have Intel-VT or AMD-V virtualization extensions.

a) Go back to the "**Infrastructure Cloud**" home page by clicking on **Enterprise**, then **Cloud**, then **Infrastructure Home**

b) Right click on "**ovm-mgr**", then click on "**Manage Storage Repository**"

c) In the window "**Storage Repository**", click on the repository "**devrepo**"

d) In the window "**Storage Repository Details: devrepo**", click on tab "**Assemblies**"

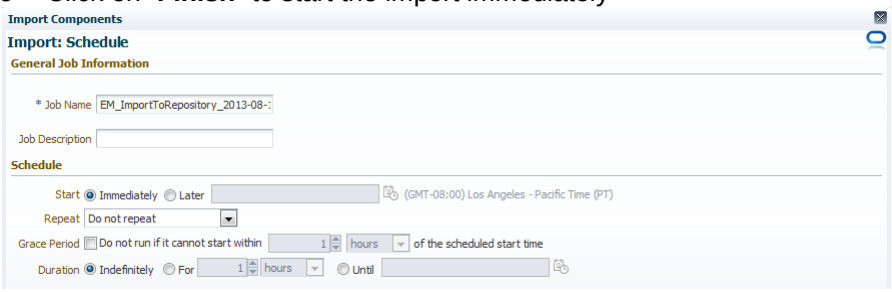
e) Click on "**Import**"

f) In the "**Import: Select Components**" window:
- Leave default value for Source ("**Software Library Component**")
- Leave default value for Storage (**Default**)
- Select line "**OL6u4_x64_PVM**"

- Click on "**Continue**"

Note: Because of the poor performance of the X86 physical machine (laptop), you may get the error "**Unable to retrieve the component type for the Selected Component**". If so, wait for a few seconds and click again on **Continue**. The error should disappear.

g) In the "**Import: Schedule**" window,
   - Leave defaults values
   - Click on "**Finish**" to start the import immediately



h) In the window "**Confirmation**", click on "**Close**".

This import will take a few minutes.

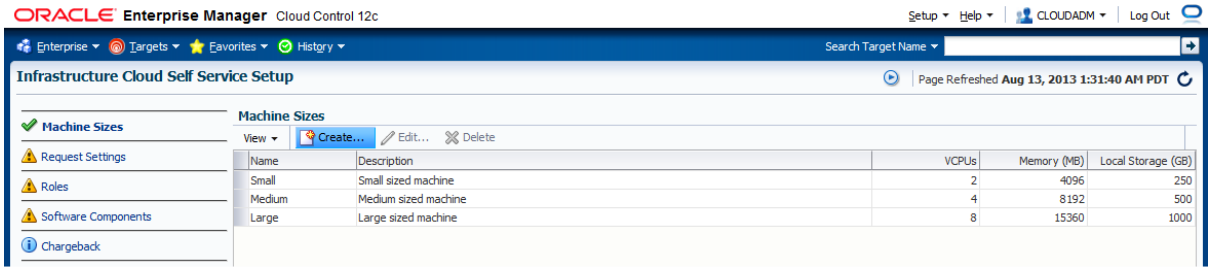
To save time, we will continue the next steps.
The import of the assembly should be finished before we actually use the assembly with the Self Service user.

2.12 SETUP THE INFRASTRUCTURE CLOUD SELF SERVICE

The infrastructure cloud based on Oracle VM is now setup. We will now authorize some Self Service users to deploy their own servers on the zone we created using the assembly we imported.
We will also setup some resource limits to avoid a specific user to consume all resources.

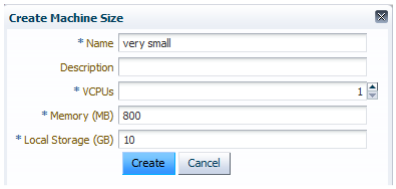
a) Go to the "**Infrastructure Cloud Self Service Setup**" page by clicking on **Setup**, then **Cloud**, then **Infrastructure**

b) In the section "**Machine Sizes**", Click on **Create**



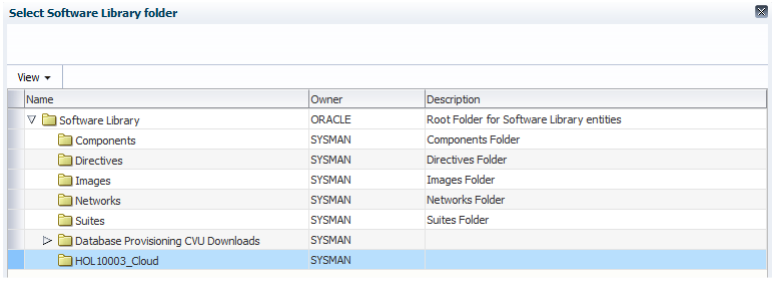
c) In the window "**Create Machine Size**", enter the following information
- Name : **very small**
- VCPUs : **1**
- Memory (MB) : **800**
- Local Storage (GB) : **10** (10GB is the size of a 2nd disk in the VM)

Then click on **Create** (The 1st disk is normally reserved for OS and its size is 11.5GB)

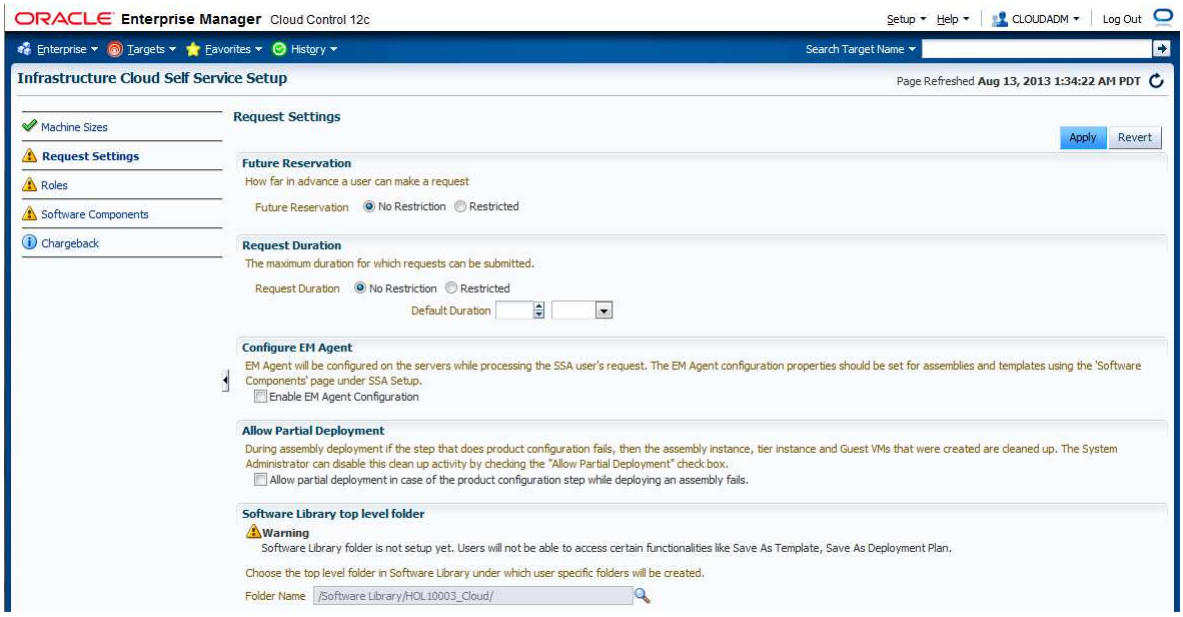


d) In the left panel, click on "**Request Settings**"

e) In the section "**Request Settings**":
- Leave default value (**No restriction**) for "**Future Reservation**"
- Leave default value (**No restriction**) for "**Request Duration**"
- Leave default value (**<unchecked>**) for "**Configure EM Agent**"
- Leave default value (**<unchecked>**) for "**Allow Partial Deployment**"
- Click on icon next to "**Folder Name**" to select the "**Software Library top level folder**"
  - Select line **HOL10003_Cloud**



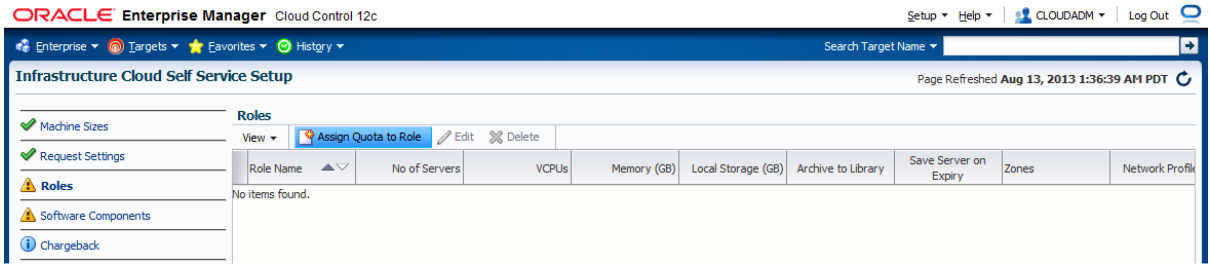
  - Click on **Select**
- Click on **Apply**



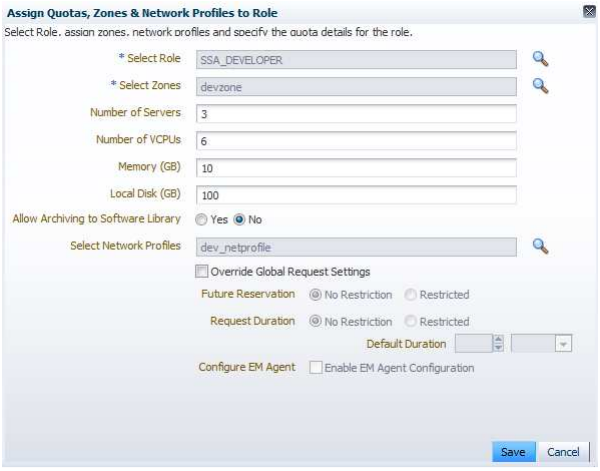
Note: in this lab, we chose not to deploy the Oracle EM Agent on the Guest VMs to save time. In real life, it is recommended to deploy the EM agent.

f) In the left panel, click on "**Roles**"

g) In the section "**Roles**", click on "**Assign Quota to Role**"

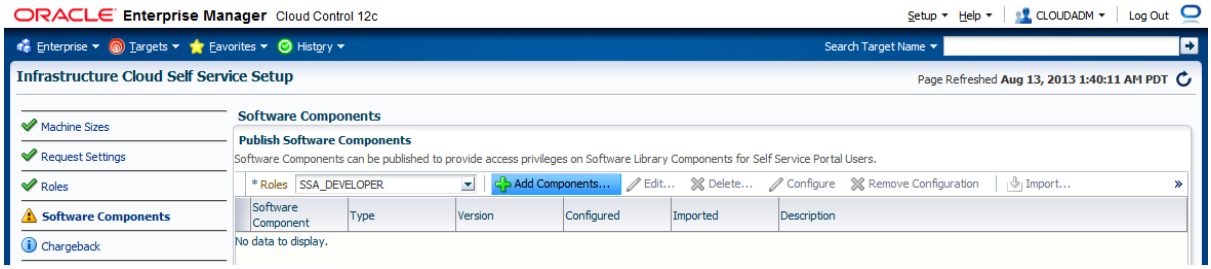


h) In the section "**Assign Quotas, Zones & Network profiles to Role**":
- Select role **SSA_DEVELOPER**
- Select zone **devzone**
- Enter the following information (resource limits for all Self Service Users with role SSA_DEVELOPER)
  - Number of Servers : **3**
  - Number of VCPUs : **6**
  - Memory (GB) : **10**
  - Local Disk (GB) : **100**
- Select Network Profile **dev_netprofile**
- Leave default values for others parameters
- Click on **Save**

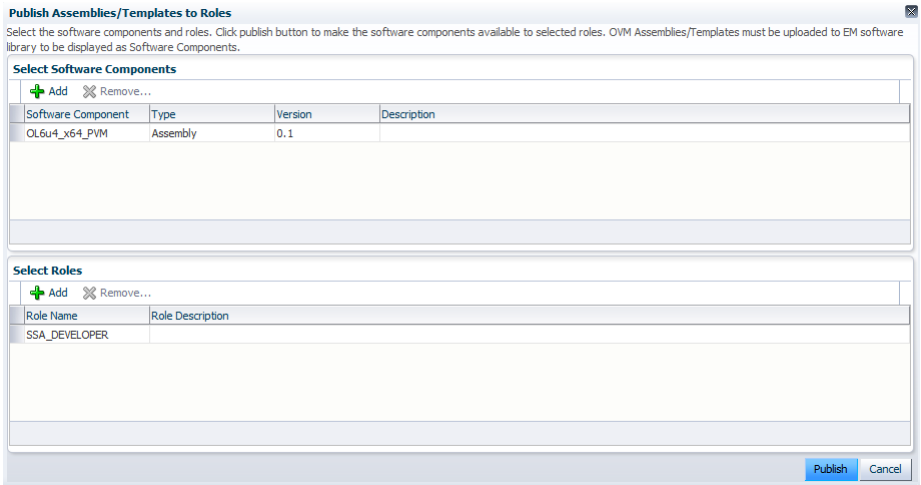


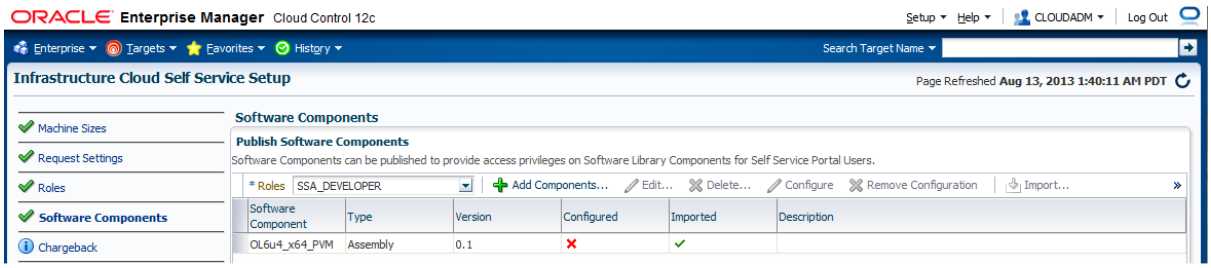
i) In the left panel, click on "**Software Components**"

j) In the section "**Software Components**", click on "**Add Components…**"



o In the window "**Publish Assemblies/Templates to Roles**":
- In the section "**Select Software Components**", click on **Add** and select line "**OL6u4_x64_PVM**"
- In the section "**Select Roles**", click on **Add** and select line "**SSA_DEVELOPER**"
- Click on **Publish**





In this chapter, we granted the following authorizations to all Self Service users with role SSA_DEVELOPER:

- Creation of VMs based on assembly OL6u4_x64_PVM within the zone **devzone**.
- Set resources limits
  - Maximum 3 servers
  - Maximum of 6 vcpus for all servers
  - Maximum of 10 GB of memory for all servers
  - Maximum of 100 GB of disk space for all servers

Reminder: in this lab, we chose not to configure deployment of the Oracle EM Agent on the Guest VMs to save time (red cross in Configured). In real life, it is recommended to deploy the EM agent.

2.13 CONFIGURE CHARGEBACK

Chargeback, as the name implies, is a tool of accountability. The application's primary uses can generally be described as follows:

- Provide resource usage metering by aggregating and normalizing the enormous amount of metric data Enterprise Manager collects.
- Provide IT a means to "charge" a currency amount to internal organizations that use resources.
- Provide internal organizations and users with reports detailing their consumption and charges.

Chargeback has three basic metrics against which to compute resource consumption: CPU usage, and memory and storage allocation. These metrics comprise a **universal charge plan** that can be applied to any target type configured for Chargeback.

While CPU, memory and storage can be used for Chargeback across a variety of target types, there may be situations where target-specific charges are required. In this instance, **an extended charge plan** can be used. The extended charge plan provides greater flexibility to Chargeback administrators, enabling them to:

- Define target type-specific charges
- Define fixed, configuration, and usage-based rates
- Override or adjust universal plan rates

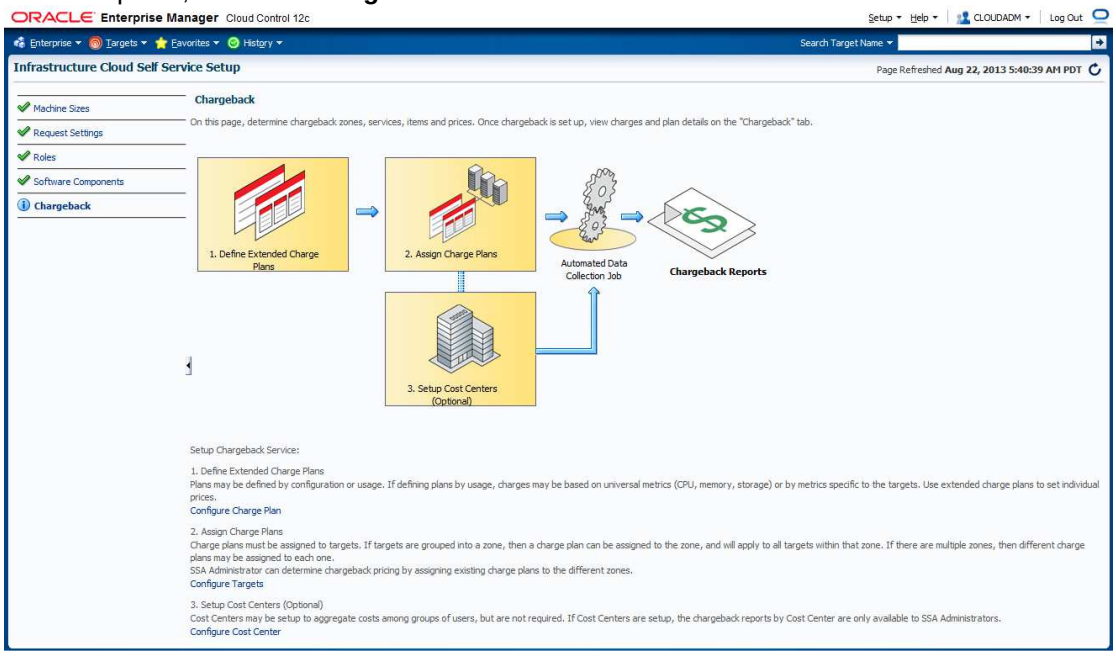
Configuring charge back consists of 3 steps:

1. Configuring the **universal charge plan** (cost per CPU, memory and storage usage)
   Creating **an extended charge plan** if needed.
2. Creating the **cost centers**
3. Assigning the charge plans to the target

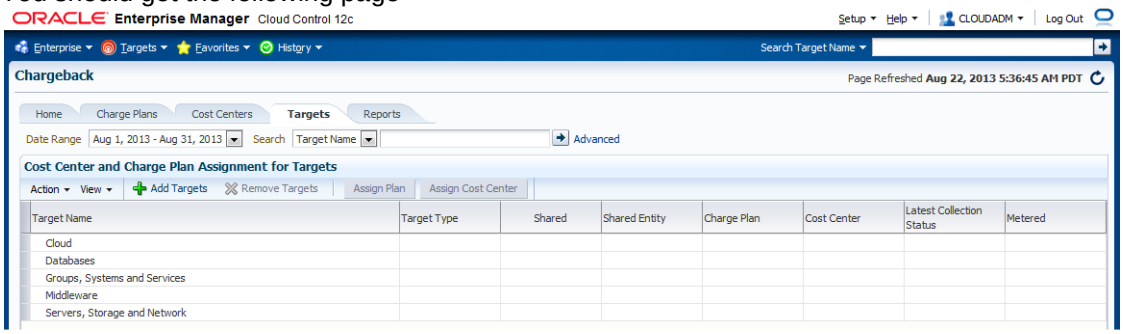
In our case, we already executed steps 1 and 2 to save time and created an extended charge plan called **devplan** and also several cost centers (see Appendix A for details).

We will now assign the extended charge plan **devplan** to the zone **devzone**.

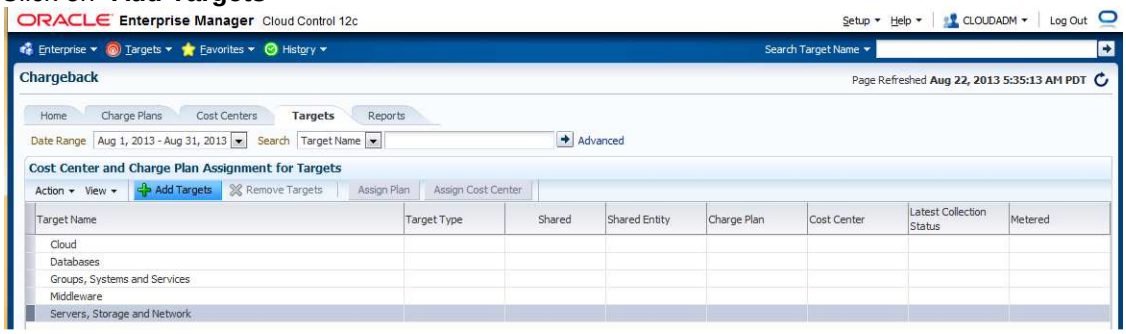
a) In the left panel, click on "**Chargeback**"



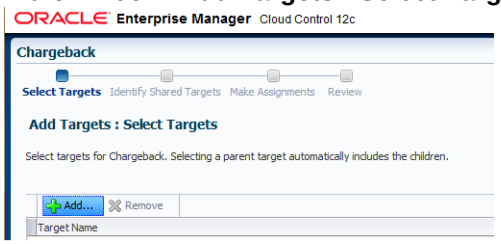
b) Click on "**Configure Targets**"
You should get the following page



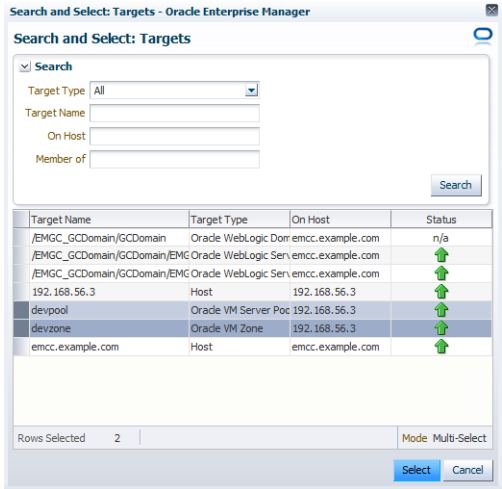
c) Click on "**Add Targets**"



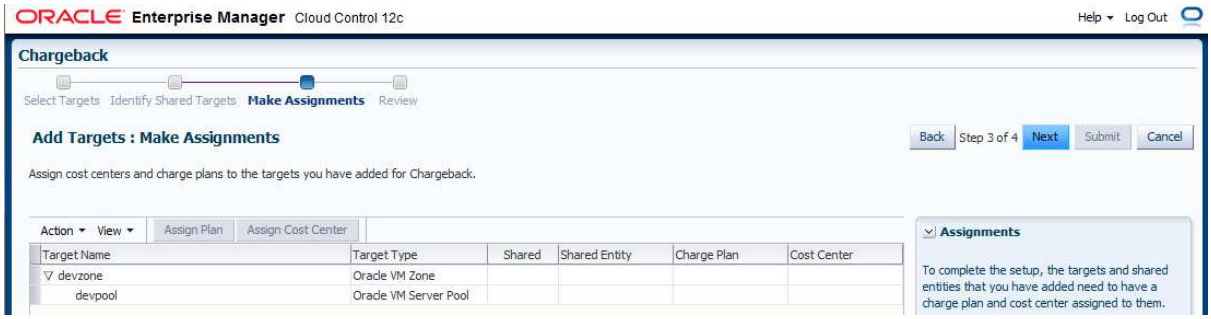
d) In the window "**Add Targets : Select Targets**", click on "**Add**"



e) In the window "**Search and Select: Targets**", select lines **devpool** and **devzone**, then click on Select

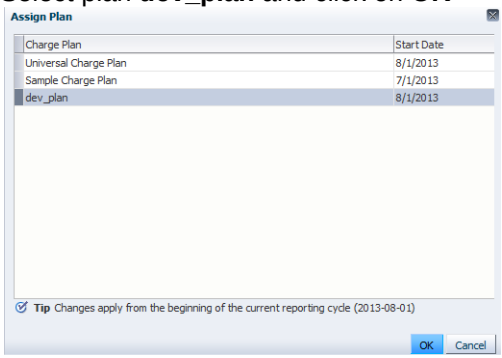


f) Click on "**Next**"

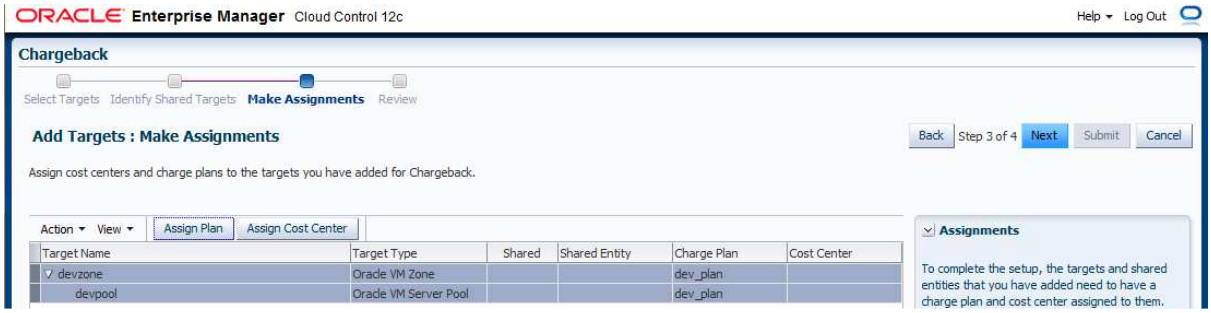


g) Select lines **devzone** and **devpool**, then click on "**Assign Plan**"

h) Select plan **dev_plan** and click on **OK**

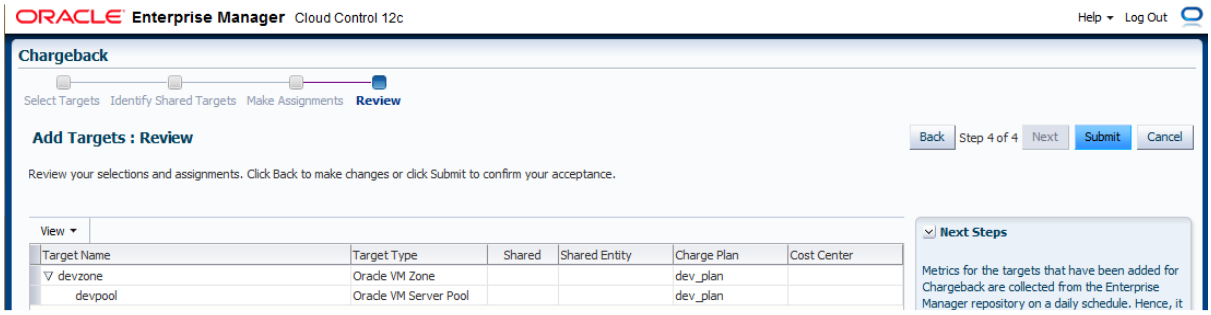


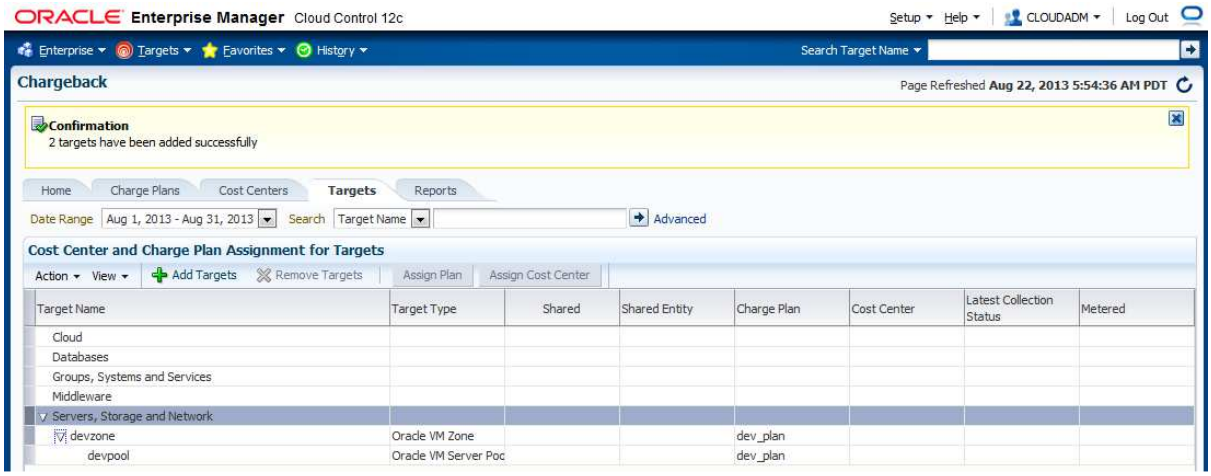
i) Click on **Next**



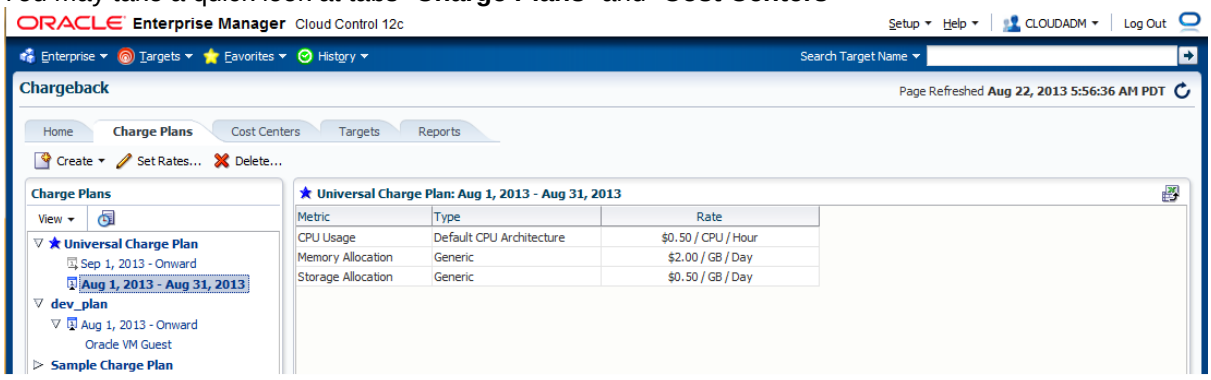
Note: we don't need to assign cost center here, since the cost center will automatically be assigned during guest VMs creation by the self service users.

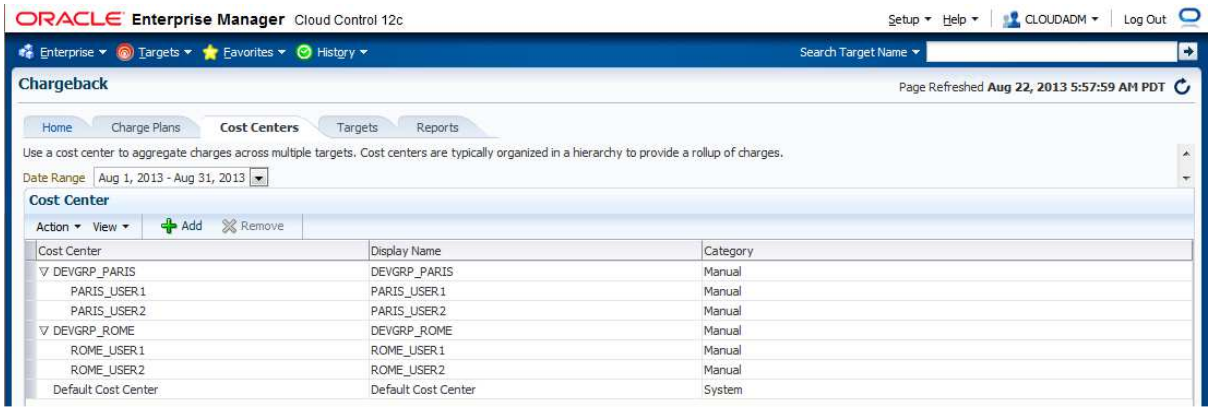
j) Click on **Submit**





k) You may take a quick look at tabs "**Charge Plans**" and "**Cost Centers**"





The setup of the infrastructure cloud environment by the Cloud Administrator is now over.

3 USING THE SELF SERVICE PORTAL

3.1 DEPLOY A GUEST VM FROM THE ORACLE VM ASSEMBLY

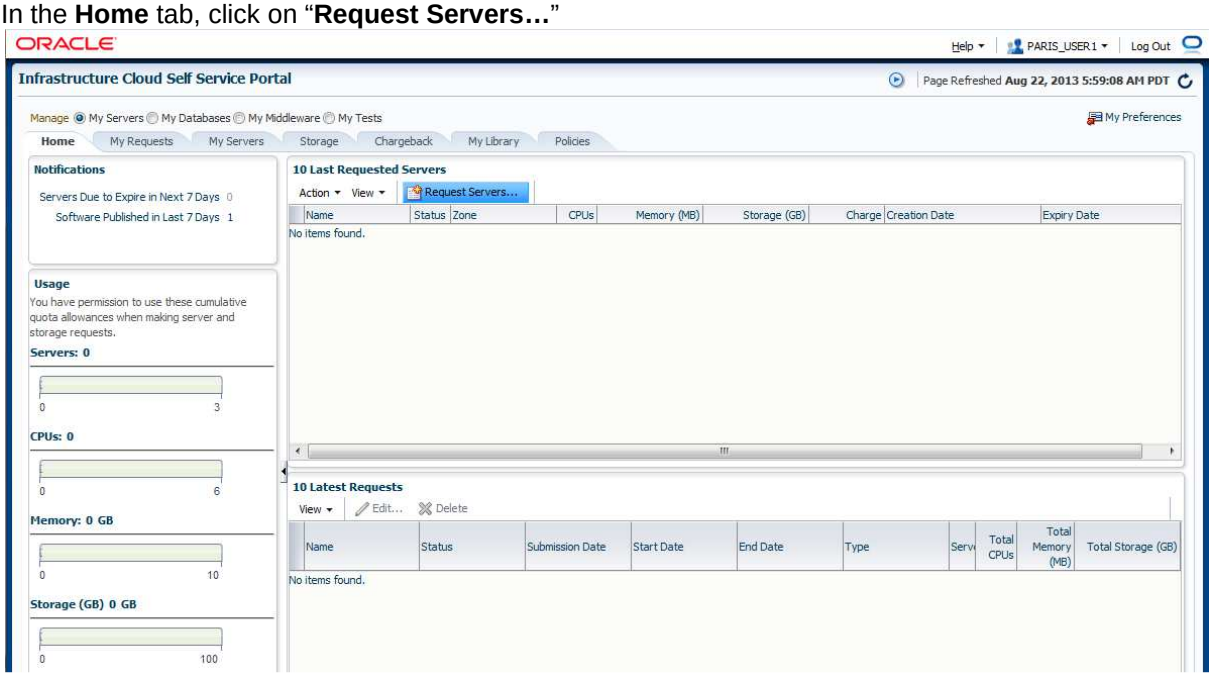
a) Click on "**Log out**" (in the top right corner) to log out the Enterprise Manager Cloud Control 12c console (user **cloudadm**)

b) Log in again with a Self Service User using the following credentials:
- User : **paris_user1**
- Password : **puser1**

You should now see the Infrastructure Cloud Self Service Portal

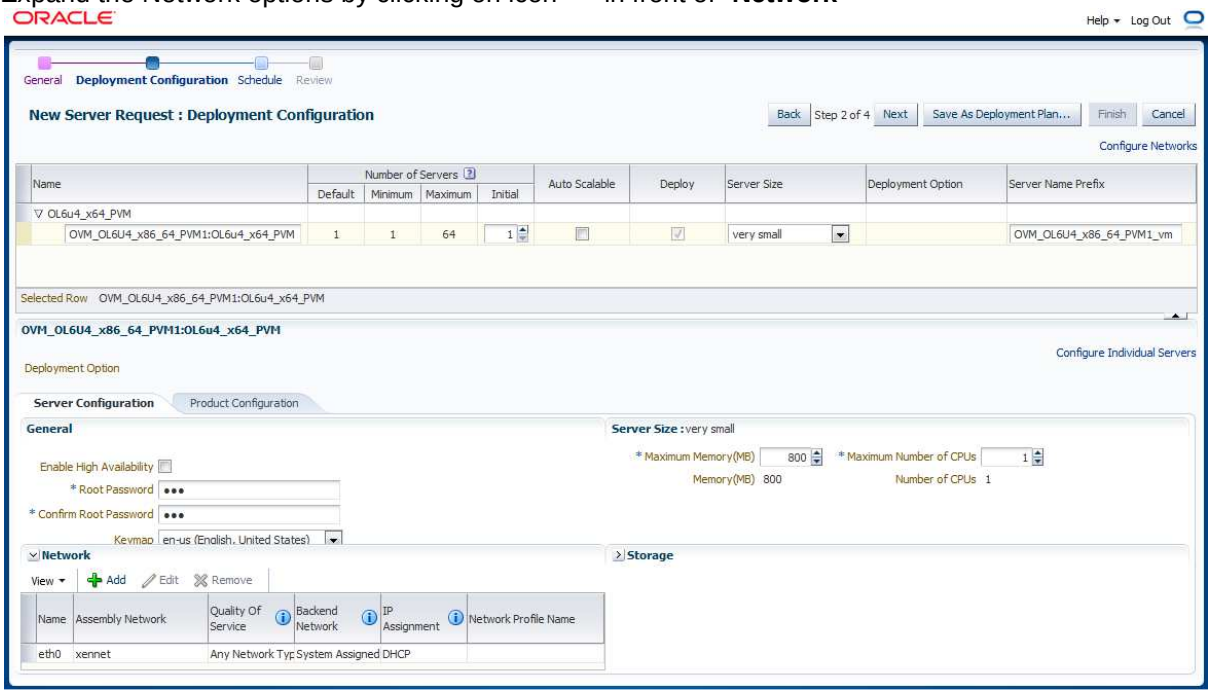
Note: On the left panel (**Usage**), you can see the resource limits previously set by the cloud administrator (3 servers, 6 vcpus, 10 GB of memory and 100 GB of disk space)

c) In the **Home** tab, click on "**Request Servers…**"



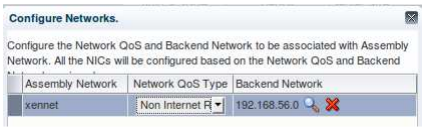
d) In the window "**New Server Request : General**":
- Select zone **devzone**
- Select source **OL6u4_x64_PVM**
- Click on **Next**

e) In the window "**New Server Request : Deployment Configuration**":
- Click on line '**OVM_OL6U4_x86_64_PVM1: OL6u4_x64_PVM**"
- This will display the deployment options
- Enter "**dev**" as the root password for the future VM
- Select "**very small**" in the "**Server Size**" drop down menu
- Expand the Network options by clicking on icon in front of "**Network**"



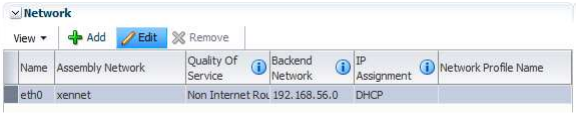
- Click on "**Configure Networks**" (**<u>on the top right corner below the Cancel button</u>**)
- In the window "**Configure Networks**"
  - Select "**Non Internet Routable**" in the drop down menu "**Network QoS Type**"

- Select Backend Network "**192.168.56.0**" by clicking on icon



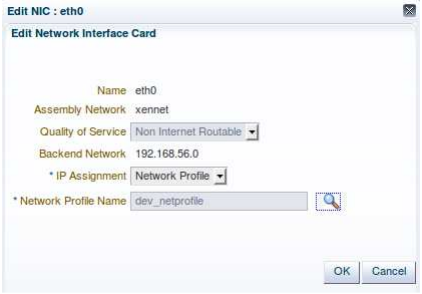
- Click on **OK**

o Select line **eth0** and click on Edit



o In the window "**Edit NIC: eth0**":

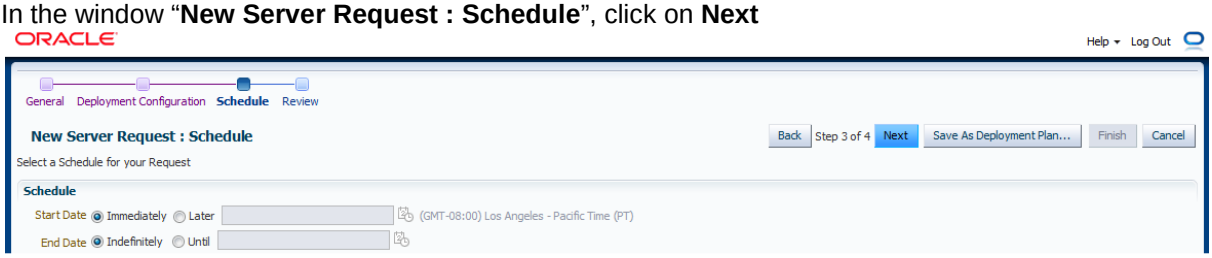
- Select "**Network Profile**" in the "**IP Assignment**" drop down menu
- Select **dev_netprofile** in the "**Network Profile Name**"



- Click on **OK**

o Click on **Next**

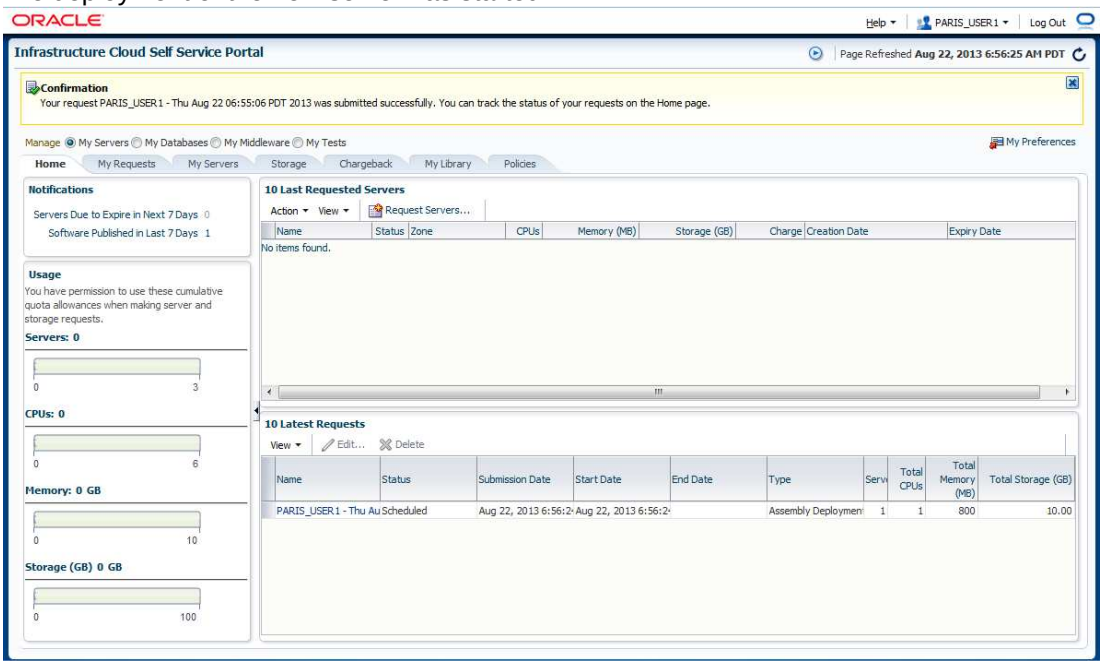
f) In the window "**New Server Request : Schedule**", click on **Next**



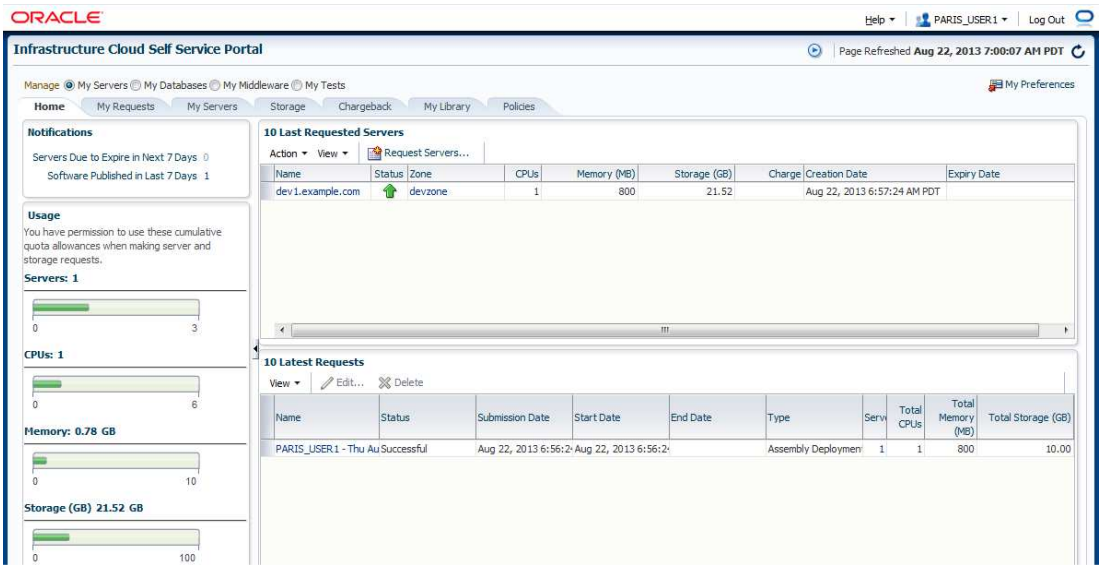
g) In the window "**New Server Request : Review**", click on **Finish**

Note: **Deployment plan**
The user inputs for this VM can be stored in a deployment plan.
This is useful if the user want to request several identical servers.

h) The deployment of the new server has started



Wait for a few minutes for the deployment to complete (You can start reading the next steps) (Click on icon in the top right corner to refresh the page)



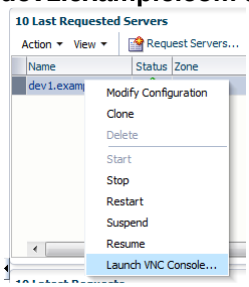
We can see here that a new server called **dev1.example.com** was deployed (hostname allocated as planned in the network profile **dev_netprofile**)

We can also see the current consumption of resources:

- 1 server out of the maximum of 3
- 1 vcpu out of the maximum of 6
- 0.78 GB memory out of the maximum of 10 GB
- 21.5 GB out of the maximum of 100 GB
  (11.5 GB system disk + 10 GB additional disk for applications)

3.2 GET THE VM CONSOLE

a) In the "**Infrastructure Cloud Self Service Portal**", right click on the server **dev1.example.com** and click on "**Launch VNC Console**"

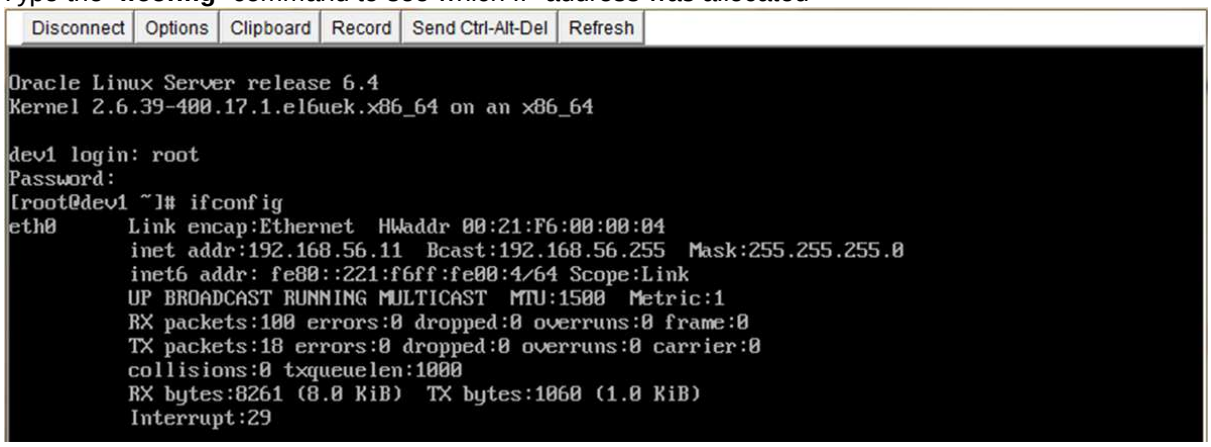


b) Ignore security warnings (accept)

c) A new window will open and display the console of the guest VM.

d) Log in on the console using login **root** and password "**dev**"

e) Type the "**ifconfig**" command to see which IP address was allocated



The allocated IP address is **192.168.56.11** as planned in the network profile **dev_netprofile** (range 192.168.56.11 to 192.168.56.20)

IMPORTANT: open VNC Console with Oracle Java Web Start

The VNC console is actually a `.jnlp` file and must be executed the Java `javaws` binary. In the Oracle OpenWorld lab, we installed Oracle Java JRE 7 (update 25) on the students laptops, and configured Firefox web browser to open the `.jnlp` files with `/usr/java/jre1.7.0_25/bin/javaws`.

If running this lab at home of office, you will have to do the same (install Oracle JRE 7 and configure your web browser).

The `javaws` file provided by other Java distributions (ex: OpenJDK) may not work correctly.

Congratulations !

You have successfully created your first virtual machine in your IaaS private cloud using Oracle Enterprise Manager Cloud Control 12c and Oracle VM.

You could now execute others operations.

For instance, as the cloud administrator (user CLOUDADM)

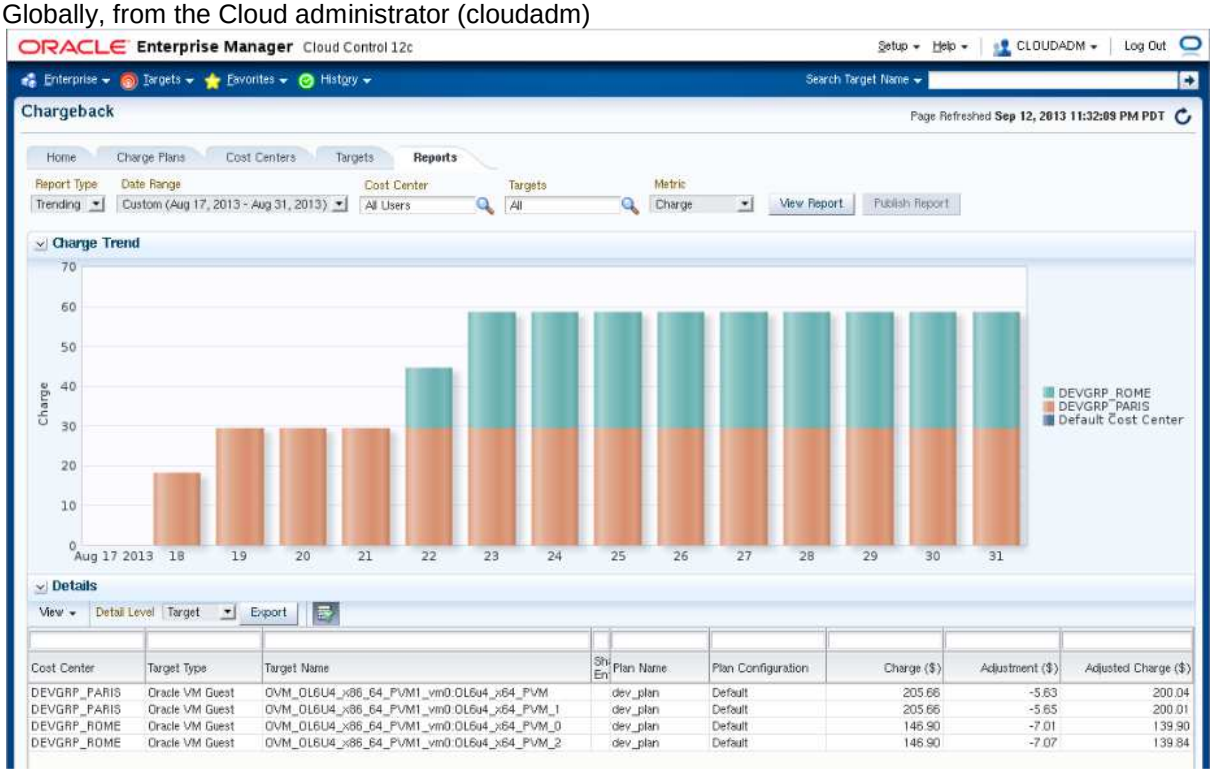
- Import other Oracle VM assemblies/templates
- Import ISO image files for OS
- Add other Oracle VM Servers
- Use a shared storage system (Oracle ZFS Storage Appliance for instance) to create a clustered pool (pool with several Oracle VM servers using a share storage repository)
- Configure the Self Service Portal to automatically install Enterprise Manager agent on the new virtual machines.
- Display Chargeback reports
- …

For instance, as a self service user (users PARIS_USER1, PARIS_USER2, ROME_USER1 or ROME_USER2)

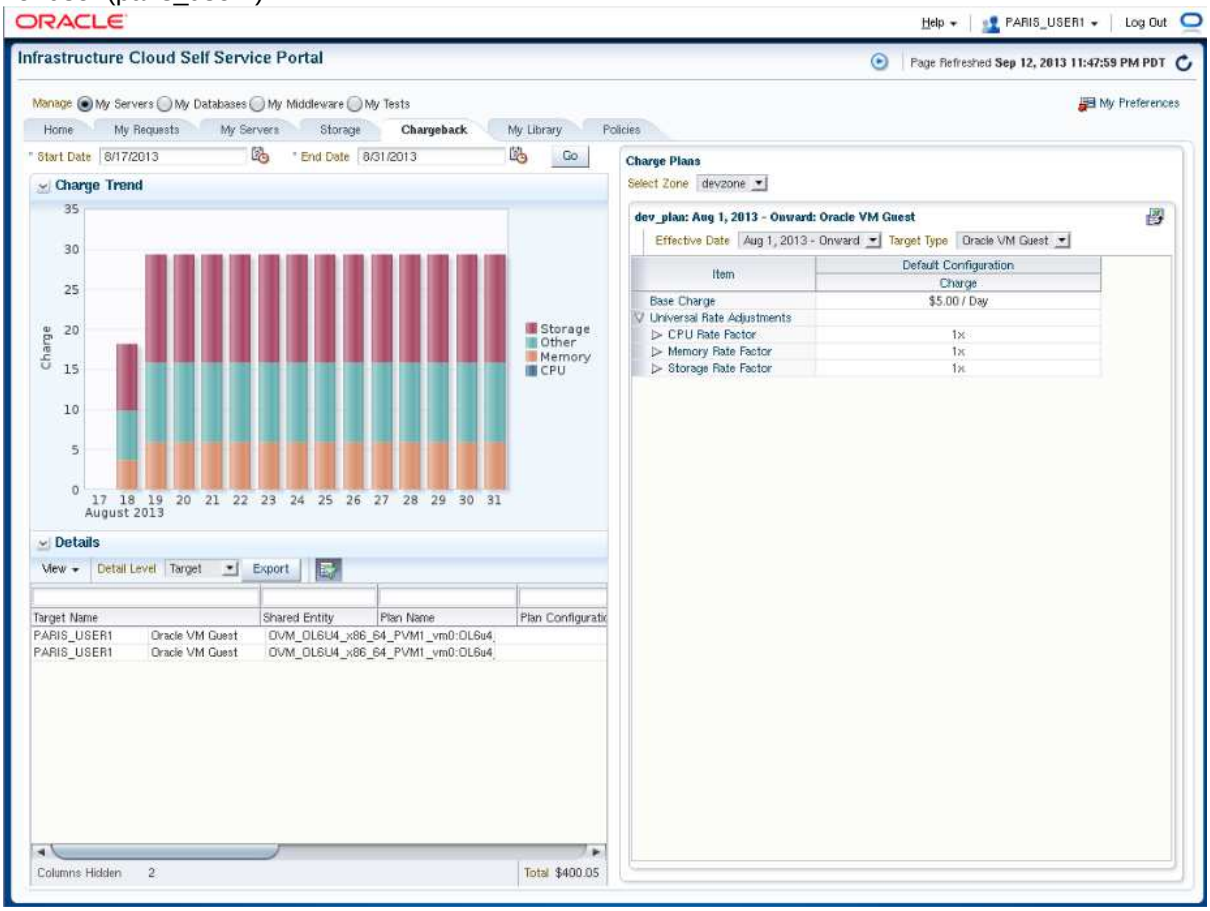
- Create other virtual machines
- Start or Stop or Modify virtual machines (add
- Modify virtual machines (add/remove cpu/memory/storage)
- Live migrate virtual machines between different Oracle VM servers in the same clustered pool
- …

You can find below examples of Chargeback reports

Globally, from the Cloud administrator (cloudadm)



Per user (paris_user1)



We hope you enjoyed this hands on lab and your trip in San Francisco at Oracle OpenWorld 2013.

3.3 END OF LAB: LAB CLEANING

When you have finished this lab, we would appreciate if you cloud stop the 3 VirtualBox virtual machines (Oracle VM Server, Oracle VM Manager and Oracle Enterprise Manager) to save time for the next labs taking place in this room.

To do that, execute the following actions for each VirtualBox virtual machine:

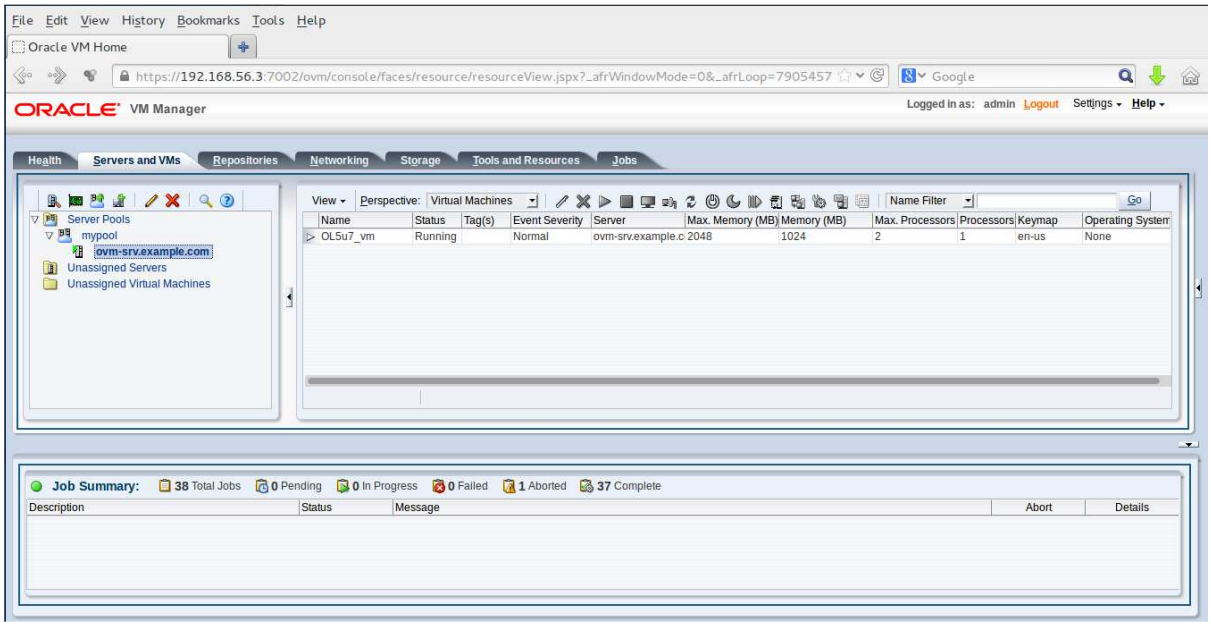
- Select the 3 virtual machines the in Oracle VM VirtualBox console
- Click on **Machine**, **Close**, and then "**Power off**"

3.4 NOTE: ORACLE VM MANAGER CONSOLE

If you already know Oracle VM Manager, or if you are just curious, you can connect to Oracle VM Manager (https://192.168.56.3:7002/ovm/console) using User Name **admin** and password **Welcome1**.

You will find that all operations executed from EM12c (network config, pool, repository, template…) were also executed in Oracle VM Manager.

This is normal since EM12c uses Oracle VM Manager to manage Oracle VM.



When you use EM12c, it is recommended not to execute actions in Oracle VM Manager, since those actions will not be reflected in EM12c.

4 APPENDIX A: PREPARATION OF ENVIRONMENT BEFORE THE LAB

4.1 PURPOSE

This section explains how to prepare the environment to run this lab. It is useful if you want to run this lab at home or office.

The first step is to find an X86 machine (server, desktop or labtop) with the required resources (4 vcpus, 16 GB of ram, and 40 GB of disk space) and install Oracle VM VirtualBox on it.

Then, there are 3 servers to install (3 VirtualBox virtual machines in fact):

- The Oracle VM Server
- The Oracle VM Manager
- The Enterprise Manager 12c

4.2 DOWNLOAD REQUIRED BINARIES

This section lists the required binaries and explains how to download them.

For your X86 machine:

1. **Oracle Java Runtime Environment (JRE) 7**
   Download the version for your OS from http://java.com/en/download/manual.jsp

2. **Oracle VM VirtualBox 4.2.x binaries** (4.2.16 during writing of this document)
   Download the version for your OS from https://www.virtualbox.org/wiki/Downloads
   Filename: For Oracle/Redhat Linux 6 64bits: **VirtualBox-4.2-4.2.16_86992_el6-1.x86_64.rpm** (size **69 MB**)
   For Microsoft Windows: **VirtualBox-4.2.16-86992-Win.exe** (size **95 MB**)
   For others…

3. **Oracle VM VirtualBox extension Pack 4.2.x**
   Download from https://www.virtualbox.org/wiki/Downloads (same file for all OSes)
   Direct link: http://download.virtualbox.org/virtualbox/4.2.16/Oracle_VM_VirtualBox_Extension_Pack-4.2.16-86992.vbox-extpack
   Filename: **Oracle_VM_VirtualBox_Extension_Pack-4.2.16-86992.vbox-extpack** (size **11 MB**)

For Oracle VM Server:

4. **VirtualBox template for Oracle VM Server 3.2.4**
   Download from http://www.oracle.com/technetwork/server-storage/vm/template-1482544.html
   Direct link: http://download.oracle.com/otn/vm/OracleVMServer3.2.4-b525.ova
   Filename: **OracleVMServer.3.2.4-b525.ova** (size **249 MB**)

For Oracle VM Manager:

5. **VirtualBox template for Oracle VM Manager 3.2.4**
   Download from http://www.oracle.com/technetwork/server-storage/vm/template-1482544.html
   Direct link: http://download.oracle.com/otn/vm/OracleVMManager3.2.4-b524.ova
   Filename: **OracleVMManager.3.2.4-b524.ova** (size **2.75 GB**)

6. **Oracle VM Assembly for Oracle Linux 6 update 4 (PVM 64 bits)**
   Download for Oracle E-delivery Linux/Oracle VM platform (https://edelivery.oracle.com/oraclevm)
   Look for "Oracle VM 3 Templates (OVF) for Oracle Enterprise Linux 6 Media Pack for x86_64 (64 bit)" or **B65790**
   and "Oracle Linux 6 Update 4 template (OVF) - PV x86_64 (64 bit)"
   Filename: **V38315-01.zip** (size **460 MB**)

7. **Oracle Linux 5 update 7 iso image**
   (Needed to add the sysstat package to the Oracle VM Manager server)
   Download for Oracle E-delivery Linux/Oracle VM platform (https://edelivery.oracle.com/linux)
   Look for "Oracle Linux Release 5 Update 7 Media Pack for x86_64 (64 bit)" or **B64448**
   and "Oracle Linux Release 5 Update 7 for x86_64 (64 Bit)"
   Filename: **V27570-01.zip** (size **3.5 GB**)

For Oracle Enterprise Manager Cloud Control 12c:

8. **Oracle VM VirtualBox template for Oracle Enterprise Manager 12c release 3 (12.1.0.3)**
   Download for Oracle E-delivery Linux/Oracle VM platform
   Direct link: https://edelivery.oracle.com/EPD/Download/get_form?egroup_aru_number=16621066
   Filenames: **V38990-01.zip** (size **4.0 GB**)
   V38991-01.zip (size **4.1 GB**)
   V38992-01.zip (size **3.8 GB**)

4.3 INSTALLATION OF ORACLE VM VIRTUALBOX

1. Find an x86 machine (desktop, laptop, server) matching the following prerequisites:
   - At least 16 GB of RAM
   - X86 64 bits CPU (Intel or AMD) with at least 4 cpus threads and with Virtualization Extensions (Intel VT or AMD-V)
   - OS supported by VirtualBox (Microsoft Windows, misc. Linux distributions, oracle Solaris 10 or 11, Apple Mac OSX)
   - 40 GB of disk space

2. Install the Oracle Java JRE on your OS (javaws binary needed to get the VNC console)

3. Install the Oracle VM VirtualBox 4.2.x binaries on your x86 machine

4. Start the Oracle VM VirtualBox console

5. If not already created, create a host only network in VirtualBox using the defaults IP information (IPv4 address 192.168.56.1 and Netmask 255.255.255.0 for your x86 machine).
   (go to File, Preferences, Network)

6. Choose the folder you want to use to store the virtual machines files.
   (go to File, Preferences, General, Default Machine Folder)

7. Install the Oracle VM VirtualBox extension Pack
   (go to File, Preferences, Extensions)

4.4 INSTALLATION OF ORACLE VM SERVER

1. In the Oracle VM VirtualBox console, import the VM from the Oracle VM Server template
   - File
   - Import Appliance
   - Select the file **OracleVMServer.3.2.4-b525.ova**
   - Next
   - Change the name of the Virtual System 1 from "**Oracle VM Server 3.2.4-b525**" to "**hol10003_ovm_srv"**
   - Import

2. Modify the settings of the virtual machine "**hol10003_ovm_srv**"
   - Set Amount of memory to **2048MB** (System)
   - Configure the network (Network, Adapter 1, Attached to Host only Adapter)

3. Start the virtual machine "**hol10003_ovm_srv**"

4. Configure the virtual machine (in the VM console)
   - Configure network
     - IP address : **192.168.56.2**
     - Netmask : **255.255.255.0**
     - Gateway : **192.168.56.1**
     - DNS server : **192.168.56.1**
       (we will not use DNS, but we have to give an IP address here)
     - Hostname : **ovm-srv.example.com**
   - Wait for the end of boot

5. Open a terminal on your Unix/Linux x86 machine and connect to the VM with ssh (you can use Putty on Microsoft Windows)
   `$ ssh root@192.168.56.2` (password is **ovsroot**)

6. Add the following lines to the /etc/hosts file
```
192.168.56.3 ovm-mgr.example.com ovm-mgr
192.168.56.5 emcc.example.com emcc
192.168.56.1 os.example.com os
```

4.5 INSTALLATION OF ORACLE VM MANAGER

1. In the Oracle VM VirtualBox console, import the VM from the Oracle VM Manager template
   - File
   - Import Appliance
   - Select the file **OracleVMManager.3.2.4-b524.ova**
   - Next
   - Change the name of the Virtual System 1 from "**Oracle VM Manager 3.2.4-b524**" to "**hol10003_ovm_mgr"**
   - Import

2. Modify the settings of the virtual machine "**hol10003_ovm_mgr**"
   - Configure the network (Network, Adapter 1, Attached to Host only Adapter)
   - Memory: Leave **4096 MB** (you need at least 3072 MB)

3. Start the virtual machine "**hol10003_ovm_mgr**"

4. Configure the virtual machine (in the VM console)
   - Set root password to **ovsroot**
   - Configure network
     - IP address : **192.168.56.3**
     - Netmask : **255.255.255.0**
     - Gateway : **192.168.56.1**
     - DNS server : **192.168.56.1**
       (we will not use DNS, but we have to give an IP address here)
     - Hostname : **ovm-mgr.example.com**
   - Wait for the end of boot

5. Open a terminal on your Unix/Linux x86 machine and connect to the VM with ssh (you can use Putty on Microsoft Windows)
   ```
   $ ssh root@192.168.56.3
   ```

6. Add the following lines to the file /etc/hosts
   ```
   192.168.56.5    emcc.example.com emcc
   192.168.56.2    ovm-srv.example.com ovm-srv
   192.168.56.1    os.example.com os
   ```

7. Create the directory where we will installed the EM12c agent later
   ```
   # mkdir /u01/em_agent
   # chown oracle /u01/em_agent
   ```

8. Set a password to the **oracle** unix user
   ```
   # passwd oracle
   ```
   (Choose **oracle** as the password)

9. Install the sysstat package (needed by Oracle Enterprise Manager agent)
   - Get the Oracle Linux 5 Update 7 (64 bits) DVD or iso file
   - Look for file **sysstat-7.0.2-11.el5.x86_64.rpm** in the **Server** directory
   - Copy this file to your VM in /var/tmp
   - Install the RPM
     ```
     # rpm -ivh /var/tmp/sysstat-7.0.2-11.el5.x86_64.rpm
     # rm /var/tmp/sysstat-7.0.2-11.el5.x86_64.rpm
     ```

10. Configure Oracle VM Manager keystore (to have a secure connection with EMCC)

    ```
    # cd /u01/app/oracle/ovm-manager-3/bin
    ```

```
# ./secureOvmmTcpGenKeyStore.sh
Generate OVMM TCP over SSH key store by following steps:
Enter keystore password: Store00
Re-enter new password: Store00
What is your first and last name?
  [Unknown]:  oow
What is the name of your organizational unit?
  [Unknown]:  oow
What is the name of your organization?
  [Unknown]:  oow
What is the name of your City or Locality?
  [Unknown]:  oow
What is the name of your State or Province?
  [Unknown]:  oow
What is the two-letter country code for this unit?
  [Unknown]:  oow
Is CN=oow, OU=oow, O=oow, L=oow, ST=oow, C=oow correct?
  [no]:  yes

Enter key password for <ovmm>
       (RETURN if same as keystore password):

# ./secureOvmmTcp.sh
Enabling OVMM TCP over SSH service

Please enter the Oracle VM manager user name: admin

Please enter the Oracle VM manager user password: Welcome1

Please enter the password for TCPS key store : Store00

The job of enabling OVMM TCPS service is committed, please restart OVMM to
take effect.

# service ovmm stop
# service ovmm start

# cd ..
# mkdir keystore
# chown oracle ./keystore
# /u01/app/oracle/java/bin/keytool -keystore /u01/app/oracle/ovm-manager-
3/ovmmCoreTcps.ks -exportcert -alias ovmm -file ./keystore/export.jks
Enter keystore password:  Store00
Certificate stored in file <./keystore/export.jks>
```

11. Stop here in the Oracle VM Manager preparation
    Go to Oracle Enterprise Manager preparation
    Come back when Enterprise Manager Server is ready

12. Deploy Enterprise Manager Agent on the Oracle VM Manager server
    - Go to the Enterprise Manager Cloud Control 12c Console (open URL https://192.168.56.5:7799/em in your Web browser)
    - Log in with user **sysman** and password **welcome1**.
    - Click on **Setup, Add Target**, **Add Target Manually**
    - Select "**Add host target**" and click on "**Add Host…**"
    - Click on Add and enter the following information
      - Host : **192.168.56.3**
      - Platform : **Linux x86-64**

- Click on "**Next**"
- Ignore Warning about Fully qualified hostnames.
- In the window "**Add Host Targets: Installation Details**", enter the following information, then click on "**Next**"
  - Installation Base Directory : **/u01/em_agent**
  - Instance Directory : **/u01/em_agent/agent_inst**
  - Named Credential
    - Click on "+" to add a new credential
      - Username : **oracle**
      - Password : **oracle**
      - Save As : **oracle**
    - Click on **OK**
  - Privileged Delegation Setting : **<empty>**
- In the window "**Add Host Targets: Review**", click on "**Deploy Agent**".
- Wait for the agent to be deployed **(several minutes)**
- Execute the indicated scripts as root on the Oracle VM Manager to finish deployment

```
$ ssh root@192.168.56.3
# /u01/em_agent/core/12.1.0.3.0/root.sh
# /u01/app/oraInventory/orainstRoot.sh
```

13. Install the "**Oracle Virtualization**" plug-in on the EM Agent just deployed
    - In the Enterprise Manager Cloud Control Console
    - Click on **Setup**, **Extensibility**, **Plug-ins**
    - Expand "**Servers, Storage and Network**"
    - Select "**Oracle Virtualization**"
    - Click on "**Deploy On**", "**Management Agent…**"
    - Click on **Continue**
    - Select the line "**192.168.56.3**" and Click on **Continue**
    - Click on **Next**
    - Click on **Deploy**

14. Finish configuring the secure connection between Oracle VM Manager and Oracle Enterprise Coud Control

```
$ ssh oracle@192.168.56.3
oracle$ cd /u01/app/oracle/ovm-manager-3
oracle$ /u01/em_agent/agent_inst/bin/emctl secure add_trust_cert_to_jks
-trust_certs_loc ./keystore/export.jks -alias ovmm
Oracle Enterprise Manager Cloud Control 12c Release 3
Copyright (c) 1996, 2013 Oracle Corporation.  All rights reserved.
Password: welcome    (default password)

Message   :   Certificate was added to keystore
ExitStatus: SUCCESS
```

15. Enable HTTP server and copy the Oracle Linux 6 update 4 Oracle VM template
    - Unzip the file **V38315-01.zip** you previously downloaded
      This will create a file called **"OVM_OL6U4_x86_64_PVM.ova"**
    - The Oracle VM Manager virtual machine has already an Apache HTTP server configured and running. The "Document Root" directory is **/var/www/html**
    - Create a subdirectory called "**files**" in **/var/www/html**

```
# cd /var/www/html
# mkdir files
# chmod 777 files
```

- Copy the file **OVM_OL6U4_x86_64_PVM.ova** in it (use scp or WinSCP)

```
# ls -lh
total 490M
-rw-r--r-- 1 root root 490M aug 12 07:47 OVM_OL6U4_x86_64_PVM.ova
```

16. Change the default timeout for VNC consoles (set 300 instead of 30 seconds)
    When opening VNC console for Oracle VM guest for the first time, there are several warnings about security. It can take more than 30 seconds to read them and close the windows.

```
# cd /u01/app/oracle/ovm-manager-3/ovm_utils
# ./ovm_managercontrol -u admin -p Welcome1 -h localhost -T 300 -c
setsessiontimeout 300
```

4.6 INSTALLATION OF ORACLE ENTERPRISE MANAGER CLOUD CONTROL 12C

1. Create the Oracle Enterprise Manager Cloud Control template file from the 3 downloaded zip files.
   - Unzip the files **V38990-01.zip, V38991-01.zip and V38992.zip.**
   - This will create 3 files with .ova extension
   - Concatenate the 3 .ova files to create a single .ova file
     `$ cat EM12cR3*.ova > EM12cR3.ova`
   - This will create a 12 GB file called **EM12cR3.ova**

2. In the Oracle VM VirtualBox console, import the VM from the Oracle Enterprise Manager Cloud Control template
   - File
   - Import Appliance
   - Select the file **EM12cR3.ova**
   - Next
   - Change the name of the Virtual System 1 to "**hol10003_emcc**"
   - Import

3. Modify the settings of the virtual machine "**hol10003_emcc**"
   - Configure the network (Network, Adapter 1, Attached to Host only Adapter)
   - Set the Base memory to **8192MB** instead of 5120MB (System, Motherboard)
     5GB is OK, but setting 8GB will improve performance.

4. Start the virtual machine "**hol10003_emcc**"

5. On the VM graphic console, log in using user root and password **welcome1**
   (Warning: the VM is preconfigured with US/qwerty keyboard, if you have another keyboard make sure to press the keys corresponding to qwerty layout)

6. Open a terminal

7. Change the network configuration (replace DHCP par static IP address)
   To do that, modify the file `/etc/sysconfig/network-scripts/ifcfg-eth0`
   and replace line
   ```
   BOOTPROTO=dhcp
   ```
   by lines
   ```
   BOOTPROTO=static
   IPADDR=192.168.56.5
   NETMASK=255.255.255.0
   ```

8. Apply the network changes now
   `# service network restart`

9. Open a terminal on your Unix/Linux x86 machine and connect to the VM with ssh (you can use Putty on Microsoft Windows)
   `$ ssh root@192.168.56.5` (password is **welcome1**)

   If not using US/qwerty keyboard, you will have the correct keyboard layout in this terminal.

10. Change the root password (Easier to have the same root password for all servers)
    `# passwd root` (choose **ovsroot**)

11. Disable the Linux Firewall to authorize HTTP/HTTPS traffic between the X86 machine web browser and Enterprise Manager
```
# chkconfig iptables off
# chkconfig ip6tables off
```

12. Create a startup script named **/etc/init.d/emcc** to automatically start EMCC at boot
```
#!/bin/bash

case "$1" in
      start)
            echo -n "Starting Enterprise Manager 12cR3"
            su oracle -c /home/oracle/start_all.sh
            ;;
      stop)
            echo -n "Stopping Enterprise Manager 12cR3"
            su oracle -c /home/oracle/stop_all.sh
            ;;
      *)
            echo "Usage: $0 {start|stop}"
esac

# chmod +x /etc/init.d/emcc
# ln -s /etc/init.d/emcc /etc/rc3.d/S98emcc
# ln -s /etc/init.d/emcc /etc/rc0.d/K01emcc
# ln -s /etc/init.d/emcc /etc/rc1.d/K01emcc
# ln -s /etc/init.d/emcc /etc/rc6.d/K01emcc
```

13. Add the following lines to the file /etc/hosts
```
192.168.56.5    emcc.example.com emcc
192.168.56.3    ovm-mgr.example.com ovm-mgr
192.168.56.2    ovm-srv.example.com ovm-srv
192.168.56.1    os.example.com os
```

14. Disable the graphic environment (Gnome) to save resources (CPU and memory)
    - Edit file /etc/initab
    - Replace line
      `id:5:initdefault:`
      by line
      `id:3:initdefault:`

15. Reboot the server
```
# reboot
```

16. Wait for the end of boot and for EMCC start.
    (Wait for the prompt "**emcc login:**" on the VM console)

17. Go back to step 12 of the Oracle VM Manager preparation

4.7 PRECONFIGURATION OF THE IAAS ENVIRONMENT IN ORACLE ENTERPRISE MANAGER 12C

Some operations of the IaaS setup were done before the Oracle OpenWorld actual lab to save time and fit in the one hour slot.

Those operations are:

- Creation of IaaS users (cloud administrator and self service users)
- Import of an Oracle VM assembly into the EMCC Software Library
- Creation of a Network Profile
- Configuration of the Chargeback

4.7.1 CREATION OF THE IAAS USERS

Blabla explication

Creation of the cloudadm user (cloud administrator)

1. In your Web browser, connect to Oracle Enterprise Manager Cloud Control 12c console using
   - URL: https://192.168.56.5:7799/em
   - User: **sysman**
   - Password: **welcome1**
2. Click on **Setup**, **Security**, **Administrators**
3. Click on **Create**
4. Enter the following information:
   - Name : **cloudadm**
   - Password : **cloud**
   - Confirm Password : **cloud**
5. Leave defaults values for other fields and click on **Next**
6. Add role **EM_CLOUD_ADMINISTRATOR to** existing roles (**EM_USER** and **PUBLIC**) and click on Next
7. In the window "**Create Administrator cloudadm: Target Privileges**", click on **Next**
8. In the window "**Create Administrator cloudadm: EM Resource Privileges**", click on **Next**
9. In the window "**Create Administrator cloudadm: Review**", click on **Finish**

Creation of the ssa_developer role (custom role for Self Service Users)

As explained in the section 3.4.1 of the "**Enterprise Manager Cloud Control 12c r3: Cloud Administration Guide**" (see Appendix B: References), we need to create a custom role for Self Service Application users.

10. In Oracle Enterprise Manager Cloud Control 12c console (still logged in with the **sysman** user), click on **Setup**, **Security**, **Roles**

11. Click on **Create**

12. Enter "**SSA_DEVELOPER**" as the Name and click on **Next**

13. Add role **EM_SSA_USER** (no existing roles) and click on **Next**

14. In the window "**Create Role SSA_DEVELOPER: Target Privileges**", click on **Next**

15. In the window "**Create Role SSA_DEVELOPER: EM Resource Privileges**", click on **Next**

16. In the window "**Create Role SSA_DEVELOPER: Administrators**", click on **Next**

17. In the window "**Create Role SSA_DEVELOPER: Review**", click on **Finish**

Creation of a Self Service user

18. In Oracle Enterprise Manager Cloud Control 12c console (still logged in with the **sysman** user), click on **Setup**, **Security**, **Administrators**

19. Enter the following information:
    - Name : **paris_user1**
    - Password : **puser1**
    - Confirm Password : **puser1**
    - Cost Center **: PARIS_USER1**
    - Line of Business **: DEV GROUP PARIS**
    - Description **: Developer based in Paris**

20. Leave defaults values for other fields and click on **Next**

21. Add role **SSA_DEVELOPER** existing roles

22. Remove existing roles **EM_USER and PUBLIC**

23. Then click on **Next**

24. In the window "**Create Administrator ssa_user1: Target Privileges**", click on **Next**

25. In the window "**Create Administrator ssa_user1: EM Resource Privileges**", click on **Next**

26. In the window "**Create Administrator ssa_user1: Review**", click on **Finish**

Creation of 3 more Self Service users

27. Creation of the 2nd user
    - Select the user **PARIS_USER1** and click on "**Create Like**"
    - Enter the following information:
      - Name : **paris_user2**
      - Password : **puser2**
      - Confirm Password : **puser2**
      - Cost Center **: PARIS_USER2**
    - Click on **Next** 4 times (in the next 4 windows) then click on **Finish**

28. Creation of the 3rd user
    - Select the user **PARIS_USER1** and click on "**Create Like**"
    - Enter the following information:
        - Name : **rome_user1**
        - Password : **ruser1**
        - Confirm Password : **ruser1**
        - Cost Center **: ROME_USER1**
        - Line of Business **: DEV GROUP ROME**
        - Description **: Developer based in Rome**
    - Click on **Next** 4 times (in the next 4 windows) then click on **Finish**

29. Creation of the 4th user
    - Select the user **ROME_USER1** and click on "**Create Like**"
    - Enter the following information:
        - Name : **rome_user2**
        - Password : **ruser2**
        - Confirm Password : **ruser2**
        - Cost Center **: ROME_USER2**
    - Click on **Next** 4 times (in the next 4 windows) then click on **Finish**

4.7.2 IMPORT OF AN ORACLE VM ASSEMBLY INTO EMCC SOFTWARE LIBRARY

1. In Oracle Enterprise Manager Cloud Control 12c console (still logged in with the **sysman** user), click on **Setup**, **Provisioning and Patching**, **Software Library**

2. Select tab "**Referenced File Locations**"

3. Select "Storage Type" **HTTP** and click on **Add**

4. Enter the following information and click on OK
    - Name **: http_mgr**
    - Location **: http://192.168.56.3/files**

5. Click on **Enterprise**, **Provisioning and Patching**, **Software Library**

6. Right click on "**Software Library**", then click on "**Create Folder**"

7. Enter **HOL10003_Cloud** as the name, and click on OK

8. Right click on "**HOL10003_Cloud**", then click on "**Create Entity**", "**Virtualization**"

9. Select Subtype **Assembly** and click on **Continue**

10. Enter **OL6u4_x64_PVM** as the name and click on **Next**

11. On the window "**Create Assembly: Upload Files**"
    - Select "**Refer Files**"
    - Select the "**Referenced File Location**" (choose **http_mgr**)
    - In the "**Specify Source**" section, click on **Add**
    - Enter the following information

  - Source File : **OVM_OL6U4_x86_64_PVM.ova**
  - Name : **OVM_OL6U4_x86_64_PVM.ova**
- Click on **Next**

12. On the window "**Create Assembly: Customize**", click on **Next**

13. On the window "**Create Assembly: Review**", click on "**Save and Upload**"

4.7.3 CREATION OF A NETWORK PROFILE

A **network profile** is used to automate assignment of IP addresses to guest virtual machines. A network profile is a list of IP address along with host names. It defines a set of IP addresses, their associated host-names, and common networking attributes for them.

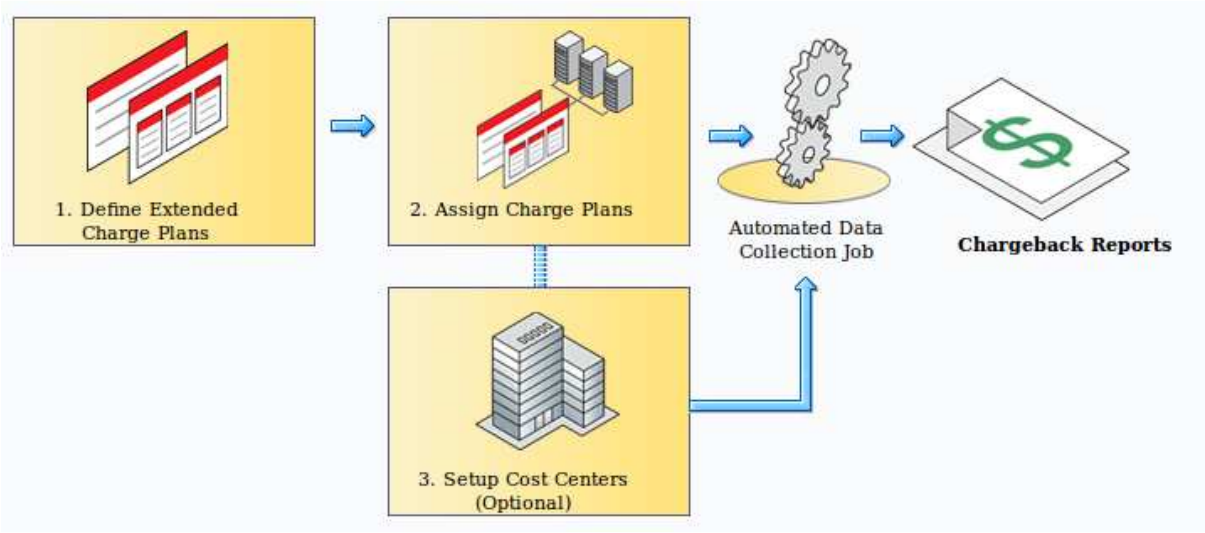
1. In Oracle Enterprise Manager Cloud Control 12c console (still logged in with the **sysman** user), click on **Setup**, **Provisioning and Patching**, **Network Profile**

2. Click on **Create**

3. Enter the following information:
   - Name : **dev_netprofile**
   - Domain name : **example.com**
   - Netmask : **255.255.255.0**
   - Gateway : **192.168.1.1**
   - DNS : **192.168.1.1**
   - IP Address : **Range**
   - Click on **Add**
     - Hostname Pattern : **dev**
     - Start Value : **1**
     - First IP Address : **192.168.56.11**
     - Last IP Address : **192.168.56.20**

4. Click on **OK**

4.7.4 CONFIGURATION OF CHARGEBACK



There are 3 steps to configure the Chargeback feature:

a) Configure the Charge Plan(s)
   - Configure the Universal Charge Plan (set cost per CPU, Memory and Disk Space usage)
   - Optionally, define an Extended Charge Plan

b) Setup the Cost Centers

c) Assign the Charge Plans(s) to Targets (target assignements)

The Chargeback feature is based on monthly reports. You can have different Charge Plans, Cost Centers and Targets assignment for each month.

Configure the Universal Charge Plan for current month

Blabla sur Universal Charge Plan et Extended Charge Plans

1. In Oracle Enterprise Manager Cloud Control 12c console (still logged in with the **sysman** user), click on **Enterprise**, **Chargeback**

2. Click on tab "**Charge Plans**"

3. Select "**Universal Charge Plan**"

4. Click on **Create**, then **Revision** to create a new revision of the Universal Charge Plan for current month

5. Enter the following costs (examples) and **duration** for resources usage:
   - CPU Usage : **0.50** $ / CPU / **hour**
   - Memory Allocation : **2.00** $ / GB / **Day**
   - Storage Allocation : **0.50** $ / GB / **Day**

Click on **Save**

Create an Extended Charge Plan

6. Click on **Create**, then **Plan** to create a new Extended Charge Plan
7. Name it **dev_plan** (since it will be use to charge the developers resource consumptions)
8. In the panel "**Target Types**", Click on "**Add**"
9. Select "**Oracle VM Guest**" and click on "**OK**"
10. The new extended plan will be based on the Universal Charge Plan using Multipliers for CPU, Memory and Storage.
    - Leave Multipliers to default values (1)
    - Click on "**Add Item**"
    - Select "**Base Charge**" in the Item Name and Click on **OK**
    - Set the cost for the Base Charge: for instance**, 10.00 $** per **Day**
    - Click on **Save**

Setup the Cost Centers

11. Click on tab "**Cost Centers**"
12. Add a cost center for the developer group based in Paris
    - Click on **Add**
    - Enter the following information
      - Cost Center : **DEVGRP_PARIS**
      - Display Name : **DEVGRP_PARIS**
    - Select the level "**Top Level (Root)**"
    - Click on **OK**
13. Add a cost center for the developer group based in Rome
    Repeat the same operations with name **DEVGRP_ROME**

14. Add a cost center for the 1st user of the Paris developers group
    - Click on **Add**
    - Enter the following information
        - Cost Center : **PARIS_USER1**
        - Display Name : **PARIS_USER1**
    - Select the level "**Member of DEVGRP_PARIS**"
    - Click on **OK**

15. Add a cost center for the 2nd user of the Paris developers group
    Repeat the same operations with Cost Center and Display Name **PARIS_USER2**

16. Add a cost center for the 1st user of the Rome developers group
    Repeat the same operations with Cost Center and Display Name **ROME_USER1** and Level "**Member of DEVGRP_ROME**"

17. Add a cost center for the 2nd user of the Rome developers group
    Repeat the same operations with Cost Center and Display Name **ROME_USER2** and Level "**Member of DEVGRP_ROME**"

Assign the Charge Plans to Targets

Since we have not yet configured the Oracle VM infrastructure cloud (done during the lab), we don't have the Oracle VM targets (zone, pool, …) and we cannot assign the charge plans at this time. The assignment will be done during the lab.

5 APPENDIX B: REFERENCES

5.1 MAIN DOCUMENTS

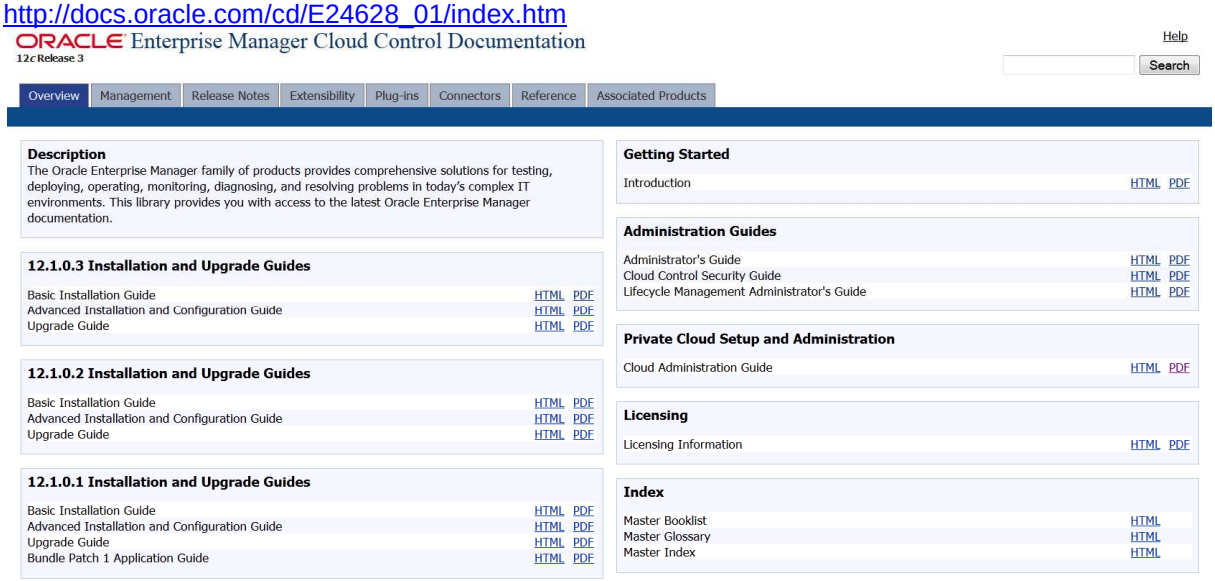
- **Entreprise Manager Cloud Control 12c r3 Cloud Administration Guide**
  Direct link : http://docs.oracle.com/cd/E24628_01/doc.121/e28814.pdf

- Book « **Building and Managing a Cloud Using Oracle Enterprise Manager 12c**" (Oracle Press)

  Authors: Madhup Gulati, Adeesh Fulay, Sudip Datta

5.2 ORACLE ENTERPRISE MANAGER CLOUD CONTROL 12C DOCUMENTATION

http://docs.oracle.com/cd/E24628_01/index.htm



5.3 ORACLE VM DOCUMENTATION

http://www.oracle.com/technetwork/server-storage/vm/documentation/index.html

Release 3.2.1

Oracle VM Release 3.2.1 Documentation

The Oracle VM Release 3.2.1 documentation set includes information on Release 3.2.1, which is the initial release of Oracle VM Release 3.2. This documentation set should also be used for any future 3.2.*x* releases. Use this documentation set in addition to any README files included with the 3.2.*x* patch updates.

Oracle VM Release 3.2.*x* patch updates can be downloaded from http://www.oracle.com/technetwork/server-storage/vm/downloads/index.html.

Oracle VM Release Notes for 3.2.1	HTML	PDF	ePub
Oracle VM Installation and Upgrade Guide for Release 3.2.1	HTML	PDF	ePub
Oracle VM Getting Started Guide for Release 3.2.1	HTML	PDF	ePub
Oracle VM User's Guide for Release 3.2.1	HTML	PDF	ePub
Oracle VM Paravirtual Drivers Installation Guide for Microsoft Windows for Release 3.2.1	HTML	PDF	ePub
Oracle VM Utilities Guide for Release 3	HTML	PDF	ePub
Oracle VM Security Guide for Release 3	HTML	PDF	ePub
Oracle VM Command Line Interface User's Guide for Release 3.2.1	HTML	PDF	ePub

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