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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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# **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:

- o Install Oracle Linux 6.4 (64 bits) on all the laptops.
- Install Oracle VM VirtualBox 4.2.16 + extensions on all the laptops.
- o Install Oracle Java JRE 7 update 25 on all the laptops. (needed to get Oracle VMs console)
- o 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.
- o Deploy an Oracle EM12c agent on the Oracle VM Manager.
- o 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)
- o Pre-configure Chargeback in Enterprise Manager (charge plans and cost centers)

#### Note: to run this lab at home of office

- o 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, ...)
- o 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 laaS 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  $\widetilde{\mathbb{V}}$ 



◯ 🤯 🧼 🧄 New Settings Start Discard		Details Snapshots
hol10003 ovm srv	🦲 General	Preview
hol10003_ovm_mgr	Name: hol10003_ovm_srv Operating System: Oracle (64 bit)	
Powered Off	System	
Powered Off	Base Memory: 2048 MB Processors: 2 Boot Order: Floppy, CD/DVD-ROM, Hard Disk Acceleration: VT-x/AMD-V, Nested Paging, PAE/NX	hol10003_ovm_srv
	ig Display	
k	Video Memory: 12 MB Remote Desktop Server: Disabled	
	Storage	
	Controller: IDE IDE Secondary Master: [CD/DVD] Empty Controller: SATA SATA Port 0: srv_31]-disk1.vmdk (Normal, 12.00 GB) SATA Port 1: srv_31]-disk2.vmdk (Normal, 40.00 GB)	
	🖗 Audio	
	Host Driver: PulseAudio Controller: ICH AC97	
	P Network	
	Adapter 1: Intel PRO/1000 MT Desktop (Host-only Adapter, 'vboxnet0')	
	Ø USB	
	Device Filters: 0 (0 active)	

- 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 <u>https://192.168.56.5:7799/em</u>

#### 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

es/logon/core-uifwk-console-login?_afrLoop=72134759365	9&_ 🗇 🛩 🕝  😵 Google	۵ 🕹 🙆
Br Cloud Control 12 <i>c</i>		Q
	Login User Name Password Login	
New in this Release	Did you know	
Test your applications using real workl workloads with Application Replay Perform realistic application scale testing by recording a production workload scenario and replaying it in your test environment. Plan your journey to the Cloud with Consolidation Planner	Integrated Sun Hardware Management with Ops Enterprise Manager Ops Center provides a complet Sun hardware and firmware. While Ops Center is an product for System Administrators, the Ops Center Manager allows relevant hardware information to be	i Center te management solution for railable as a standalone Connector in Enterprise
	es/logon/core-ulfwk-console-login?_afrLoop=72134759365 er Cloud Control 12c New in this Release Test your applications using real world workloads with Application Repipe Perform realistic applications using real world workloads with Application Repipe	es/logon/core-uifwk-console-login?_afrLoop=721347593659&.

- b) Log in using the following credentials:
  - 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

ORACLE Enterpris	e Manager	Cloud Control 12c		Setup 🔻 Help 🔻 📃 🕺 CLOUDADM 👻 🛛 Log Out
🚯 Enterprise 🔹 👩 Targets 👻	🚖 Eavorites 👻	🥝 History 👻		Search Target Name 🔻
Summary	lanager Clou	d Control 12c		۲
Monitoring  Job Feports Configuration	Overview	Welcome to Er	nterprise Manager Cloud Control	Total Cloud Control
Compliance + Provisioning and Patching + Quality Management + My Oracle Support +	Oracle Enterprise Mana provides the industry's management solution. the built-in management		ger is Oracle's integrated enterprise IT management product line, which only complete, integrated and business-driven enterprise cloud Oracle Enterprise Manager creates business value from IT by leveraging it capabilities of the Oracle stack for traditional and cloud environments,	Complete Cloud Lifecycle Management     Integrated Application-to-Disk Management     Business-Driven Application Management
Cloud  Chargeback Chargeback	Infrastructure Infrastructure Infrastructure	: Home : Request Dashboard : Policies	chieve unprecedented efficiency gains while dramatically increasing re.th	
Select Enterprise Ma	Middleware ar Middleware ar	nd Database Home nd Database Request Dashboard		Getting Started
Choose your personal Home Page Home Page. Once selected, your	Testing Home Self Service P	ortal	ADM menu > Set Current Page as My Home to select any other Enterprise Manager page as you in.	Jr Discover Targets
Click an image below for a la	Service Instar	ices	ose your personal Home Page.	Set up E-mail Notifications

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

ORACLE Enterprise M	anager Cloud Control 12c	Setup 🕶 Help 🕶 1 💶 CLOUDADM 🕶 🛛 Log Out	$\Box$
🤹 Enterprise 🔻 🎯 Iargets 👻 🐈 E	avorites 🔻 🥝 History 🔻	Search Target Name 👻	+
Target Navigation View • 的 頁 預 馅	Infrastructure Cloud 🔹	Page Refreshed Aug 13, 2013 12:49:15 AM GMT-07:00 C	•
Infrastructure Cloud	General     Status 0 Virtual Server Pools 0     OVM Managers 0 Virtual Servers 0     Zones 0 Guest VMs 0     Workflow to Set Up Cloud Infrastructure	Target Flux (Last 30 Days)	* III
	Request Status (%)     O		
	Policy     Active Policies     Constructions 0     Evaluations 0     Folicies     Most Evaluations     Most Failed Executions     Name     There are no policy evaluations.     Evaluations	© CPU © CPU © CPU 0-25 25-50 50-75 75-100 CPU (%) ♥ Memory © •	
	Most Evaluations         Most Failed Executions           Name         Evaluations           There are no policy evaluations,         Evaluations	0-25 25-50 50-75 75-100 CPU (%)	

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

Target I	laviga	ation		Infrastructure Clo	bu	(1)	
View →     ●     ○     ○       Infrastructure Cloc <sup>-31</sup> Register		12	Infrastructure Cloud	•			
	astruct	ure Giot	Register OV Members	M Manager Aneral Status	0	Virtual Server Pools	(
			Setup	VM Managers	0	Virtual Servers	1
				Zones	0	Gunet When	17







- c) Enter the following information:
  - Name 0
  - Monitoring Agent 0
  - Oracle VM Manager URL 0
  - 0
  - Username 0
  - Password 0

Then click on "Submit"

- : ovm-mgr
- : 192.168.56.3:3872
- : tcps://192.168.56.3:54322
- Oracle VM Manager Console URL : https://192.168.56.3:7002/ovm/console
  - : admin
    - : Welcome1

ORACLE Enterprise Manager Cloud Control 12c	Setup * Help	🔹 🛛 🎎 CLOUDADM 👻 🛛 Log Out
🔹 Enterprise 🔻 🎯 Iargets 🔻 🃩 Eavorites 👻 🤗 History 💌	Search Target Name 🔻	*
Infrastructure Cloud    Infras	Page Refreshed <b>Aug</b>	13, 2013 12:50:46 AM GMT-07:00 🖒
Register Oracle VM Manager Register an existing installation of Oracle VM Manager with Enterprise Manager. Make sure that a * Name own-mgr * Monitoring Agent 192.168.56.3:3872	connection can be established using the specified URL. Ensure that the Oracle VM Manager certificate has been imported into the Agent K	Submit Cancel
Oracle VM Manager		
Connection URLs * Orade VM Manager URL tcps://192.168.56.3:54322 @ TTP URL for an existing Orade VM Manager install * Orade VM Manager Console URL https://192.168.56.3:7002/ovm/co @ TTP URL for the Orade VM Manager Console e.g.	ation. e.g. tqp://localhost:54321, tqps:// <server.domain>:54322 http://server.domain&gt;:<port>/, https://<srever.domain>:<port>/</port></srever.domain></port></server.domain>	
Monitoring Credentials     Specify the credentials to be used for monitoring Oracle VM Manager.     * Username   admin     * Password      ••••••••	Administration Credentials Specify the credentials to be used for administration of Oracle VM Manager. If not specified, it defaults to the monitoring credentials.  Username  * Password	

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.

Confirmation		5
Job has been submitted successfully.		
	Job Details	Close

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

Enterprise 🔻 🔞 Targets 👻 🐈 Eavorites 👻 🥝 Hist <u>o</u> ry 💌				Search Target Name	*	
b Activity				Page F	tefreshed Aug 13	3, 2013 12:52:31 AM PDT
Ivanced Search           Name         Register/OvmManager_CLOUDADM_2013-08-13_00-52-24-288           Owner         COUDADM Im           Status         AI           Status         AI           Status         AI           Store         Show jobs scheduled to start during or after the selected period.		Job Type All Target Type All Target Name Go Simp		v	2	
New Results Edit Create Like Copy To Library Suspend Resume Stop Delet	View Runs	Create Job OS Command	▼ Go Targets	Target Type	Owner	Јор Туре





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

ORACLE Enterprise Manager Cloud Control 12c	Setup + Help + 📃 💶 CLOI	JDADM 🕶 🕴 Log Out 👱
🎼 Enterprise 🔻 🔞 Targets 🔻 🌟 Eavorites 👻 🥝 History 🕶	Search Target Name 💌	÷
		Θ
	Page Refreshed Aug 13, 2013 1	12:53:19 AM PDT 🖒
	Auto Refr	esh 15 seconds 💌
Job Activity		

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

Select         Name         Status (Executions)         Scheduled         Targets         Target Type         Owner         Job Type <ul> <li>REGISTEROVIMMANAGER_CLOUDADM_2013-08-13_00-52-24-288</li> <li>1 Succeeded</li> <li>Aug 13, 2013 12:52:24 AM GMT-07:00</li> <li>192.168.56.53:3872</li> <li>Agent</li> <li>CLOUDADM</li> <li>Register OVM Manager</li> </ul>	Viet	Results Edit Create Like Copy To Library Suspend Resume Stop Delete	View Runs 💌	Create Job OS Command	GO			
REGISTEROVIMMANAGER_LOUDADM_2013-08-13_00-52-24-288     1 Succeeded Aug 13, 2013 12:52:24 AM GMT-07:00     192_168_56_3:3872     Agent CUOLDADM Register OVM Manager	Sele	t Name	Status (Executions)	Scheduled 💌	Targets	Target Type	Owner	Job Type
	۲	REGISTEROVMMANAGER_CLOUDADM_2013-08-13_00-52-24-288	1 Succeeded	Aug 13, 2013 12:52:24 AM GMT-07:00	192.168.56.3:3872	Agent	CLOUDADM	Register OVM Manager

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"

ORACLE Enterprise Ma	Inager Cloud Control 12c	Setup 👻 Help 👻 👥 CLOUDADM 👻 Log Out	C
🍓 Enterprise 👻 🎯 Iargets 👻 🏫 Ea	vorites 🔻 📀 History 🕶	Search Target Name 🔻	+
Target Navigation           View ▼         ●	Infrastructure Cloud   Infrastructure Cloud  Infrastructur	Page Refreshed Aug 13, 2013 12:55:22 AM GMT-07:00	c
V 🍛 Infratructure Cloud	Ceneral Cov Status I( 1) Virtual Server Pools 0 OVM Managers 1 Virtual Servers 0 Zones 0 Guest VMs 0 Workflow to Set Lip Cloud Infrastructure  Request Status (%) There is no request.	<ul> <li>Target Flux (Last 30 Days)</li> <li>0.4</li> <li>0.5</li> <li>0.6</li> <li>0.6</li> <li>0.7</li> <li>0.6</li> <li>0.8</li> <li>0.4</li> <li>0.4</li> <li>0.4</li> <li>0.5</li> <li>0.5</li> <li>0.6</li> <li>0.6</li> <li>0.7</li> <li>0.7</li> <li>0.7</li> <li>0.7</li> <li>0.8</li> <li>0.9</li> <li>0.9</li></ul>	• III
	Policy Active Policies     Active Policies     Successful Executions 0     Evaluations 0     Felled Executions 0      Top Policies     Most Evaluations     Most Failed Executions     There are no policy evaluations.	CPU Or B CPU 0-25 25-50 CPU (%) 50-75 75-100 CPU (%) 0-	1. State 1.









### 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"

DRACLE Enterprise Manager Cloud Control 12c	Setup 👻 Help 👻 📃 💶 CLOUDADM 👻	4 🕶 🕴 Log Out 👱	
🗄 Enterprise 🛪 🎯 Iargets 🛪 🌟 Eavorites 🛪 🥝 History 🕶	Search Target Name 🔻		
ovm-mgr 0		192.168.56.	
	Page Refreshed Aug 13, 2013 12:56:39	9 AM PDT 🖒	
Discover Virtual Servers	Subm	nit Cancel	
Virtual Servers			
Specify long host name(FQDN) or IP address. To enter multiple entries, enter each new host name/IP address/IP range in a new line			
Oracle VM Agent Credentials			
Specify the Oracle VM Agent Username and Password for the virtual servers to be discovered.			
* User Name oracle			
* Password ••••••			

- 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 ORACLE Enterprise Manager Cloud Control 12c Setup + Help + St. CLOUDADM + Log Out 🦚 Enterprise 🔻 🎯 Targets 👻 🏫 Eavorites 👻 🥝 History 🕶 + Search Target Name 👻 👚 ovm-mgr 🔅 192.168.56.3 Target Navigation Page Refreshed Aug 13, 2013 12:58:51 AM PDT 🖒 🔏 VM Manager 🔻 View - 🐽 頁 信 쒑 V 🌰 Infrastructure Cloud Network () ⊳ 🔏 👚 ovm-mgr Networks VLAN Groups Virtual Network Interface Card Manager S Network is grouping of virtual server physical NIC ports. View 🗸 🛛 🚰 Create... 🧪 Edit... 💥 Delete Search + Network Type Network Role Network Types Vame Descriptio Server Management Cluster HeartBeat Virtual Machine Live Migrate Storage 192.168.56.0 Inter-server This mana







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

eral Config	igure Ports and	I VLAN Interfaces Netwo	rk Profile and QoS Review						
it Networ	rk : Configu	ure Ports and VLAN	Interfaces					Back Step 2 of 4	4 Next Finish C
VLAN Inter	rfaces								
View -	👍 Add	X Remove							
Port			MAC Address	MTU	Address Type	IP Address	Netmask	Bonding Mode	1
No VLAN Ir	Interfaces Adde	d.							
No VLAN In	Interfaces Adde	d							
No VLAN In Ports View -	interfaces Adde	d. % Remove							
No VLAN In Ports View -	Interfaces Adde	d. X Remove	MAC Address	МТИ	Address Type	IP Address	Netmask	Bonding Mode	
No VLAN In Ports View - Port ovm-sr	Interfaces Adde	d. Remove	MAC Address De.com 08:00-27:8d:5a:ca	MTU 1500	Address Type Static _	IP Address 192.168.56.2	Netmask 255.255.255.0	Bonding Mode	
No VLAN In Ports View - Port ovm-sr	Add	d. Remove : bond0 on ovm-srv example	MAC Address De.com 08:00:27:8d:5a:ca	MTU 1500	Address Type Static T	IP Address 192.168.56.2	Netmask 255.255.0	Bonding Mode	

- g) In the window "Edit Network: Network Profile and QoS":
  - Click on icon <sup>I</sup> to select the network type

RACLE Enterpr					
M: Edit Network	VLAN Interfaces Netwo Profile and QoS	rk Profile and QoS Ref	view		Back Step 3 of 4 Next Finish Ci
Network Profiles					
View - Add	Remove		11.00.000.000.000.000		
Name	Oomain Name Net M	lask Gateway	DNS Server		
No Network Profiles Added	L				
Select "N In the set	l <b>on Intern</b> ction " <b>Net</b>	iet Routa work Pro	ble" and file", clic	click on <b>Select</b> k on <b>Add</b>	k
Select "N In the set Select pr Select Network P	on Intern ction "Net ofile "dev	et Routa work Pro _netprofi	ble" and file", clic ile" and c	click on <b>Select</b> k on <b>Add</b> click <b>OK</b>	. ►
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No Network Profiles Added	Ction <b>Intern</b> Ction " <b>Net</b> ofile " <b>dev</b> rofiles for the Netwo Domain Name example.com	et Routa work Pro _netprofi rk 	ble" and ofile", clic ile" and c	click on <b>Select</b> ck on <b>Add</b> click <b>OK</b>	R 22
No Network Profiles Added	Ion Intern Ction "Net ofile "dev Orfiles for the Netwo Domain Name example.com	net Routa work Pro _netprofi rk 	ble" and file", clic ile" and c Gateway 192.168.56.1	click on Select k on Add click OK DNS Server 192.168.56.1	Hardware and Software Engineered to Work Together



OR,	ACLE Enter	prise Manager	Cloud Control 12c					Help 🔻 Log Out 👱
OVM:	Edit Network							
Gener	al Configure Ports a	nd VLAN Interfaces	Network Profile and	QoS Review				
Edit	t Network : Net	work Profile an	d QoS				Back Step 3 of 4 Next	Finish Cancel
Sel	lect Network Type	Non Internet Routable	<b>a X</b>					
N	letwork Profiles							
	🕂 Add 💥 F	lemove				_		
	Name	Domain Name	Net Mask	Gateway	DNS Server			
	dev_netprofile	example.com	255.255.255.0	192.168.56.1	192.168.56.1			
0 (	Click on N	lext						

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

: Edit Netwo	vrk								
ral Configure	Ports and VLAN Interf	aces Network Profile and							
								The second second second	
t Network :	Review							Back Step 4 of 4 Next	Finish
tings for the	e new created n	etwork							
Name	192.168.56.0								
Description	This management no	etwork is created automati	cally during discoverin	g Virtual Server					
Network Roles	Name	Description				Select			
	Server Management	Used to communicate bet	ween the Manager and	d Server Pool Master.					
	Cluster HeartBeat	This network role is used	for cluster heartbeat tr	affic.		~			
	Storage	This network role is used to carry storage traffic.							
	Live Migrate	This network role is used	for virtual machine live	migration data.		~			
	Virtual Machine	Used to carry network tra	ffic to Virtual Machines			✓			
Natwork Tupo									
VI AN Interface		1.14							
Port	13	MAC Address	Address Type	IP Address	Netmask	Bondi	ing Mode		
No VLAN Interfa	aces Added.	1	1						
Ports									
Ports Port	MAC Addres	iss MTU	Address Type	IP Address	Netmask	Bond	ting Mode		

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

• IP addresses : 192.168.56.11 to 192.168.56.20

(range of 10 addresses)

- Netmask : 255.255.255.0
  - Hostnames : dev1 to dev10
  - 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.

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Target Navigation View + 前 夏 宿 馅	<sup>¶</sup> ovm-mgr <sup>®</sup> <sup>®</sup> <sup>™</sup> <sup>™   <sup>™</sup></sup>	📳 192. 168. 56. 3 Page Refreshed <b>Aug 13, 2013 1:07:02 AM PDT 🖒</b>
♥ △ Infrastructure Cloud ▷ △ ↑ ovm-mgr	Network  VLAN Groups Virtual Network Interface	e Card Manager
	Virtual Machine networks carry network traffic to virtual network     View      View      View      View	nterface cards (VNICs) in the Virtual Machines. Each VNIC can be connected to one Virtual Machine network.           Search         MAC Address           Image: Content of the content of
	VNICs(MAC Address)	twork Virtual Machine (VNIC Owner)

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
  - o Virtual Server Pool Name : devpool : <unchecked>
  - 0 Activate Cluster
  - Virtual IP 0

: 192.168.56.4

(non-clustered pool)

- 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"

Search				
Target Type	Oracle \	/M Server	•	
Target Name				
On Host				
Configuration Search	<no conf<="" th=""><th>iguration search selecte</th><th>edə 🔍 🧳</th><th></th></no>	iguration search selecte	edə 🔍 🧳	
				Search
Target Name		Target Type	On Host	Status
		iniger iype		
ovm-srv.example.co	m	Oracle VM Server	192.168.56.3	1
ovm-srv.example.co	am	Oracle VM Server	192.168.56.3	Ŷ
ovm-srv.example.co	m	Oracle VM Server	192.168.56.3	Û
ovm-srv.example.co	m	Oracle VM Server	192.168.56.3	Û
ovm-srv.example.co	am	Oracle VM Server	192.168.56.3	Û
ovm-srv.example.co	m	Oracle VM Server	192.168,56.3	1
ovm-srv.example.co	m	Oracle VM Server	192.168,56.3	Ŷ
ovm-srv.example.co	m	Oracle VM Server	192.168,56.3	Û
ovm-srv.example.co	m	Oracle VM Server	192.168,56.3	Û
ovm-srv.example.co	m	Oracle VM Server	192.168,56.3	1
ovm-srv.example.co	m	Oracle VM Server	192.168.56.3	Mode Multi-Sele
ovm-srv example co	m	Oracle VM Server	192.168.56.3	Mode Multi-Sele





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

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ovm-mgr 🔋	192			
VM Manager +	Page Refreshed Aug 13, 2013 1:08:50 AM PDT			
reate Virtual Server Pool	OK Cance			
* Virtual Server Pool Name devpool Description	Concepts  Secure VM Migrate: Select whether to enable encrypted migration of virtual machines. When Secure VM Migrate is checked, using and income programs of using SD, to protect the data			
Keymap       en-us (English, United States)         VM Start Polky       Start on Best Server         VM Start Polky       Start on Best Server         Secure VM Migrate       Activate Cluster         Activate Cluster       Image: Cluster Image:	<ul> <li>Bocket Winking the tableback, in the limited inter the table durated being to be protect the data during the migration process.</li> <li>Activate Cluster: Select whether to enable dustering of the Orade VM Servers in the server pool to enable HA.</li> <li>Cluster Timeout: When enable Activate Cluster, allow to set the timeout in seconds for duster. Disk heartbeat and network heartbeat are derived from the duster timeout value.</li> <li>Pool File System: The server pool file system is used to hold the server pool and duster data, and is also used for duster heartbeating. The size of Pool File System should be at least 12GB.</li> <li>For Clustered ServerPool, if you are using Network File System should be at least 12GB.</li> <li>For Clustered ServerPool, if you are using Network File System should be at least 12GB.</li> <li>For Clustered ServerPool, if you are using Network File System should be at least 12GB.</li> <li>For Clustered ServerPool, if you are using Network File System as Pool File System. The Network File System should be refreshed before it can be used as Pool File System. The Network File System Server which exposes the Network File System. The Network File System (SFS or Physical Disk) should be accessible on all the virtual servers in the ServerPool.</li> <li>Virtual IP: A IP Address used to identify the master Orade VM Server, which controls the other Orade VM Server in the server pool.</li> </ul>			
Virtual Servers				
Name				

- 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"

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<ul> <li>✓ Generative Cloud</li> <li>✓ Generative Clo</li></ul>	General Status 3( 1 3 ) Virtual Server Pools 1 OVM Managers 1 Virtual Servers 1 Zones 0 Guest VMs 0 Workflow to Set Up Cloud Infrastructure	⊚.	✓ Target Flux (Last 30 Days) 3.5 3.0 2.5 900 1.5	New Retired

Hardware and Software Engineered to Work Together







### 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"
  - click on + Add... to add a pool to the zone
  - o In the window "Select Virtual Server Pools":

elect Virtual Server Pools	- Oracle Enterprise Mana	ger	
Select Virtual Serve	r Pools		
≤ Search			
Target Name			
			Sea
Target Name	Target Type	On Host	Status
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- Click on Select
- o Click on OK to actually create the zone

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<b>∱ ovm-mgr</b> ⓐ					192.168.56.3
Create Zone					OK Cancel
* Name	devzone				
Description					
ſ	✓ Infrastructure Cloud Self Service Zone				
	<ol> <li>Only zones marked as Infrastructure C</li> </ol>	oud Self Service Zone will be avail	able in the Self Service Portal		
Virtual Server Po	ools				
👍 Add 💥	Remove				
Virtual Server Pool	Name	Virtual Servers			
devpool					

- 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"

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

* Name	devrepo	
Storage Type	Network File System	
	Physical Disk	

- Click on the icon section is 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"

View +	Name	Storage Server	All	<u> </u>
Name			Status	Size (GB)
SATA	VBOX HARDDISK VB	b4dca67-ec1bf1ba		40.0





earch and Select:	Targets		
Search			Search
Target Name	Target Type	On Host	Status

• Finally, click on "OK" to create the repository

route hepotent	.,	
* Name	devrepo	
Storage Type	Network File System	
	Physical Disk	0
* Location	SATA_VBOX_HARDDISK_VB1860	
* Server Pool	devpool	2
Description		
	orlo	Incol
	UN UN	anodi

- 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"

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	a 💮 devzone	View 👻 🎯 Crea	te 👌 In	nport 🖙	🖉 Edit 💥 Delet	e 👩 Auto-Ref	resh		
1	V 🎎 🏠 devpool	Name	Owned	File System Size (GB)	File System Size Used (%)	Disk	Share Path	Storage Server	Descrip
	🗐 👚 ovm-srv.example		Yes	40	10	SATA_VBOX_HARD	DISK_VBca36G	Local FS ovm-srv.examp	le.com









### 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"

View -	Select Servers		
Name		Туре	

d) In the window "Select Targets",

o C	lick on hen clic	the c k on	heckbox in front of "Select"	"devzone"
Select Tar	gets			
Oracle VM	/ Manager ovm-r ers	ngr		
Search N	lame 💌		Go	
View +	Detach			
Name	Statu	is Type		
⊳ <b>⊘</b> devz	one 🏠	Oracle	e VM Zone	

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

View +	Select Servers		
Name	. Summer and the second s	Туре	
ovm-srv.example.com		Oracle VM Server	

- 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"

mport Components							×
nport: Select Compo	onents						0
Component Source Select	ion						
Component Type As	ssembly						
Selected Repository(s) de	evrepo						
Source 🥥	Software Library Component	C External Lo	ocation				
Storage 🥥	Default 🔿 Override						
Search Name 🗾		Advance	ed				
View -							
Name	Туре	Subtype	Directory	Revision	Status	Maturity	Ov
OL6u4_x64_PVM	Virtualization	Assembly	HOL10003_Cloud/	0.1	Ready	Untested	SY







• 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,
  - o Leave defaults values
  - o Click on "Finish" to start the import immediately

Import Components	×				
Import: Schedule					
General Job Information					
* Job Name EM_ImportToRepository_2013-08-: Job Descripton Schedule					
Start   Immediately  Later					
Repeat Do not repeat					
Grace Period 🔲 Do not run if it cannot start within 1 🚆 hours 👻 of the scheduled start time					
Duration   Indefinitely  For  I  I  I  I  I  I  Durat    Unti  I  I  I  I  I  I  I  I  I  I  I  I  I					

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

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Infrastructure Cloud Self Serv	vice Setup		Page Refres	hed Aug 13, 2013 1:	31:40 AM PDT 🖒
✓ Machine Sizes	Machine Sizes	// Edit 💥 Delete			
📤 Request Settings	Name	Description	VCPUs	Memory (MB)	Local Storage (GB)
A Roles	Small	Small sized machine	2	4096	250
	- Medium	Medium sized machine	4	8192	500
Software Components	Large	Large sized machine	8	15360	1000
(i) Chargeback					

c) In the window "Create Machine Size", enter the following information

0	Name		: very sm	all
0	VCPU	ls	:1	
0	Memo	ory (MB)	: 800	
0	Local	Storage (GB)	: 10	(10GB is the size of a 2 <sup>nd</sup> disk in the VM)
Th	en click	on Create		(The 1 <sup>st</sup> disk is normally reserved for OS and its size is 11.5GB)
Cre	ate Machine Siz	e		
	* Name	very small		
	Description			
	* VCPUs		1 🖨	
	* Memory (MB)	800		
* L	ocal Storage (GB)	10		
		Create Cancel		

- d) In the left panel, click on "Request Settings"
- e) In the section "Request Settings":
  - o Leave default value (No restriction) for "Future Reservation"
  - o Leave default value (No restriction) for "Request Duration"
  - Leave default value (<unchecked>) for "Configure EM Agent"
  - o Leave default value (<unchecked>) for "Allow Partial Deployment"
  - - Select line HOL10003\_Cloud select Software Library folder

/iew 🗸		
Name	Owner	Description
▽ 🚞 Software Library	ORACLE	Root Folder for Software Library entities
Components	SYSMAN	Components Folder
Directives	SYSMAN	Directives Folder
🛅 Images	SYSMAN	Images Folder
🛅 Networks	SYSMAN	Networks Folder
🛅 Suites	SYSMAN	Suites Folder
Database Provisioning CVU Downloads	SYSMAN	
HOL 10003_Cloud	SYSMAN	
HOL 10003_Cloud	SYSMAN	

- Click on Select
- o Click on Apply

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✓ Machine Sizes		Request Settings Apply Rever	ŧ			
🛕 Request Settings		Future Reservation				
🔼 Roles		How far in advance a user can make a request				
🛕 Software Components		Future Reservation 💿 No Restriction 💿 Restricted				
(i) Chargeback	•	Request Duration         The maximum duration for which requests can be submitted.         Request Duration				
		Allow Partial Deployment During assembly deployment if the step that does product configuration fails, then the assembly instance, ter instance and Guest Wis that were created are deaned up. The System Administrator can disable this dean up activity by checking the "Allow Partial Deployment" check box. Administrator can disable this dean up activity by checking the "Allow Partial Deployment" check box. Administrator can disable this dean up activity by checking the "Allow Partial Deployment" check box. Administrator can disable this dean up activity by checking the "Allow Partial Deployment" check box. Administrator can disable this dean up activity by checking the "Allow Partial Deployment" check box. Administrator can disable this dean up activity by checking the "Allow Partial Deployment" check box. Administrator can disable this dean up activity by checking the "Allow Partial Deployment" check box. Administrator can disable this dean up activity by checking the "Allow Partial Deployment" check box. Administrator can disable this dean up activity by checking the "Allow Partial Deployment" check box. Administrator can disable this dean up activity by checking the "Allow Partial Deployment" check box. Administrator can disable this dean up activity by checking the disable this deploying an assembly fails. Software Library folder is not setup yet. Users will not be able to access certain functionalities like Save As Template, Save As Deployment Plan. Choose the top level folder in Software Library under which user specific folders will be created. Folder Name _Software Library/HOL10003_Cloud/				

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"

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Machine Sizes	Roles View - Stating Quota to Role / Edit X Delete					
Request Settings	Role Name AV No of Servers VCPUs N	Memory (GB)         Local Storage (GB)         Archive to Library         Save Server on Expiry         Zones	Network Profile			
A Software Components	No items found.					
(i) Chargeback						

- h) In the section "Assign Quotas, Zones & Network profiles to Role":
  - Select role SSA\_DEVELOPER
  - o 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
  - o Leave default values for others parameters
  - o Click on Save





Assign Quotas, Zones & Network	Profiles to Role		×						
Select Role, assion zones, network pro	files and specify the ou	iota details for the role.							
* Select Role	SSA_DEVELOPER	Q							
* Select Zones	* Select Zones devizione								
Number of Servers	5								
Number of VCPUs	6								
Memory (GB)	10								
Local Disk (GB)	100								
Allow Archiving to Software Library	O Yes O No								
Select Network Profiles	dev_netprofile	Q							
	🕅 Override Global Re	quest Settings							
	Future Reservation	No Restriction     O Restricted							
	Request Duration	No Restriction     C Restricted							
		Default Duration	*						
	Configure EM Agent	Enable EM Agent Configuration							
	Corrigore DM Agent	Enable of Agent Conguration	ve Cancel						

- i) In the left panel, click on "Software Components"
- j) In the section "Software Components", click on "Add Components..."

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Machine Sizes	Software Compo	nents components						
Request Settings	Software Components	can be published to p	rovide access privileg	es on Software Library	Components for Self	Service Portal Users.		
🖋 Roles	* Roles SSA_DEV	ELOPER	- Add Com	ponents / Edit.	💥 Delete 🖉	🖉 Configure 🛛 💥 Remove Configuration 🛛 🕒 Imp	port »	
A Software Components	Software Component	Туре	Version	Configured	Imported	Description		
(i) Chargeback	No data to display.							

- 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

elect the software components and roles. Click publish button to make the software components available to selected roles. OVM Assemblies/Templates must be uploaded to EM software to displayed as Software Components.  Select Software Component Type Version Description OL 6u4_x64_PVM Assembly 0.1  Select Roles  Role Name Role Description SA DEVELOPER	ublish Assemblies/Te	mplates to Roles		
Select Software Components  Add   Add   Add   Add   Add    Prote Version   Description  OL 6u4_x64_PVM  Assembly  0.1    Select Roles  Felect Roles  Role Name Role Description  So A DEVELOPER  Role Name Role Description  So A DEVELOPER	lect the software compor rary to be displayed as So	nents and roles. Click oftware Components	c publish button to make s.	e the software components available to selected roles. OVM Assemblies/Templates must be uploaded to EM softwar
Add % Remove Software Component Type Version Description OL6u4_x64_PVM Assembly 0.1    elect Roles   Role Name Role Description So Description So Description	elect Software Comp	onents		
Software Component Type Version Description OL6u4_x64_PVM Assembly 0.1  elect Roles elect Roles Role Name Role Description So DevLoCPR	🕂 Add 🛛 💥 Remove	····		
OLGU4_x64_PVM Assembly 0.1	Software Component	Туре	Version	Description
elect Roles	OL6u4_x64_PVM	Assembly	0.1	
elect Roles  Add % Remove Role Name Role Description SSA DEVELOFER				
Image: Solution         Role Description           SSA DEVELOPER         SSA DEVELOPER	elect Roles			
Role Name Role Description SSA DEVELOPER	Add 💥 Remove	2		
SSA_DEVELOPER	Role Name	Role Description		
	SSA_DEVELOPER			
				Publish Can





ORACLE Enterprise Manager Cloud Control 12c					Setup	▼ Help ▼   🤽 CLOUDADM ▼   L	og Out	
🦂 Enterprise 🔻 🎯 Targets 👻 🏫 Eavo	orites 🔻 🥝 Hist <u>o</u> ry 🔻					Search Target Name 🔻		÷
Infrastructure Cloud Self Servi	ice Setup					Page	e Refreshed Aug 13, 2013 1:40:11 A	M PDT 🖒
Machine Sizes	Software Compon	ents						
Request Settings	<ul> <li>Publish Software Components</li> <li>Software Components can be published to provide access privileges on Software Library Components for Self Service Portal Users.</li> </ul>							
✓ Roles	* Roles SSA_DEVE	LOPER	💽 🛛 🕂 Add Comp	oonents 🥒 Edit	💥 Delete 🥢	🖉 Configure 🛛 💥 Remove Config	guration 🔄 Import	*
Software Components	Software . Component	Туре	Version	Configured	Imported	Description		
(i) Chargeback	OL6u4_x64_PVM	Assembly	0.1	×	¥			

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
  - o Maximum 3 servers
  - o 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.
- o 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
- o 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"



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

ORACLE Enterprise Manager Cloud Control 12c	Setup 🔻 Help 🔻 🛛 👥 CLOUDADM 👻 🛛 Log Out							
🍓 Enterprise 🔻 🎯 Targets 🔻 👷 Eavorites 🔻 📀 History 👻					Search Target Name 👻			
Chargeback		Page Re	efreshed Aug 22, 2013	5:36:45 AM PDT 🖒				
Home         Charge Plans         Cost Centers         Targets         Report           Date Range         Aug 1, 2013 - Aug 31, 2013 •         •         Search         Target Name •           Cost Center and Charge Plan Assignment for Targets         Acton •         Vew •         •         Add Targets         % Remove Targets         Assign Plan	s an Assign Cost Cer	→ Adv	vanced					
Target Name	Target Type	Shared	Shared Entity	Charge Plan	Cost Center	Latest Collection Status	Metered	
Cloud								
Databases								
Groups, Systems and Services								
Middleware								
Servers, Storage and Network								

#### c) Click on "Add Targets"

ORACLE Enterprise Manager Cloud Control 12c					Setup 👻 Help 👻 🔛 CLOUDADM 👻 🛛 Log Out				
🎼 Enterprise 🔻 🎯 Targets 🔻 🏫 Eavorites 👻 🥝 History 👻		Search Target Name 👻							
Chargeback					Page R	efreshed Aug 22, 2013	3 5:35:13 AM PDT 🖒		
Home Charge Plans Cost Centers Targets Repo Date Range Aug 1, 2013 - Aug 31, 2013 Search Target Name Cost Center and Charge Plan Assignment for Targets Actor v View - Add Targets Remove Targets Assign	Plan Assign Cost C	Ar	dvanced						
Target Name	Target Type	Shared	Shared Entity	Charge Plan	Cost Center	Latest Collection Status	Metered		
Cloud									
Databases									
Groups, Systems and Services									
Middleware									
Servers, Storage and Network									

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

ORACLE Enterprise Manager Cloud Control 12c
Chargeback
Select Targets Identify Shared Targets Make Assignments Review
Add Targets : Select Targets
Select targets for Chargeback. Selecting a parent target automatically includes the children.
Add 💥 Remove
Target Name

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

Search				
Target Type	All	•		
Target Name				
On Host				
Member of				
i lember of				
				Search
Target Name		Target Type	On Host	Status
/EMGC_GCD	omain/GCDomain	Oracle WebLogic Dom	emcc.example.com	n/a
/EMGC_GCD	omain/GCDomain/EM	Orade WebLogic Serv	emcc.example.com	1
/EMGC_GCD	omain/GCDomain/EM	Orade WebLogic Serv	emcc.example.com	<b>1</b>
192.168.56.	3	Host	192.168.56.3	1
devpool		Orade VM Server Poo	192.168.56.3	1
devzone		Orade VM Zone	192.168.56.3	Û
emcc.examp	le.com	Host	emcc.example.com	1
the second second	2			Mode Multi-Sele



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f) Click on "Next"



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

DRACLE Enterprise Mana	Help 🕶 Log Out 👱					
Chargeback						
Select Targets Identify Shared Targets	Take Assignments Review					_
Add Targets : Make Assignme	ents					Back Step 3 of 4 Next Submit Cancel
Assign cost centers and charge plans to the	e targets you have added for Chargeba	ack.				
Action - View - Assign Plan A	Assign Cost Center					✓ Assignments
Target Name	Target Type	Shared	Shared Entity	Charge Plan	Cost Center	
V devzone	V devzone Oracle VM Zone					To complete the setup, the targets and shared
devpool	Orade VM Server Po	lou				entities that you have added need to have a charge plan and cost center assigned to them.

h) Select plan dev\_plan and click on OK

sign Plan	
Charge Plan	Start Date
Universal Charge Plan	8/1/2013
Sample Charge Plan	7/1/2013
dev_plan	8/1/2013
Tip Changes apply from the beginning of the current rep	oorting cycle (2013-08-01)
	ок

#### 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.

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#### j) Click on Submit

	ontrol 12c					Help 🕶 Log Out 👱
Chargeback						
Select Targets Identify Shared Targets Make Assignments	Review					
Add Targets : Review						Back Step 4 of 4 Next Submit Cancel
Review your selections and assignments. Click Back to make	changes or click Submit to	confirm your	acceptance.			
View <b>v</b>						
view +						Next Steps
Target Name	Target Type	Shared	Shared Entity	Charge Plan	Cost Center	
	Oracle VM Zone			dev_plan		Metrics for the targets that have been added for
devpool	Oracle VM Server Pool			dev_plan		Manager repository on a daily schedule. Hence, it

#### ORACLE Enterprise Manager Cloud Control 12c

DRACLE	Interprise Manager Cloud Control	12c				Setup 🕶		ADM 🕶 🕴 Log Out 🧲
🖁 Enterprise 🕶 👩	Targets 🔻 🏫 Eavorites 👻 🎯 Hist <u>o</u> ry 👻				Sear	rch Target Name 👻		+
Chargeback						Page Re	efreshed Aug 22, 2013	3 5:54:36 AM PDT 🖒
Confirmation 2 targets have b	een added successfully							X
Home Char Date Range Aug 1	ge Plans Cost Centers Targets , 2013 - Aug 31, 2013 ▼ Search Target N	Reports		Advanced				
Cost Center and	Charge Plan Assignment for Targets	J Accient Dista	inn Cost Conter	ř				
Target Name	Add Hargets So remove fargets	Target Type	Shared	Shared Entity	Charge Plan	Cost Center	Latest Collection Status	Metered
Cloud								
Databases								
Groups, System	and Services							
Middleware								
V Servers, Storag	and Network							
V devzone		Oracle VM Zone			dev_plan			
devpool		Oracle VM Server Poc			dev_plan			

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

#### Setup • Help • I 🔮 CLOUDADM • | Log Out 🤤 ORACLE' Enterprise Manager Cloud Control 12c 🎼 Enterprise 🔻 🎯 Targets 🔻 🏫 Eavorites 🔻 🥝 Hist<u>o</u>ry 👻 Search Target Name 🔻 • Chargeback Page Refreshed Aug 22, 2013 5:56:36 AM PDT 🖒 Home Charge Plans Cost Centers Targets Reports 🔮 Create 🔻 🥖 Set Rates... 💥 Delete... 3 Charge Plans ★ Universal Charge Plan: Aug 1, 2013 - Aug 31, 2013 View 👻 👩 Metric CPU Usage Type Default CPU Architecture Rate \$0.50 / CPU / Hour 🛛 🖈 Universal Charge Plan Memory Allocation Generic \$2.00 / GB / Day Sep 1, 2013 - Onward Aug 1, 2013 - Aug 31, 2013 Storage Allocation Generic \$0.50 / GB / Day ⊽ dev\_plan V Aug 1, 2013 - Onward Oracle VM Guest Sample Charge Plan

ORACLE Enterprise Mana	ger Cloud Control 12c		Setup 🔻 Help 👻 🔝 CLC	)UDADM 🕶 🛛 Log Out 🧲
🍓 Enterprise 🔻 🔘 Targets 🔻 🏫 Eavori	tes ▼ 🥝 Hist <u>o</u> ry ▼		Search Target Name 🔻	+
Chargeback			Page Refreshed Aug 22, 2	013 5:56:36 AM PDT 🖒
Home Charge Plans Cost	Centers Targets Reports			
Charge Plans	dev_plan: Aug 1, 2013 - Onward: 0	Dracle VM Guest		
View 👻 🔄	Those	Default Configuration		
V * Universal Charge Plan	Item	Charge		
Sep 1, 2013 - Onward	Base Charge	\$10.00 / Day		
Aug 1, 2013 - Aug 31, 2013	V Universal Rate Adjustments			
∀ dev plan	> CPU Rate Factor	1x		
V Aug 1 2013 - Onward	Memory Rate Factor	1x		
Oracle VM Guest	Storage Rate Factor	1x		
Sample Charge Plan				





ORACLE Enterprise Manager Cloud Co	ntrol 12c	Setup 👻 Help 👻 🔤 💶 CLOUDADM 👻	Log Out 🤤
🤹 Enterprise 🔻 🗑 Targets 🔻 📩 Eavorites 👻 😌 Histor	Y <del>-</del>	Search Target Name 🔻	+
Chargeback		Page Refreshed Aug 22, 2013 5:57:5	59 AM PDT 🖒
Home Charge Plans Cost Centers Ta	rgets Reports		
Use a cost center to aggregate charges across multiple targets	. Cost centers are typically organized in a hi	erarchy to provide a rollup of charges.	*
Date Range Aug 1, 2013 - Aug 31, 2013 💌			-
Cost Center			
Action - View - 🕂 Add 💥 Remove			
Cost Center	Display Name	Category	
V DEVGRP_PARIS	DEVGRP_PARIS	Manual	
PARIS_USER1	PARIS_USER1	Manual	
PARIS_USER2	PARIS_USER2	Manual	
▼ DEVGRP_ROME	DEVGRP_ROME	Manual	
ROME_USER1	ROME_USER1	Manual	
ROME_USER2	ROME_USER2	Manual	
Default Cost Center	Default Cost Center	System	

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)

ORACLE Enterprise Manager Cloud	i Control 12c	Setup 🔻 Help 🔻 🛛 🕵 CLOUDA	ADM - Log Out					
🏟 Enterprise 🔻 🎯 Targets 👻 🏫 Eavorites 👻 🥝 H	st <u>o</u> ry ▼	Search Target Name 👻						
Chargeback	geback Page Refreshed Aug 26,							
Home Charge Plans Cost Centers Use a cost center to aggregate charges across multiple ta Date Range Aug 1, 2013 - Aug 31, 2013	Targets Reports rgets. Cost centers are typically organized in a	hierarchy to provide a rollup of charges.	*					
Cost Center			-					
Action 👻 View 👻 📲 Add 🛛 💥 Remove								
Cost Center	Display Name	Category						
V DEVGRP_PARIS	DEVGRP_PARIS	Manual						
PARIS USER1	PARIS USER1	Manual						

- b) Log in again with a Self Service User using the following credentials:
  - User : paris\_user1
  - o 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..."

DIRACLE							Help	• 🔛	PARIS_US	ER1 •   Log Out
nfrastructure Cloud Self Service Po	ortal					Θ	Page Refre	shed <b>Aug</b>	, <mark>22, 2</mark> 013	5:59:08 AM PDT
Manage  My Servers My Databases My Home My Requests My Servers	Middleware () My Tests Storage Cha	argeback My Libra	ry Policies							📕 My Preferenc
Notifications Servers Due to Expire in Next 7 Days 0	10 Last Requeste Action • View •	d Servers								
Software Published in Last 7 Days 1	Name No items found.	Status Zone	CPUs	Memory (MB)	Storage (GB)	Charge Creation	on Date		Expiry I	Date
Jsage su have permission to use these cumulative jota allowances when making server and torage requests. ervers: 0 0 3 PUs: 0	_				11					
	4									
emory: 0 GB	10 Latest Reques	ts X Delete				1				
	Name	Status	Submission Date	Start Date	End Date	Туре	Serve	Total CPUs	Total Memory (MB)	Total Storage (G
0 10 torage (GB) 0 GB	No items found.	i			i					







- d) In the window "New Server Request : General":
  - o Select zone devzone
  - Select source OL6u4\_x64\_PVM
  - o Click on Next

DRACLE	Help + Log Out
General Deployment Configuration Schedule Review	
New Server Request : General	Back         Step 1 of 4         Next         Save As Deployment Plan         Finish         Cancel
Request Name	
Specify a name for your request. This will help you track it later.	
* Name PARIS_USER1 - Thu Aug 22 06:01:29 PDT 2013	
Destination	
Select the zone in which servers will get created.	
* Zone devzone 💌	
Description devzone	
Source	
Select the source software (assembly or template) to be used for this request. 🔳	
* Source OL6u4_x64_PVM Q	
Description	
Assembly Instance Name	
* Name OL6u4_x64_PVM	
Deployment Plan(Optional)	
Deployment plans allow you to record inputs and use them later while creating new requests using standard values.	
Name 🔍 🗶	
Description	

- e) In the window "New Server Request : Deployment Configuration":
  - Click on line 'OVM\_OL6U4\_x86\_64\_PVM1: OL6u4\_x64\_PVM"
  - o This will display the deployment options
  - o Enter "dev" as the root password for the future VM
  - o Select "very small" in the "Server Size" drop down menu
  - Expand the Network options by clicking on icon I in front of "Network"

vew Server Request . Deployment Con	ngurauc						DOCK	(Cp 2 0)	- Hext Suve As De	poynener man
										Configure Netv
Name		Number of Servers 2 Auto Scala		Auto Scalable	Deploy Server Size			Deployment Option	Server Name Prefix	
	Default	Minimum	Maximum	Initial						
OVM_OL6U4_x86_64_PVM1:OL6u4_x64_PVM	1	1	64	1		1	very small			OVM_OL6U4_x86_64_PVM1_vm
cted Row OVM_OL6U4_x86_64_PVM1:OL6u4_x64_ 1_OL6U4_x86_64_PVM1:OL6u4_x64_PVM	PVM									Configure Individual Se
lected Row OVM_OL6U4_x86_64_PVM1:OL6u4_x64_ rM_OL6U4_x86_64_PVM1:OL6u4_x64_PVM eployment Option Server Configuration Product Configuration eneral	PVM				Sen	ver Size : very	small	1 ****	uinum Number of CDU I	Configure Individual Se
Interest Configuration  Interest Configuration  Interest Configuration  Interest  Inte					Sen	<b>ver Size</b> : very * Maximum Mer Mer	small nory(MB) 800 ( 300	] * Mz	ximum Number of CPUs [ Number of CPUs ]	Configure Individual Se

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

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Help 👻 Log Out 📿



General Deployment Configuration Schedule Review	
New Server Request : Schedule Select a Schedule for your Request	Back         Step 3 of 4         Next         Save As Deployment Plan         Finish         Cancel
Schedule	
Start Date ( ) Immediately () Later () (GMT-08:00) Los Angeles - Pacific Time (PT)	
End Date   Indefinitely  Until	

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

ORACLE		•			·					Help 👻 Log Out
General Deployment Configuration Schedule Rev New Server Request : Review	) riew						Back St	ep 4 of 4 Next Save	e As Deployment Plan	Finish Cancel
General						Schedule				
Request Name SSA_USER 1 - Tue Aug 1?	02:02:49 PD	Γ2013				Start Date Imm	nediately			
Zone devzone						End Date Ind	efinitely			
Source OL6u4_x64_PVM										
Assembly Instance Name OL6u4_x64_PVM										
Deployment Configuration										
	1	Number r	of Servers				-			
Name	Default	Minimum	Maximum	Initial	Auto Scalable	Deploy	Server Size	Deployment Option	n Server Name F	renx
♥ OL6u4_x64_PVM										
OVM_OL6U4_x86_64_PVM1:OL6u4_x64_PVM	1	1	64	1		<b>V</b>	very small		OVM_OL6U4_>	<86_64_PVM1_vm

#### 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

							Tech	- 1 <u>8</u>	PARIS_US	-
nfrastructure Cloud Self Service Por	tal					🕑 🛛 Page	Refre	shed Au	g 22, 2013	6:56:25 AM PDT
Confirmation Your request PARIS_USER 1 - Thu Aug 22 06:5	5:06 PDT 2013 was subm	itted successfully. You ca	n track the status of	your requests on the	Home page.					2
Manage ( ) My Servers ( ) My Databases ( ) My M	iiddleware 🔘 My Tests									Preference:
Home My Requests My Servers	Storage Cha	argeback My Library	/ Policies							
Notifications Servers Due to Expire in Next 7 Days .0	10 Last Requeste	d Servers								
Software Published in Last 7 Days 1	Name	Status Zone	CPUs	Memory (MB)	Storage (GB)	Charge Creation Dat	e		Expiry I	Date
ervers: 0					m					¥
PUs: 0		<b>ts</b> 💥 Delete								
0 6	Name	Status	Submission Date	Start Date	End Date	Туре	Servi	Total CPUs	Total Memory (MB)	Total Storage (GB
lemory: 0 GB									(190)	2 1
Memory: 0 GB	PARIS_USER1 - T	hu Au Scheduled	Aug 22, 2013 6:56	:2• Aug 22, 2013 6:5	6:24	Assembly Deploymen	1	1	800	10.00

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)

unitastructure ciouu Sei Service Po	rtal					Page	Refre	shed Aug	22, 2013	7:00:07 AM PDT
Manage  My Servers  My Databases  My Home My Requests My Servers	Middleware () My Tests Storage Char	geback My Libra	ry Policies							Hy Preference
Notifications Servers Due to Expire in Next 7 Days 0	10 Last Requested Action • View •	Servers								
Software Published in Last 7 Days 1	Name	Status Zone	CPUs	Memory (MB)	Storage (GB)	Charge Creation Dat	te		Expiry I	Date
	dev1.example.com	devzone	1	800	21.52	Aug 22, 201	3 6:57	:24 AM PE	T	
	-									
0 3	-				m					
0 3 CPUs: 1	↓ 10 Latest Request View ▼	<b>s</b> 			m					
0 3 CPUs: 1 0 6 Hemory: 0.78 GB	↓ 10 Latest Request Vew ↓	s Status	Submission Date	Start Date	III End Date	Туре	Servi	Total CPUs	Total Memory (MB)	Total Storage (GB)
0 3 CPUs: 1 0 6 Hemory: 0.78 GB		s ≫ Delete Status u Au Successful	Submission Date Aug 22, 2013 6:56	Start Date :2: Aug 22, 2013 6:5	III End Date	Type Assembly Deploymen	Servi 1	Total CPUs 1	Total Memory (MB) 800	Total Storage (GB)

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:

- o 1 server out of the maximum of 3
- o 1 vcpu out of the maximum of 6
- o 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"

Name		Status	Zone		
dev1.exam Modify Configuration					
	Clo	one			
	De	lete			
	Sta	art			
	Sto	op			
	Re	start			
	Suspend				
•	Re	sume			
	Lau	unch VNC C	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
  Disconnect Options Clipboard Record Send Ctrl-Alt-Del Refresh

Dracle Linux Server release 6.4	
Kernel 2.6.39-400.17.1.el6uek.x86_64 on an x86_64	
deut logint most	
rassuora:	
[root@dev1 ~]# ifconfig	
the Link encap:Ethernet HWaddr 00:21:F6:00:00:04	
inet addr: 192.168.56.11 Bcast: 192.168.56.255 Mask:	255.255.255.0
inet6 addr: fe80::221:f6ff:fe00:4/64 Scope:Link	
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1	
RX packets:100 errors:0 dropped:0 overruns:0 frame:0	
TX packets:18 errors:0 dropped:0 overruns:0 carrier:	0
collisions:0 txqueuelen:1000	
RX bytes:8261 (8.0 KiB) TX bytes:1060 (1.0 KiB)	
Interrupt:29	

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 laaS 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)

- o Import other Oracle VM assemblies/templates
- Import ISO image files for OS
- o 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.
- o Display Chargeback reports

ο..

For instance, as a self service user (users PARIS\_USER1, PARIS\_USER2, ROME\_USER1 or ROME\_USER2)

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

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
- o 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 (<u>https://192.168.56.3:7002/ovm/console</u>) 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.

Eile Edit View History Bookmarks Tools	<u>H</u> elp				
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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
- o The Oracle VM Manager
- The Enterprise Manager 12c

### 4.2 DOWNLOAD REQUIRED BINARIES

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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 <a href="http://java.com/en/download/manual.jsp">http://java.com/en/download/manual.jsp</a>
- Oracle VM VirtualBox 4.2.x binaries (4.2.16 during writing of this document)
   Download the version for your OS from <u>https://www.virtualbox.org/wiki/Downloads</u>
   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 <u>https://www.virtualbox.org/wiki/Downloads</u> (same file for all OSes) Direct link: <u>http://download.virtualbox.org/virtualbox/4.2.16/Oracle\_VM\_VirtualBox\_Extension\_Pack-4.2.16-86992.vbox-extpack</u> 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 <u>http://www.oracle.com/technetwork/server-storage/vm/template-1482544.html</u> Direct link: <u>http://download.oracle.com/otn/vm/OracleVMServer3.2.4-b525.ova</u> 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 <u>http://www.oracle.com/technetwork/server-storage/vm/template-1482544.html</u> Direct link: <u>http://download.oracle.com/otn/vm/OracleVMManager3.2.4-b524.ova</u> 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 (<u>https://edelivery.oracle.com/oraclevm</u>) 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 (<u>https://edelivery.oracle.com/linux</u>) 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: <u>https://edelivery.oracle.com/EPD/Download/get\_form?egroup\_aru\_number=16621066</u>
 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
- 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
- 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 <u>https://192.168.56.5:7799/em</u> 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 gualified hostnames.
- In the window "Add Host Targets: Installation Details", enter the following information, then click on "Next"
  - Installation Base Directory : /u01/em\_agent
    - : /u01/em\_agent/agent\_inst
  - Instance Directory Named Credential
    - Click on "+" to add a new credential
      - o Username : oracle
      - Password : oracle
      - Save As : oracle 0
    - 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)

: Certificate was added to keystore Message 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





- 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"
- 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
- 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
```

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
```

# ln -s /etc/init.d/emcc /etc/rc1.d/K01emcc
# ln -s /etc/init.d/emcc /etc/rc6.d/K01emcc

- 14. Disable the graphic environment (Gnome) to save resources (CPU and memory)
- 15. Reboot the server # reboot
- 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 laaS 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
  - o URL: <u>https://192.168.56.5:7799/em</u>
  - o 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:

0	Name	: paris_user1
0	Password	: puser1
0	Confirm Password	: puser1
0	Cost Center	: PARIS_USER1
0	Line of Business	: DEV GROUP PARIS
0	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

: puser2

26. In the window "Create Administrator ssa\_user1: Review", click on Finish

#### Creation of 3 more Self Service users

27. Creation of the 2<sup>nd</sup> user

- o Select the user PARIS\_USER1 and click on "Create Like"
- Enter the following information:
  - Name : paris\_user2
  - Password
    - Confirm Password : puser2
  - Cost Center : PARIS\_USER2
- o Click on Next 4 times (in the next 4 windows) then click on Finish







- 28. Creation of the 3<sup>rd</sup> user
  - Select the user PARIS USER1 and click on "Create Like" 0
  - Enter the following information: 0
    - Name .

- Password
- : rome\_user1 : ruser1
- Confirm Password
- : ruser1
- Cost Center
  - : ROME USER1 : DEV GROUP ROME
  - Line of Business Description
    - : Developer based in Rome
- Click on Next 4 times (in the next 4 windows) then click on Finish
- 29. Creation of the 4<sup>th</sup> user
  - Select the user ROME USER1 and click on "Create Like" 0
  - Enter the following information: 0
    - Name : rome\_user2
      - : ruser2
      - Password Confirm Password : ruser2
      - Cost Center : ROME USER2
  - Click on Next 4 times (in the next 4 windows) then click on Finish 0

#### 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
  - : 255.255.255.0 Netmask
  - Gateway : 192.168.1.1
  - DNS : 192.168.1.1
  - IP Address : Range \_
  - Click on Add
    - Hostname Pattern • : dev :1
    - . Start Value
    - First IP Address : 192.168.56.11
    - Last IP Address : 192.168.56.20
- 4. Click on OK



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### 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 <u>for</u> <u>current month</u>
- 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

ORACLE Enterprise Manager	Cloud Control 12c		
🔹 Enterprise 👻 👩 Iargets 👻 🏫 Eavorites 💌	⊘ History ▼		
Chargeback			
Home Charge Plans Cost Cente	rs Targets	Reports	
Charge Plans	* Universal Charge	Plan: Sep 1, 2013 - Onward	
View - 🔄	Metric	Туре	Rate
V 🖢 Universal Charge Plan	CPU Usage	Default CPU Architecture	\$0.50 / CPU / Hour
Sep 1, 2013 - Onward	Memory Allocation	Generic	\$2.00 / GB / Day
Aug 1, 2013 - Aug 31, 2013	Storage Allocation	Generic	\$0.50 / GB / Day

#### 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)
  - o Click on "Add Item"
  - o Select "Base Charge" in the Item Name and Click on OK
  - Set the cost for the Base Charge: for instance, 10.00 \$ per Day
  - o Click on Save

🖁 Enterprise 🕶 👩 Targets 👻 🐈 Eave	orites 👻 📀 Hist <u>o</u> ry 👻	
hargeback		
Home Charge Plans Cos	t Centers Targets Reports	
hand .		
Charge Plans	dev_plan: Aug 1, 2013 - Onward: 0	Dracle VM Guest
Charge Plans	dev_plan: Aug 1, 2013 - Onward: O	Dracle VM Guest Default Configuration
Charge Plans View - 🔄	dev_plan: Aug 1, 2013 - Onward: O	Dracle VM Guest Default Configuration Charge
Charge Plans View + 0 ★ Universal Charge Plan © Sep 1, 2013 - Onward	dev_plan: Aug 1, 2013 - Onward: C	Dracle VM Guest Default Configuration Charge \$10.00 / Day
View ▼         Image: Charge Plans           ✓ ★ Universal Charge Plan         Sep 1, 2013 - Onward           Image: Charge Plan = Charge Plans         Sep 1, 2013 - Onward	dev_plan: Aug 1, 2013 - Onward: C Item Base Charge ⊽ Universal Rate Adjustments	Dracle VM Guest Default Configuration Charge \$10.00/ Day
View →         Image: Charge Plan           ✓ ★ Universal Charge Plan         Image: Charge Plan           Image: Charge Plan	dev_plan: Aug 1, 2013 - Onward: 0 Item Base Charge V Universal Rate Adjustments > CPU Rate Factor	Dracle VM Guest Default Configuration Charge \$10.00 / Day 1x
Wiew ▼         Image: Constraint of the second	dev_plan: Aug 1, 2013 - Onward: 0       Item       Base Charge       ♥ Universal Rate Adjustments       ▷ CPU Rate Factor       ▷ Memory Rate Factor	Dracle VM Guest Default Configuration Charge \$10.00 / Day 1x 1x

#### Setup the Cost Centers

- 11. Click on tab "Cost Centers"
- 12. Add a cost center for the developer group based in Paris
  - o Click on Add
  - o Enter the following information
    - Cost Center : DEVGRP\_PARIS
    - Display Name : DEVGRP\_PARIS
  - o Select the level "Top Level (Root)"
  - o 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 1<sup>st</sup> user of the Paris developers group
  - o Click on Add
  - Enter the following information
    - Cost Center : PARIS\_USER1
    - Display Name : PARIS\_USER1
  - o Select the level "Member of DEVGRP\_PARIS"
  - o Click on **OK**
- 15. Add a cost center for the 2<sup>nd</sup> 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 1<sup>st</sup> user of the Rome developers group Repeat the same operations with Cost Center and Display Name ROME\_USER1 and Level "Member of DEVGRP\_ROME"
- Add a cost center for the 2<sup>nd</sup> 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 : <u>http://docs.oracle.com/cd/E24628\_01/doc.121/e28814.pdf</u>
- 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

Recase 3				
Overview Management Release Notes Extensibility Plug-ins	Connectors Reference	Associated Products		
Description		Getting Started		
The Oracle Enterprise Manager family of products provides comprehensiv deploying, operating, monitoring, diagnosing, and resolving problems in I	re solutions for testing, today's complex IT	Introduction	HTM	
environments. This library provides you with access to the latest Oracle E documentation.	nterprise manager	Administration Guides		
12.1.0.3 Installation and Upgrade Guides		Administrator's Guide	HTMI	
Basic Installation Guide	HTML PDF	Cloud Control Security Guide Lifecycle Management Administrator's Guide	HIM	
Advanced Installation and Configuration Guide Upgrade Guide	HTML PDF HTML PDF	Patrata Claud Catan and Administration		
12.1.0.2 Installation and Upgrade Guides		Cloud Administration Guide	HTM	
Advanced Installation and Configuration Guide	HTML PDF HTML PDF	Licensing		
Upgrade Guide	HTML PDE	Licensing Information	HTM	
12.1.0.1 Installation and Upgrade Guides		Index		
Basic Installation Guide	HTML PDE	Master Daaldat		
Advanced Installation and Configuration Guide	HTML PDF	Master Booklist Master Glossary	HIMI HTMI	
Upgrade Guide	HTML PDF	Mastar Inday	HTMI	





### 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	<u>ePub</u>	
Oracle VM Installation and Upgrade Guide for Release 3.2.1	HTML	PDF	<u>ePub</u>	
Oracle VM Getting Started Guide for Release 3.2.1	HTML	PDF	<u>ePub</u>	
Oracle VM User's Guide for Release 3.2.1	HTML	PDF	<u>ePub</u>	
Dracle VM Paravirtual Drivers Installation Guide for Microsoft Windows for Release 3.2.1	HTML	PDF	<u>ePub</u>	
Oracle VM Utilities Guide for Release 3	HTML	PDF	<u>ePub</u>	
Oracle VM Security Guide for Release 3	HTML	PDF	<u>ePub</u>	
Dracle VM Command Line Interface User's Guide for Release 3.2.1	HTML	PDF	<u>ePub</u>	

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