ORACLE
VM

HOL9121
Create your own template using Oracle VM 3.3.1
HANDS-ON LAB

In this session, you'll learn how to create your own Oracle VM Template for your application. The template will start with Oracle Linux as the guest Operating System and end-up with a template for the automatic deployment and configuration of MySQL 5.6.

A must attend to see how you can harness the power of Oracle VM Templates.

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ORACLE

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Last update: September 22, 2014

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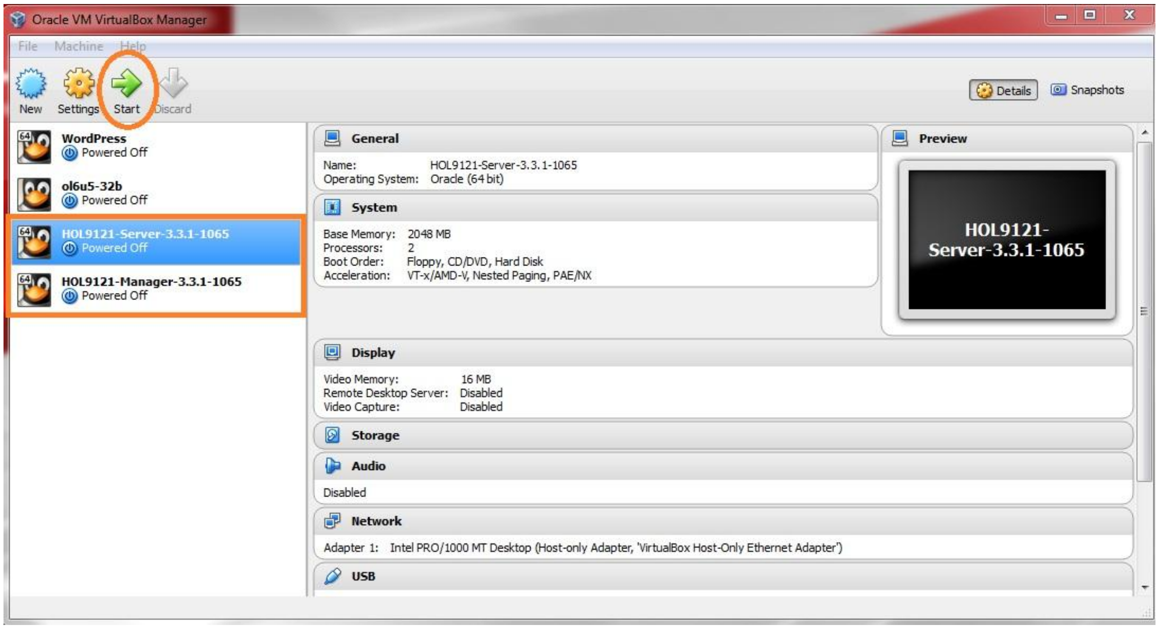
Special thanks to: Gregory Verstraeten, Bruno Bottreau , Christophe Pauliat, Simon Coter, Doan Nguyen, Jean-Philippe Pinte

PRE-WORK TO BE DONE

To save time, the first thing to do is to start both VirtualBox VMs (Oracle VM Manager and Oracle VM Server) :

- Select the VM called “HOL9121-OracleVM-Manager-3.3.1-1065” and click on Start to start it
- Select the VM called “HOL9121-OracleVM-Server-3.3.1-1065” and click on Start to start it



General
Name: HOL9121-Server-3.3.1-1065
Operating System: Oracle (64 bit)

System
Base Memory: 2048 MB
Processors: 2
Boot Order: Floppy, CD/DVD, Hard Disk
Acceleration: VT-x/AMD-V, Nested Paging, PAE/NX

Display
Video Memory: 16 MB
Remote Desktop Server: Disabled
Video Capture: Disabled

Storage

Audio
Disabled

Network
Adapter 1: Intel PRO/1000 MT Desktop (Host-only Adapter, 'VirtualBox Host-Only Ethernet Adapter')

USB

LAPTOP ENVIRONMENT

To save time and fit it one hour slot of Oracle OpenWorld, some actions were done prior the actual lab.

Here is a quick list of actions which were already done :

Install Oracle Linux 6.5 (64 bits) on all the laptops.

Install Oracle VirtualBox 4.3.12r93733 + extensions on all the laptops.

Install an Oracle VM Manager 3.3.1 server in a VirtualBox virtual machine (HOL9121_ovm_mgr).

Install an Oracle VM Server 3.3.1 server in a VirtualBox virtual machine (HOL9121_ovm_srv).

Note:

To run this lab at home or office you will need an X86 machine with 8GB of RAM and 4 cores CPU.

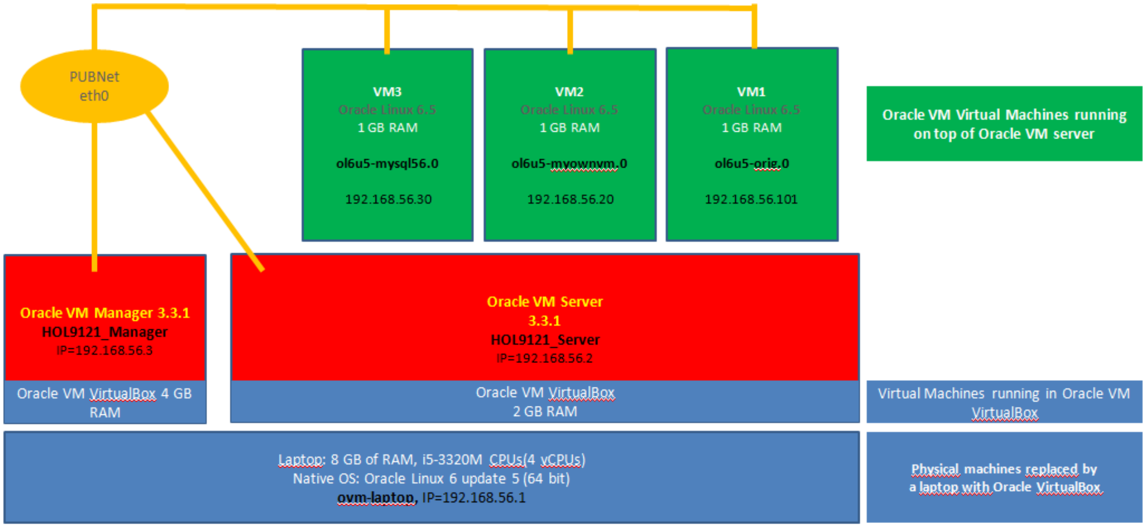
WHAT YOU WILL LEARN

In this lab, you will learn some basics on Oracle VM and execute following steps :

1) How to discover an Oracle VM Server
2) How to start an Oracle VM virtual machine from the OVM Manager
3) How to install Oracle VM API packages
4) How to create a Oracle VM template from an Oracle VM virtual machine
5) How to use Oracle VM messages to configure an Oracle VM virtual machine
6) How to use Oracle VM Command Line Interface to configure an Oracle VM virtual machine
7) How to create your own Oracle VM template for automatic deployment and configuration of MySQL5.6

GLOBAL LAB PICTURE

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


PUBNet
eth0
VM3
Oracle Linux 6.5
1 GB RAM
ol6u5-mysql56.0
192.168.56.30
VM2
Oracle Linux 6.5
1 GB RAM
ol6u5-myownvm.0
192.168.56.20
VM1
Oracle Linux 6.5
1 GB RAM
ol6u5-orig.0
192.168.56.101
Oracle VM Virtual Machines running on top of Oracle VM server
Oracle VM Manager 3.3.1
HOL9121_Manager
IP=192.168.56.3
Oracle VM Server 3.3.1
HOL9121_Server
IP=192.168.56.2
Oracle VM VirtualBox 4 GB RAM
Oracle VM VirtualBox 2 GB RAM
Virtual Machines running in Oracle VM VirtualBox
Laptop: 8 GB of RAM, i5-3320M CPUs(4 vCPUs)
Native OS: Oracle Linux 6 update 5 (64 bit)
ovm-laptop, IP=192.168.56.1
Physical machines replaced by a laptop with Oracle VirtualBox

START OVM SERVER AND OVM MANAGER

As previously explained, we will use Oracle VirtualBox to host the 2 servers (Oracle VM Server, Oracle VM Manager) on a single laptop.

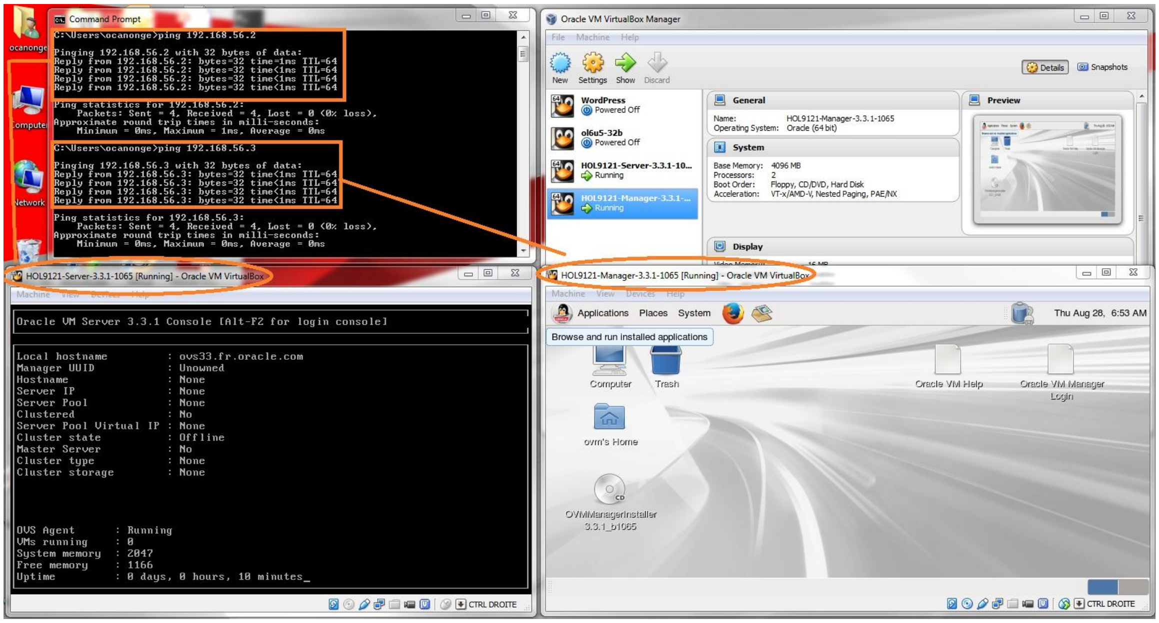
Both VMs should have been started previous section (PRE-WORK TO BE DONE), if not please start both VMs as described there

TO DO :

- Wait for both VMs to be fully started
  - Wait for the Oracle Linux display screen on the VM HOL9121_Server
  - Wait for Oracle VM server display screen on the VM HOL9121_Manager
  - Open a Terminal windows and check you are able to ping both VMs :

    HOL9121_Manager : 192.168.56.3

    HOL9121_Server : 192.168.56.2



```
C:\Users\ocanonge>ping 192.168.56.2

Pinging 192.168.56.2 with 32 bytes of data:
Reply from 192.168.56.2: bytes=32 time=1ms TTL=64
Reply from 192.168.56.2: bytes=32 time<1ms TTL=64
Reply from 192.168.56.2: bytes=32 time<1ms TTL=64
Reply from 192.168.56.2: bytes=32 time<1ms TTL=64

Ping statistics for 192.168.56.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\Users\ocanonge>ping 192.168.56.3

Pinging 192.168.56.3 with 32 bytes of data:
Reply from 192.168.56.3: bytes=32 time<1ms TTL=64
Reply from 192.168.56.3: bytes=32 time<1ms TTL=64
Reply from 192.168.56.3: bytes=32 time<1ms TTL=64
Reply from 192.168.56.3: bytes=32 time<1ms TTL=64

Ping statistics for 192.168.56.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

```
Oracle VM Server 3.3.1 Console [Alt-F2 for login console]

Local hostname          : ovs33.fr.oracle.com
Manager UUID            : Unowned
Hostname                : None
Server IP               : None
Server Pool             : None
Clustered               : No
Server Pool Virtual IP  : None
Cluster state           : Offline
Master Server           : No
Cluster type            : None
Cluster storage         : None



OVS Agent      : Running
VMs running    : 0
System memory  : 2047
Free memory    : 1166
Uptime         : 0 days, 0 hours, 10 minutes_
```

Name: HOL9121-Manager-3.3.1-1065
Operating System: Oracle (64 bit)

Base Memory: 4096 MB
Processors: 2
Boot Order: Floppy, CD/DVD, Hard Disk
Acceleration: VT-x/AMD-V, Nested Paging, PAE/NX

Once both VMs are started and you have checked ping is OK you can :

- Minimize the main VirtualBox program window

- Minimize the Oracle VM Manager VirtualBox window

- Minimize the Oracle VM Server window

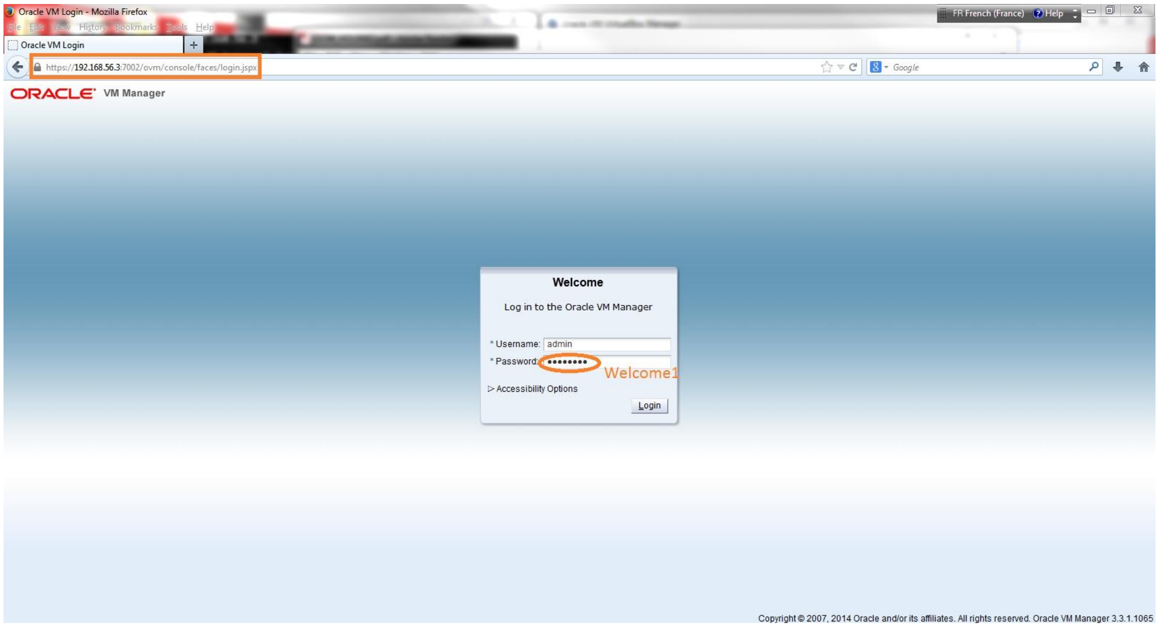
All next steps will be done from your laptop native OS.

CONNECT TO THE ORACLE VM MANAGER CONSOLE

TO DO :

- On your Linux physical desktop open a Firefox browser and connect to the Oracle VM Manager console using URL https://192.168.56.3:7002/ovm/console

  You should get the following login page :



Oracle VM Login - Mozilla Firefox
File Edit View History Bookmarks Tools Help
Oracle VM Login
FR French (France)
Help
Google
ORACLE VM Manager

https://192.168.56.3:7002/ovm/console/faces/login.jspx

Welcome

Log in to the Oracle VM Manager

* Username: admin

* Password: ••••••••

Welcome1

▷ Accessibility Options

Login

Copyright © 2007, 2014 Oracle and/or its affiliates. All rights reserved. Oracle VM Manager 3.3.1.1065

Log in using the following credentials:

- Login : **admin** (Oracle VM Manager Administrator)
- Password : **Welcome1**

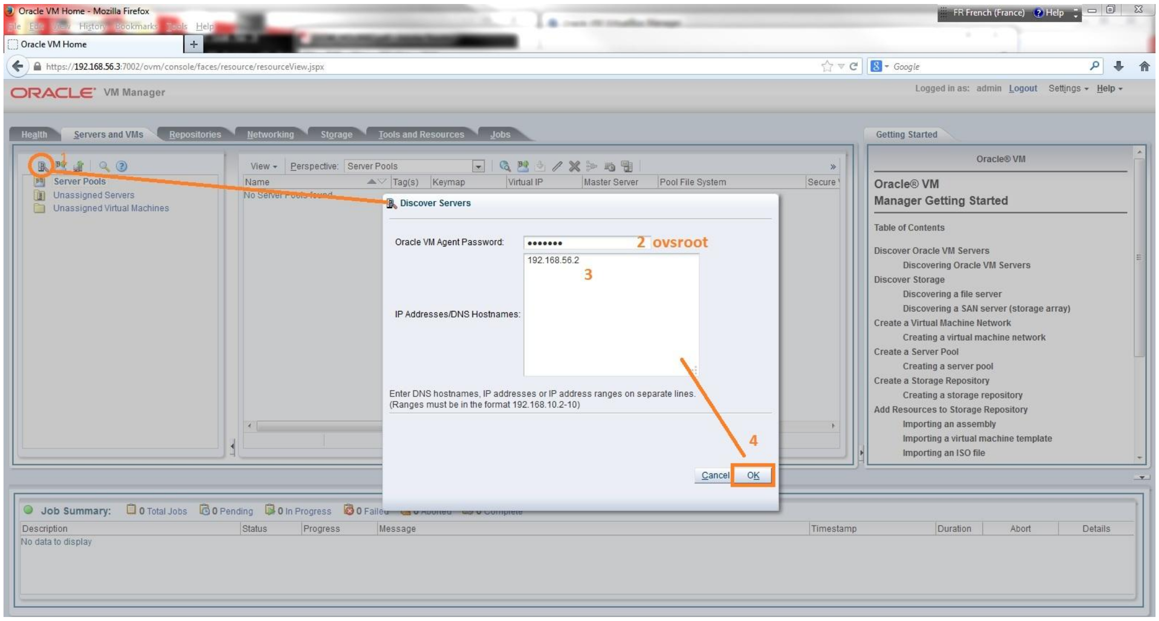
DISCOVER THE ORACLE VM SERVER

When you add Oracle VM Servers to your Oracle VM Manager environment, this process is known as discovering Oracle VM Servers. The first thing you should do to set up your virtualization environment is to discover your Oracle VM Servers.

When an Oracle VM Server is discovered, it contains some basic information about itself, and about any immediate connectivity to a shared SAN, but it is considered to be in an unconfigured state. Any storage attached to the Oracle VM Server is also discovered. Depending on your hardware and networking configuration, external storage may be automatically detected during discovery of the Oracle VM Servers. In this LAB our Oracle VM Server does not have any shared storage only a local OCFS storage that has been discovered during discovery of the server.

TO DO :

- Click the Servers and VMs tab, if not already selected
- Click (Discover Servers in the toolbar)
- In Discover Servers wizard, Enter the Oracle VM Agent password (ovsroot) and the IP address (192.168.56.2) for the Oracle VM Server(s) to be discovered. Click OK



Oracle VM Home - Mozilla Firefox [redacted]

https://192.168.56.3:7002/ovm/console/faces/resource/resourceView.jspx

ORACLE VM Manager — Logged in as: admin Logout Settings Help

Health | Servers and VMs | Repositories | Networking | Storage | Tools and Resources | Jobs

Server Pools / Unassigned Servers / Unassigned Virtual Machines

View · Perspective: Server Pools

Name	Tag(s)	Keymap	Virtual IP	Master Server	Pool File System	Secure
No Server Pools found.						

Discover Servers

Oracle VM Agent Password: ••••••• 2 ovsroot

IP Addresses/DNS Hostnames: 192.168.56.2 3

Enter DNS hostnames, IP addresses or IP address ranges on separate lines.
(Ranges must be in the format 192.168.10.2-10)

4 Cancel OK

Job Summary: 0 Total Jobs 0 Pending 0 In Progress 0 Failed 0 Aborted 0 Complete

Description	Status	Progress	Message	Timestamp	Duration	Abort	Details
No data to display							

Getting Started

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- Add Resources to Storage Repository
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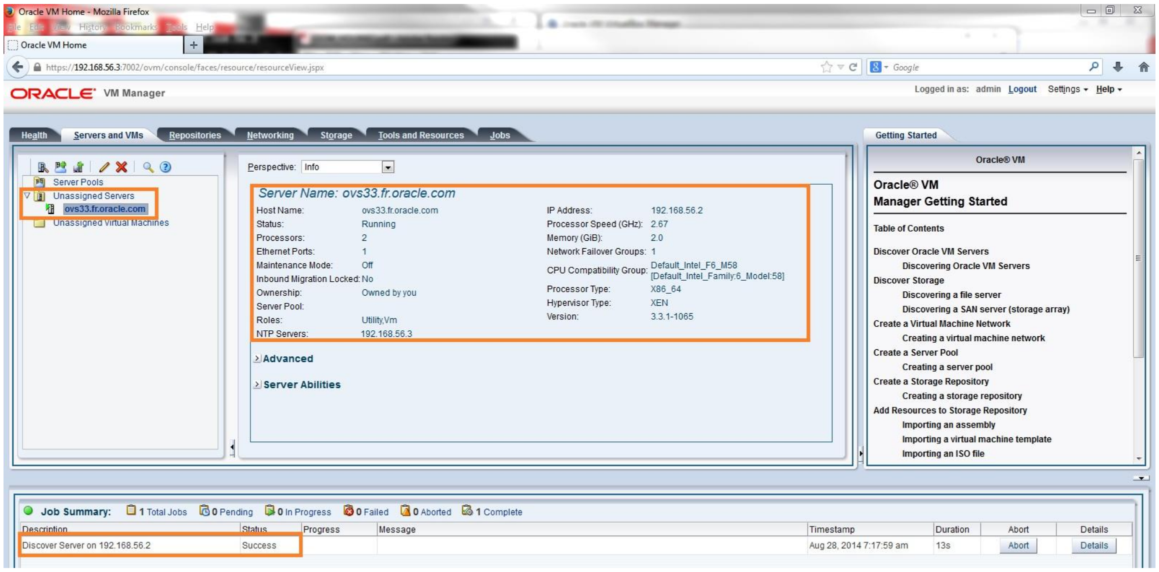
  - Importing a virtual machine template
  - Importing an ISO file

The Oracle VM Servers are discovered and added to the **Unassigned Servers** folder in the **Servers and VMs** tab. The displayed name of a discovered Oracle VM Server is the assigned DNS name, and not the IP addres :



Oracle VM Home - Mozilla Firefox [redacted]

https://192.168.56.3:7002/ovm/console/faces/resource/resourceView.jspx

ORACLE VM Manager — Logged in as: admin Logout Settings Help

Health | Servers and VMs | Repositories | Networking | Storage | Tools and Resources | Jobs

Server Pools / Unassigned Servers / ovs33.fr.oracle.com / Unassigned Virtual Machines

Perspective: Info

Server Name: ovs33.fr.oracle.com

Host Name:	ovs33.fr.oracle.com	IP Address:	192.168.56.2
Status:	Running	Processor Speed (GHz):	2.67
Processors:	2	Memory (GiB):	2.0
Ethernet Ports:	1	Network Failover Groups:	1
Maintenance Mode:	Off	CPU Compatibility Group:	Default_Intel_F6_M58 [Default_Intel_Family:6_Model:58]
Inbound Migration Locked:	No	Processor Type:	X86_64
Ownership:	Owned by you	Hypervisor Type:	XEN
Server Pool:		Version:	3.3.1-1065
Roles:	Utility,Vm		
NTP Servers:	192.168.56.3		

Advanced

Server Abilities

Job Summary: 1 Total Jobs 0 Pending 0 In Progress 0 Failed 0 Aborted 1 Complete

Description	Status	Progress	Message	Timestamp	Duration	Abort	Details
Discover Server on 192.168.56.2	Success			Aug 28, 2014 7:17:59 am	13s	Abort	Details

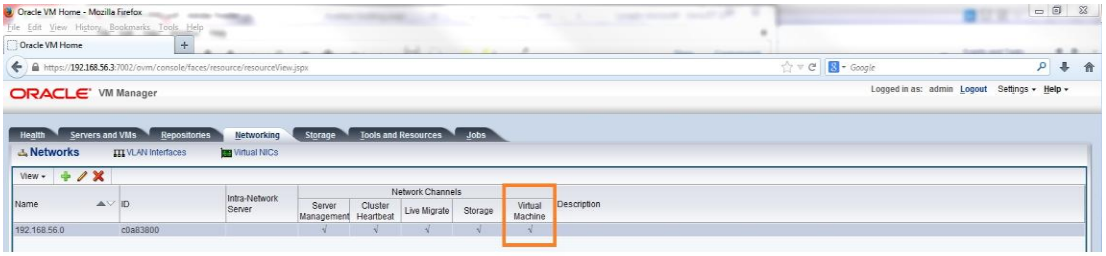
Next step is the discovery of a storage array. In our LAB we only have a local OCFS2 disk attached to the Oracle VM Server which have already been discovered during the discovery of the Oracle VM Server. So next step is to configure a virtual machine network.

DEFAULT MANAGEMENT NETWORK

Oracle VM has a number of network functions: Server Management, Live Migrate, Cluster Heartbeat, Virtual Machine, and Storage. The Server Management, Live Migrate and Cluster Heartbeat roles were automatically assigned to the management network (192.168.56.0) when you discovered the Oracle VM Server. The Virtual Machine and Storage roles are not automatically created, and you must manually create these. The Storage role is only required for iSCSI-based storage, so for the purposes of local based storage used in this HOL, it is not required. In this HOL the Virtual Machine role was already created.

TO DO :

- Click the Networking tab, then the Networks subtab
- Select existing Management Network 192.168.56.0
- Check Virtual Machine role is selected if not, add this role using ✎


Oracle VM Home - Mozilla Firefox
File Edit View History Bookmarks Tools Help
Oracle VM Home
https://192.168.56.3:7002/ovm/console/faces/resource/resourceView.jspx
Google
ORACLE VM Manager
Logged in as: admin Logout Settings Help
Health
Servers and VMs
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Jobs
Networks
VLAN Interfaces
Virtual NICs
View

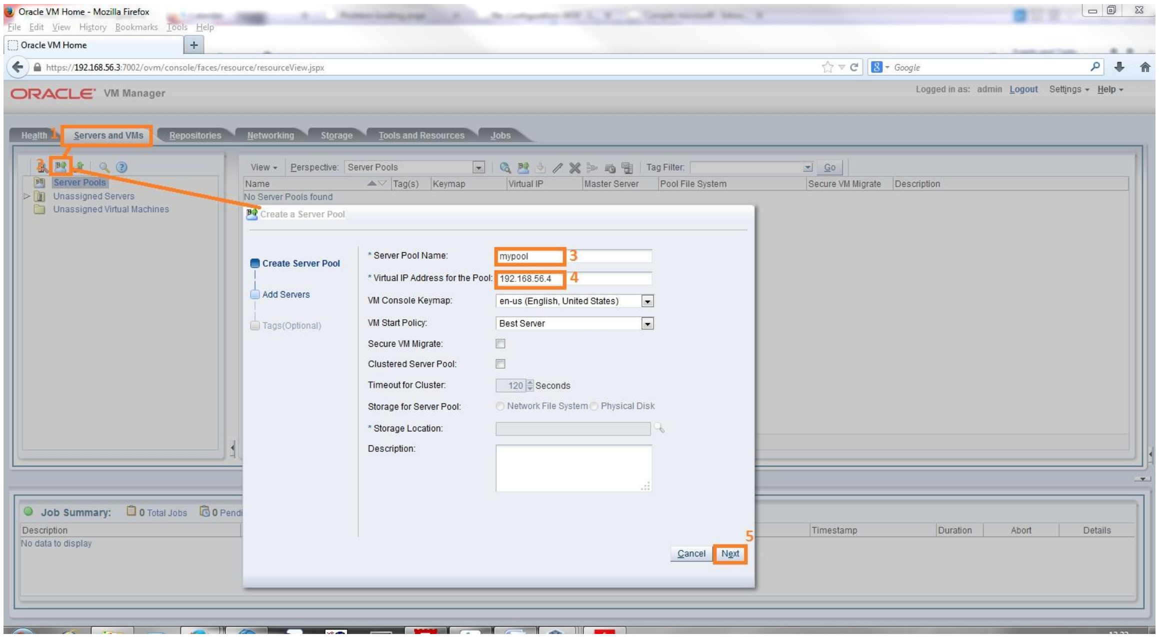
Name	ID	Intra-Network Server	Network Channels					Description
			Server Management	Cluster Heartbeat	Live Migrate	Storage	Virtual Machine	
192.168.56.0	c0a83800		√	√	√	√	√	

CREATE A SERVER POOL

A server pool contains a group of Oracle VM Servers, which as a group perform virtual machine management tasks, such as High Availability (HA), implementation of resource and power management policies, access to networking, storage and repositories. In this LAB, we will create a server pool with a single Oracle VM Server inside.

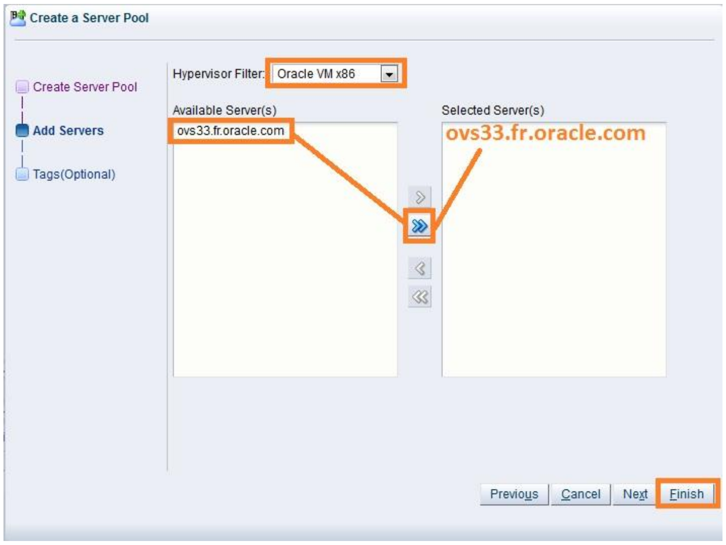
TO DO :

- Click the Servers and VMs tab
- Click Create Server Pool from the toolbar
- The Create a Server Pool wizard is displayed. Enter the server pool information
  - Server Pool Name : mypool
  - Virtual IP : 192.168.56.4
  - Uncheck Clustered Server Pool


Create a Server Pool

- * Server Pool Name: mypool 3
- * Virtual IP Address for the Pool: 192.168.56.4 4
- VM Console Keymap: en-us (English, United States)
- VM Start Policy: Best Server
- Secure VM Migrate: □
- Clustered Server Pool: □
- Timeout for Cluster: 120 Seconds
- Storage for Server Pool: ○ Network File System ○ Physical Disk
- * Storage Location:
- Description:

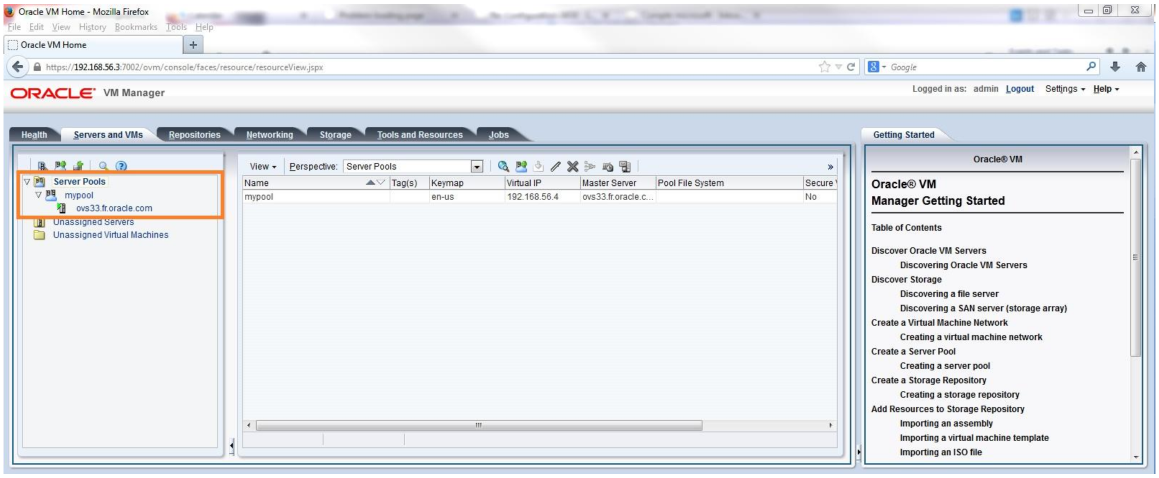
- Click Next to add the Oracle VM Server ovs33.fr.oracle.com to the server pool


Create a Server Pool

Hypervisor Filter: Oracle VM x86

Available Server(s)	Selected Server(s)
ovs33.fr.oracle.com	ovs33.fr.oracle.com

- Click Finish and check Oracle VM Server ovs33.fr.oracle.com is now part of your server pool mypool


Oracle VM Home - Mozilla Firefox
File Edit View History Bookmarks Tools Help
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https://192.168.56.3:7002/ovm/console/faces/resource/resourceView.jspx
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Server Pools
mypool
ovs33.fr.oracle.com
Unassigned Servers
Unassigned Virtual Machines
View
Perspective: Server Pools

Name	Tag(s)	Keymap	Virtual IP	Master Server	Pool File System	Secure \
mypool		en-us	192.168.56.4	ovs33.fr.oracle.c...		No

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Add Resources to Storage Repository
Importing an assembly
Importing a virtual machine template
Importing an ISO file

You will now create a storage repository.

CREATE A STORAGE REPOSITORY

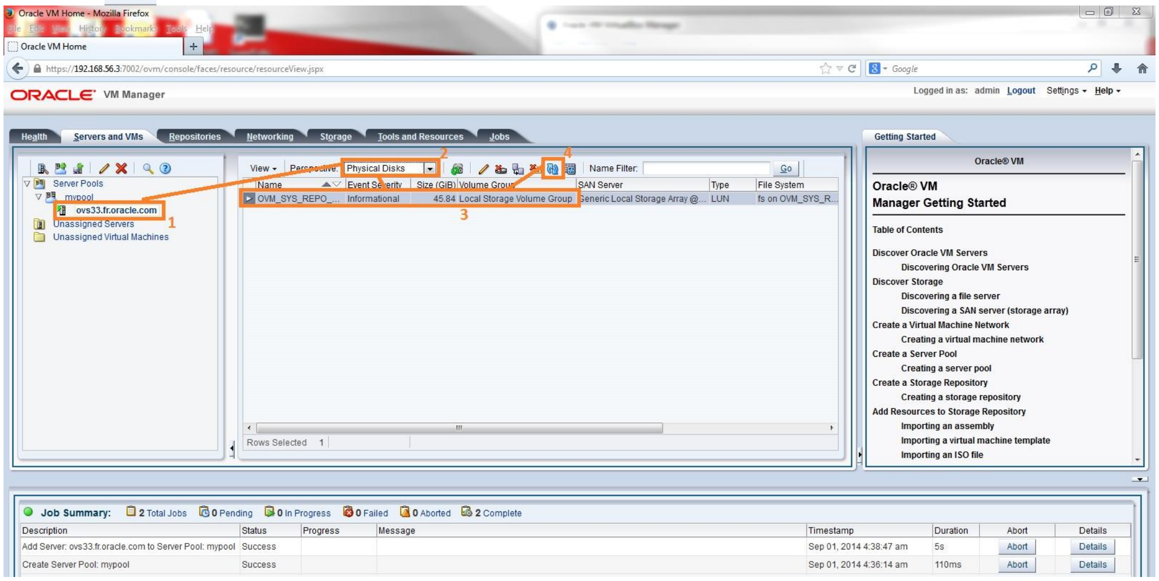
A storage repository is where Oracle VM resources may reside. Resources include virtual machines, templates for virtual machine creation, virtual machine assemblies, ISO files (DVD image files), shared virtual disks, and so on.

We will create a storage repository for Oracle VM by using a pre-existing disk. This disk already contains an existing repository with a Virtual Machine inside. Creating the repository is very simple but installing this Oracle Linux VM would take too much time during this HOL session.

TO DO :

- In servers and VMs Tab, select ovs33.fr.oracle.com and in Perspective choose Physicals disks
- Select the existing hard disk (OVM_SYS_REPO…)

- Click on to refresh the Physical Disk



Name	Event Severity	Size (GiB)	Volume Group	SAN Server	Type	File System
OVM_SYS_REPO_...	Informational	45.84	Local Storage Volume Group	Generic Local Storage Array @...	LUN	fs on OVM_SYS_R...

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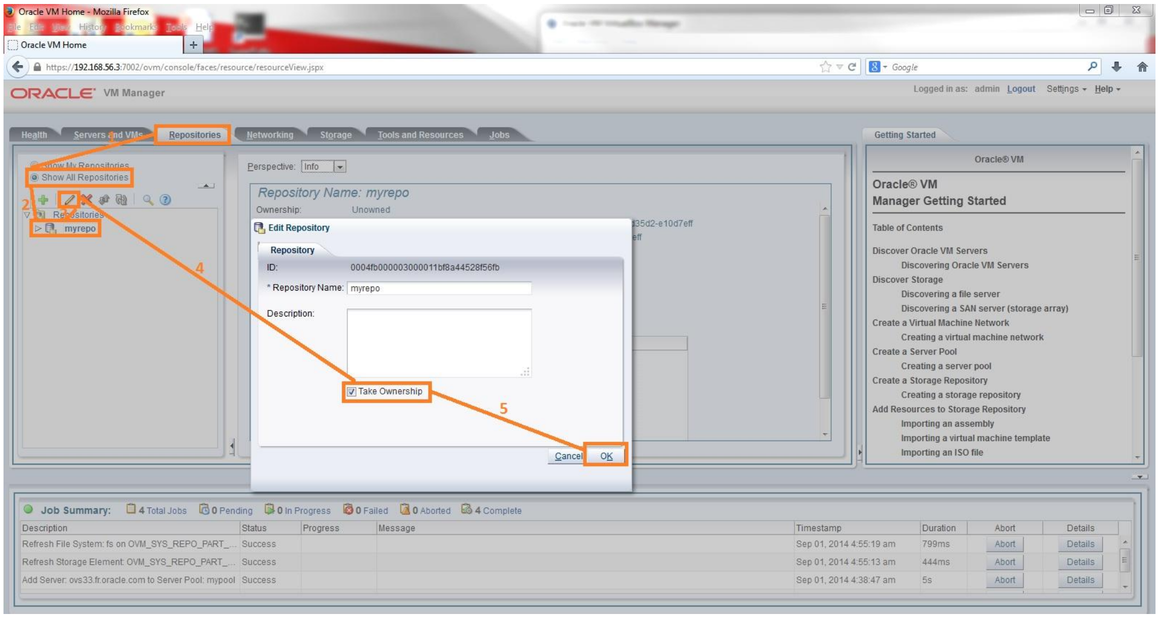
Importing an ISO file

Job Summary: 2 Total Jobs 0 Pending 0 In Progress 0 Failed 0 Aborted 2 Complete

Description	Status	Progress	Message	Timestamp	Duration	Abort	Details
Add Server: ovs33.fr.oracle.com to Server Pool: mypool	Success			Sep 01, 2014 4:38:47 am	5s	Abort	Details
Create Server Pool: mypool	Success			Sep 01, 2014 4:36:14 am	110ms	Abort	Details

- In the Confirmation windows click OK to confirm
- In Repositories tab, click on Show All repositories, you will see the pre-existing myrepo. For now, this repo is not owned/presented to any server
- Select the myrepo and click to edit the Repository
- In the Edit Repository wizard, Set Take Ownership and press OK



Perspective: Info

Repository Name: myrepo

Ownership: Unowned

Edit Repository

Repository

ID: 0004fb000003000011bf8a44528f56fb

* Repository Name: myrepo

Description:

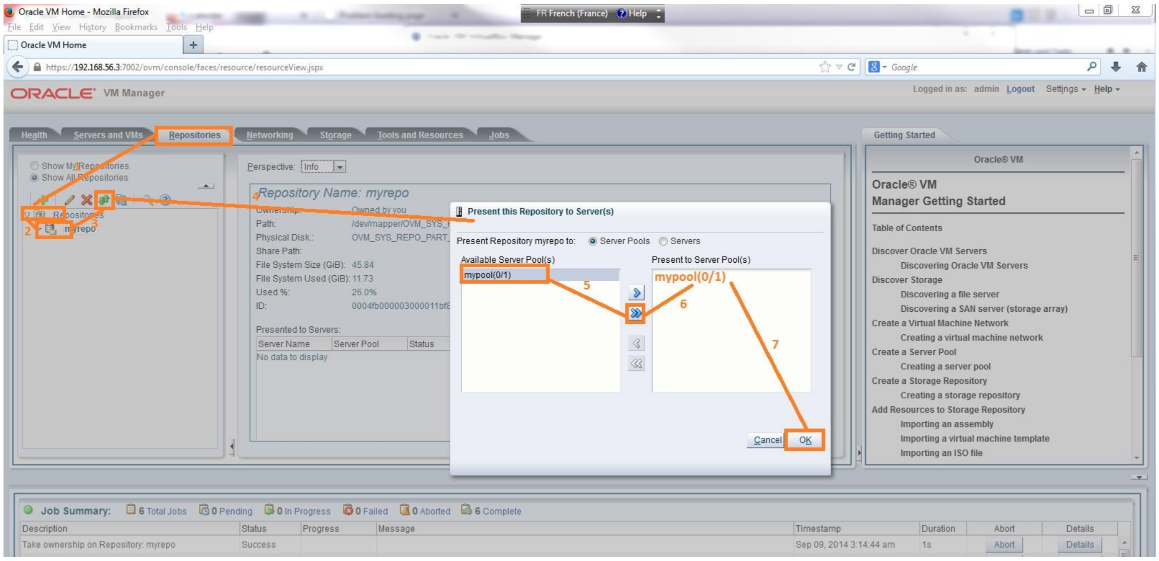
☑ Take Ownership

Job Summary: 4 Total Jobs 0 Pending 0 In Progress 0 Failed 0 Aborted 4 Complete

Description	Status	Progress	Message	Timestamp	Duration	Abort	Details
Refresh File System: fs on OVM_SYS_REPO_PART_...	Success			Sep 01, 2014 4:55:19 am	799ms	Abort	Details
Refresh Storage Element: OVM_SYS_REPO_PART_...	Success			Sep 01, 2014 4:55:13 am	444ms	Abort	Details
Add Server: ovs33.fr.oracle.com to Server Pool: mypool	Success			Sep 01, 2014 4:38:47 am	5s	Abort	Details

- In the Repository tab, Select Repositories, Select myrepo and click on

- In “Present this Repository to Server(s)” wizard present your server pool mypool to your server



ORACLE VM Manager — Logged in as: admin Logout Settings Help

Tabs: Health | Servers and VMs | Repositories | Networking | Storage | Tools and Resources | Jobs

○ Show My Repositories
● Show All Repositories

Repositories
- myrepo

Perspective: Info

Repository Name: myrepo

Ownership:	Owned by you
Path:	/dev/mapper/OVM_SYS_
Physical Disk.:	OVM_SYS_REPO_PART_
Share Path:	
File System Size (GiB):	45.84
File System Used (GiB):	11.73
Used %:	26.0%
ID:	0004fb000003000011bf

Presented to Servers:

Server Name	Server Pool	Status
No data to display		

Present this Repository to Server(s)

Present Repository myrepo to: ● Server Pools ○ Servers

Available Server Pool(s): mypool(0/1)

Present to Server Pool(s): mypool(0/1)

Cancel | OK

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  - Importing an ISO file

Job Summary: 6 Total Jobs 0 Pending 0 In Progress 0 Failed 0 Aborted 6 Complete

Description	Status	Progress	Message	Timestamp	Duration	Abort	Details
Take ownership on Repository: myrepo	Success			Sep 09, 2014 3:14:44 am	1s	Abort	Details

- Click OK to complete
- The repository is now owned and presented to the Oracle VM Server ovm-srv.oow.com
- You need to refresh the repository by clicking on

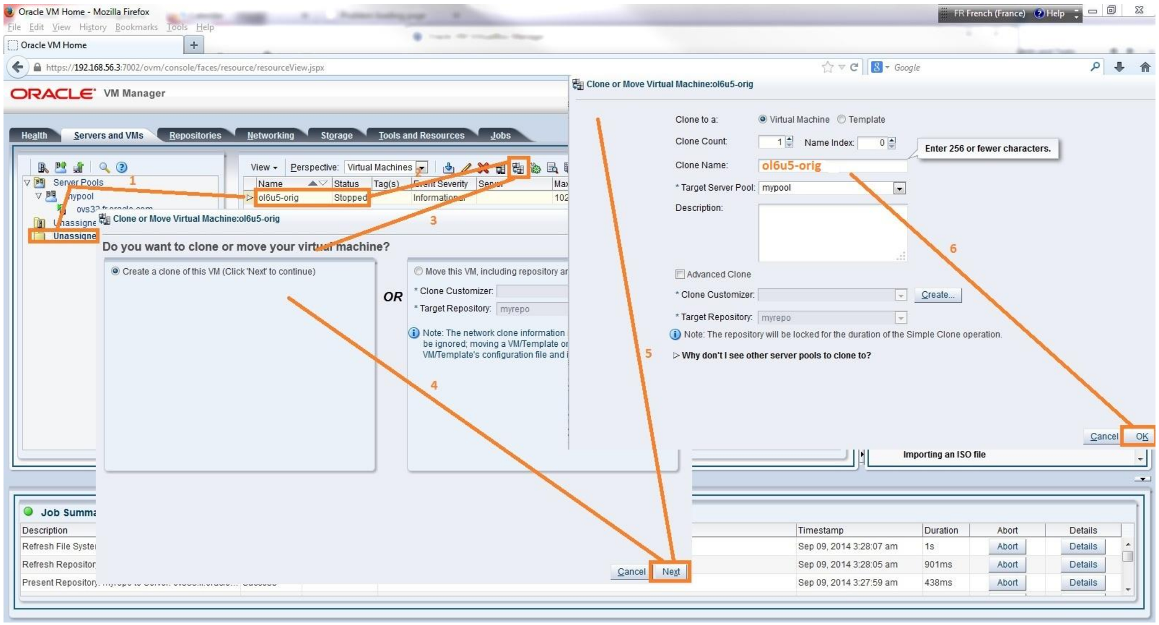
You now have a repository presented to your Oracle VM server ovs33.fr.oracle.com. This repository is having one Unassigned Virtual Machine (Oracle Linux 6.5). This Virtual Machine (ol6u5-orig) is going to be used in following steps.

CLONE AND START YOUR ORACLE LINUX VIRTUAL MACHINE

The repository have been provided to you with an Oracle Linux 6u5 virtual machine. Before starting the virtual machine you will be asked to create a clone of this virtual machine. The work for this HOL will be done on this clone avoiding modification of the original VM.

TO DO :

- In Servers and VMs Tab, Click on Unassigned Virtual Machines
- Select Virtual machine ol6u5-orig
- Click on to clone this virtual machine,
- In “Clone or Move Virtual Machine” wizard, select Create a clone of this VM and click Next
- In “Clone or Move Virtual Machine” wizard, chose a name for your VM
  - Clone Name = ol6u5-orig



Clone or Move Virtual Machine:ol6u5-orig

Do you want to clone or move your virtual machine?

● Create a clone of this VM (Click 'Next' to continue)

OR

○ Move this VM, including repository ar

* Clone Customizer:

* Target Repository: myrepo

Note: The network clone information be ignored; moving a VM/Template or VM/Template's configuration file and i

Clone to a: ● Virtual Machine ○ Template

Clone Count: 1 Name Index: 0

Clone Name: ol6u5-orig

* Target Server Pool: mypool

Description:

☐ Advanced Clone

* Clone Customizer: Create...

* Target Repository: myrepo

Note: The repository will be locked for the duration of the Simple Clone operation.

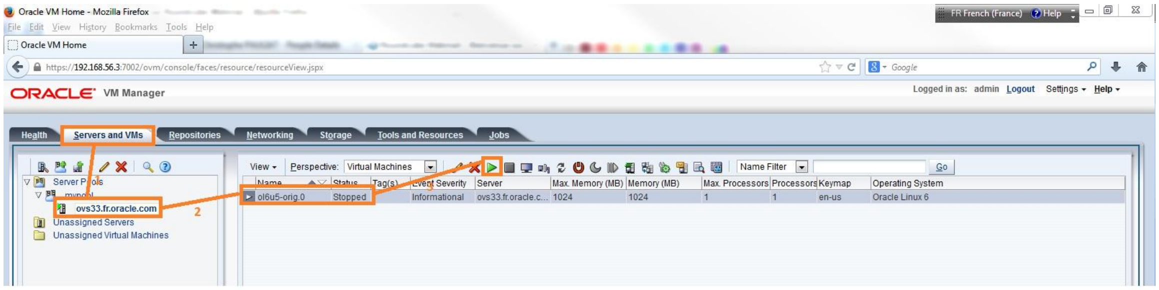
▷ Why don't I see other server pools to clone to?

Description	Timestamp	Duration	Abort	Details
Refresh File Syste	Sep 09, 2014 3:28:07 am	1s	Abort	Details
Refresh Repositor	Sep 09, 2014 3:28:05 am	901ms	Abort	Details
Present Repository...	Sep 09, 2014 3:27:59 am	438ms	Abort	Details

- Click OK

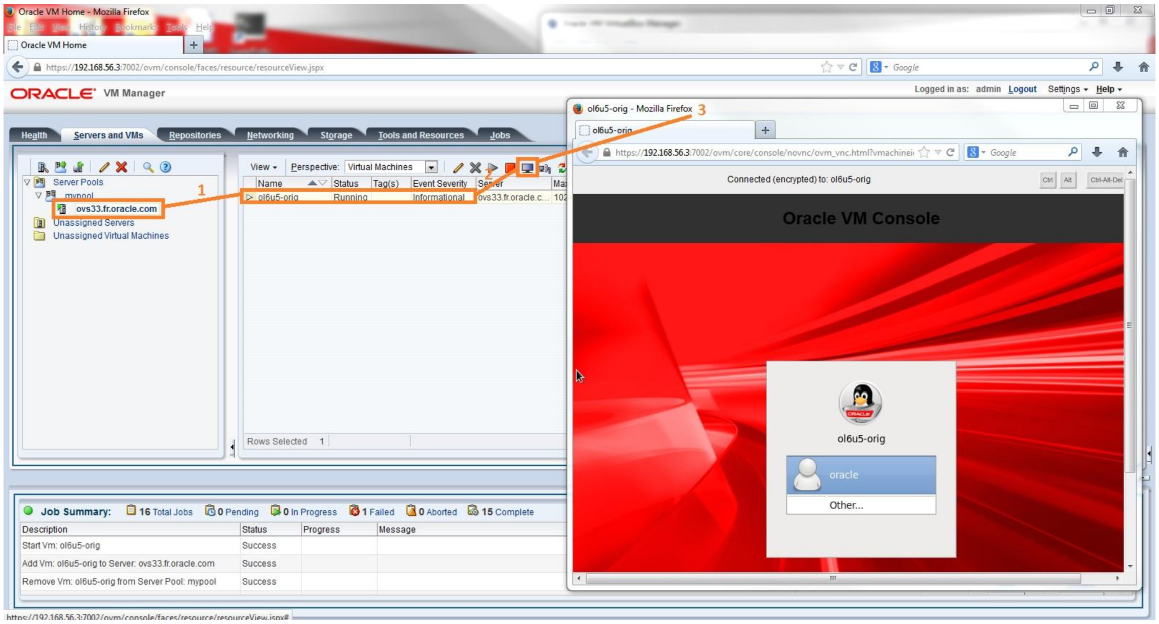
Oracle Virtual Machine ol6u5-orig.0 is now assigned to OVM Server ovs33.fr.oracle.com

- Select ovs33.fr.oracle.com, In Perspective choose Virtual Machines, select ol6u5-orig.0 and press ▶ to start the Virtual Machine


Oracle VM Home - Mozilla Firefox
https://192.168.56.3:7002/ovm/console/faces/resource/resourceView.jspx
ORACLE VM Manager
Logged in as: admin Logout Settings Help
Health
Servers and VMs
Repositories
Networking
Storage
Tools and Resources
Jobs
Server Pools
mypool
ovs33.fr.oracle.com
Unassigned Servers
Unassigned Virtual Machines
Perspective: Virtual Machines
Name Filter
Go
2

Name	Status	Tag(s)	Event Severity	Server	Max. Memory (MB)	Memory (MB)	Max. Processors	Processors	Keymap	Operating System
ol6u5-orig.0	Stopped		Informational	ovs33.fr.oracle.c...	1024	1024	1	1	en-us	Oracle Linux 6

- Launch a console by pressing on 🖥 (take care of popup blocker in Firefox screen and allow 192.168.56.3)

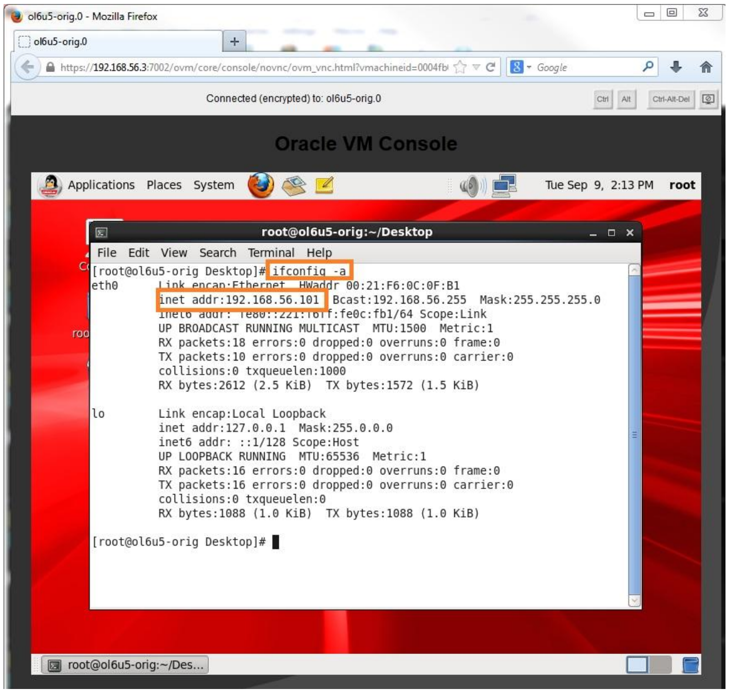


Job Summary: 16 Total Jobs 0 Pending 0 In Progress 1 Failed 0 Aborted 15 Complete

Description	Status	Progress	Message
Start Vm: ol6u5-orig	Success		
Add Vm: ol6u5-orig to Server: ovs33.fr.oracle.com	Success		
Remove Vm: ol6u5-orig from Server Pool: mypool	Success		

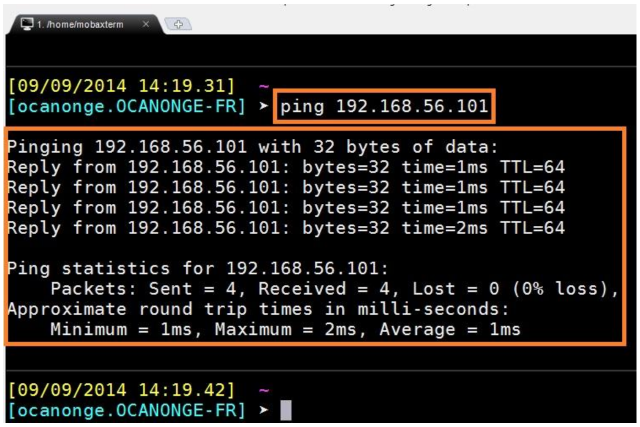
https://192.168.56.3:7002/ovm/console/faces/resource/resourceView.jspx#

- Logging in the VM console window using credential oracle/ovsroot, open a terminal session and check the IP of the VM using ifconfig -a, it should be 192.168.56.101


ol6u5-orig.0 - Mozilla Firefox
ol6u5-orig.0
https://192.168.56.3:7002/ovm/core/console/novnc/ovm_vnc.html?vmachineid=0004fb
Connected (encrypted) to: ol6u5-orig.0
Ctrl
Alt
Ctrl-Alt-Del
Oracle VM Console
Applications Places System
Tue Sep 9, 2:13 PM root
root@ol6u5-orig:~/Desktop
File Edit View Search Terminal Help
root@ol6u5-orig:~/Des...

```
[root@ol6u5-orig Desktop]# ifconfig -a
eth0      Link encap:Ethernet  HWaddr 00:21:F6:0C:0F:B1
          inet addr:192.168.56.101  Bcast:192.168.56.255  Mask:255.255.255.0
          inet6 addr: fe80::221:f6ff:fe0c:fb1/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:18 errors:0 dropped:0 overruns:0 frame:0
          TX packets:10 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:2612 (2.5 KiB)  TX bytes:1572 (1.5 KiB)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:65536  Metric:1
          RX packets:16 errors:0 dropped:0 overruns:0 frame:0
          TX packets:16 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:1088 (1.0 KiB)  TX bytes:1088 (1.0 KiB)

[root@ol6u5-orig Desktop]# 
```

- Once IP has been checked, minimize the console windows
- From you host system, open a terminal a session and check you are able to ping the VM



```
[09/09/2014 14:19.31]  ~
[ocanonge.OCANONGE-FR] ➤ ping 192.168.56.101
Pinging 192.168.56.101 with 32 bytes of data:
Reply from 192.168.56.101: bytes=32 time=1ms TTL=64
Reply from 192.168.56.101: bytes=32 time=1ms TTL=64
Reply from 192.168.56.101: bytes=32 time=1ms TTL=64
Reply from 192.168.56.101: bytes=32 time=2ms TTL=64

Ping statistics for 192.168.56.101:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 2ms, Average = 1ms

[09/09/2014 14:19.42]  ~
[ocanonge.OCANONGE-FR] ➤
```

CONFIGURE ORACLE LINUX 6.5 AS AN ORACLE VM TEMPLATE

Next steps will show you how to make use of Oracle VM API to configure and an Oracle Linux VM running on top of Oracle VM 3 as an Oracle VM template. Because of limited time during this session some steps have already been done and are indicated as “ALREADY DONE”. Requirement are :

- To have a local yum repository (ALREADY DONE). This local yum repository is configured on the Oracle VM Manager virtual machine (192.168.56.3). The repository is incuding 3 channels : ol6_latest, ol6_addons and ol6_MySQL56. If you are interested on how it was build have a look to the ANNEXE part of this document
- Virtual Machine ol6u5-orig.0 is configured to receive updates from this local yum repository. Yum repository configuration file is in /etc/yum.repos.d. Check content of the file public-yum-ol6.repo, it looks like :

```
[root@ol6u5-orig yum.repos.d]# more public-yum-ol6.repo
[ol6_latest]
name=Oracle Linux $releasever Latest ($basearch)
baseurl=http://192.168.56.3/yum/ol6/ol6_latest/
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-oracle
gpgcheck=1
enabled=1

[ol6_addons]
name=Oracle Linux $releasever Add ons ($basearch)
baseurl=http://192.168.56.3/yum/ol6/ol6_addons/
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-oracle
gpgcheck=1
enabled=1

[ol6_MySQL56]
name=MySQL 5.6 for Oracle Linux 6 ($basearch)
baseurl=http://192.168.56.3/yum/ol6/ol6_MySQL56/
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-oracle
gpgcheck=1
enabled=1
```

TO DO :

- Connect to ol6u5-orig.0 using ssh (root/ovsroot) :

  ssh root@192.168.56.101

- Check you are able to receive some updates from your local yum repository :

```
[root@ol6u5-orig yum.repos.d]# yum repolist
Loaded plugins: refresh-packagekit, security
repo id                                   repo name
status
ol6_MySQL56                               MySQL 5.6 for Oracle Linux 6 (x86_64)
91
ol6_addons                                Oracle Linux 6Server Add ons (x86_64)
153
ol6_latest                                Oracle Linux 6Server Latest (x86_64)
5,409
repolist: 5,653
[root@ol6u5-orig yum.repos.d]#
```

- Install following Oracle VM API packages (ovmd, xenstoreprovider python-simplejson ovm-template-config) :

  This installs the basic necessary packages on Oracle Linux 6 to support the Oracle VM API. Xenstoreprovider is the library which communicates with the ovmapi kernel infrastructure. ovmd is a daemon that handles configuration and re-configuration events and provides a mechanism to send/receive messages between the VM and the Oracle VM Manager.

```
[root@ol6u5-orig yum.repos.d]# yum install ovmd xenstoreprovider python-simplejson \
ovm-template-config
Loaded plugins: refresh-packagekit, security
Setting up Install Process
Resolving Dependencies
--> Running transaction check
---> Package ovm-template-config.noarch 0:3.0-75.el6 will be installed
---> Package ovmd.x86_64 0:3.0-40.el6 will be installed
--> Processing Dependency: libovmapi >= 3.0 for package: ovmd-3.0-40.el6.x86_64
--> Processing Dependency: libovmapi.so()(64bit) for package: ovmd-3.0-40.el6.x86_64
---> Package python-simplejson.x86_64 0:2.0.9-3.1.el6 will be installed
---> Package xenstoreprovider.x86_64 0:3.0-11.el6 will be installed
--> Running transaction check
---> Package libovmapi.x86_64 0:3.0-6.el6 will be installed
--> Finished Dependency Resolution

Dependencies Resolved

=========================================================================================
 Package                    Arch          Version                Repository          Size
=========================================================================================
Installing:
 ovm-template-config        noarch        3.0-75.el6             ol6_addons          62 k
 ovmd                       x86_64        3.0-40.el6             ol6_addons          31 k
 python-simplejson          x86_64        2.0.9-3.1.el6          ol6_latest         126 k
 xenstoreprovider           x86_64        3.0-11.el6             ol6_addons          24 k
Installing for dependencies:
 libovmapi                  x86_64        3.0-6.el6              ol6_addons          19 k

Transaction Summary
=========================================================================================
Install       5 Package(s)

Total download size: 262 k
Installed size: 748 k
Is this ok [y/N]:y
```

- Respond yes to any warnings, following packages should have been installed :

```
Running Transaction
  Installing : libovmapi-3.0-6.el6.x86_64
1/5
  Installing : ovm-template-config-3.0-75.el6.noarch
2/5
  Installing : ovmd-3.0-40.el6.x86_64
3/5
  Installing : xenstoreprovider-3.0-11.el6.x86_64
4/5
  Installing : python-simplejson-2.0.9-3.1.el6.x86_64
5/5
  Verifying  : xenstoreprovider-3.0-11.el6.x86_64
1/5
  Verifying  : python-simplejson-2.0.9-3.1.el6.x86_64
2/5
  Verifying  : ovmd-3.0-40.el6.x86_64
3/5
  Verifying  : ovm-template-config-3.0-75.el6.noarch
4/5
  Verifying  : libovmapi-3.0-6.el6.x86_64
5/5

Installed:
  ovm-template-config.noarch 0:3.0-75.el6    ovmd.x86_64 0:3.0-40.el6    python-
simplejson.x86_64 0:2.0.9-3.1.el6
  xenstoreprovider.x86_64 0:3.0-11.el6

Dependency Installed:
  libovmapi.x86_64 0:3.0-6.el6

Complete!
```

- In order to create an Oracle VM template that includes basic OS configuration system scripts, we are going to install all of the following packages :

  ovm-template-config-authentication (authentication configuration script), ovm-template-config-datetime (datetime configuration script), ovm-template-config-firewall(firewall configuration script), ovm-template-config-network (network configuration script), ovm-template-config-selinux (selinux configuration script), ovm-template-config-ssh (ssh configuration script), ovm-template-config-system (system configuration script) and ovm-template-config-user (user configuration script).

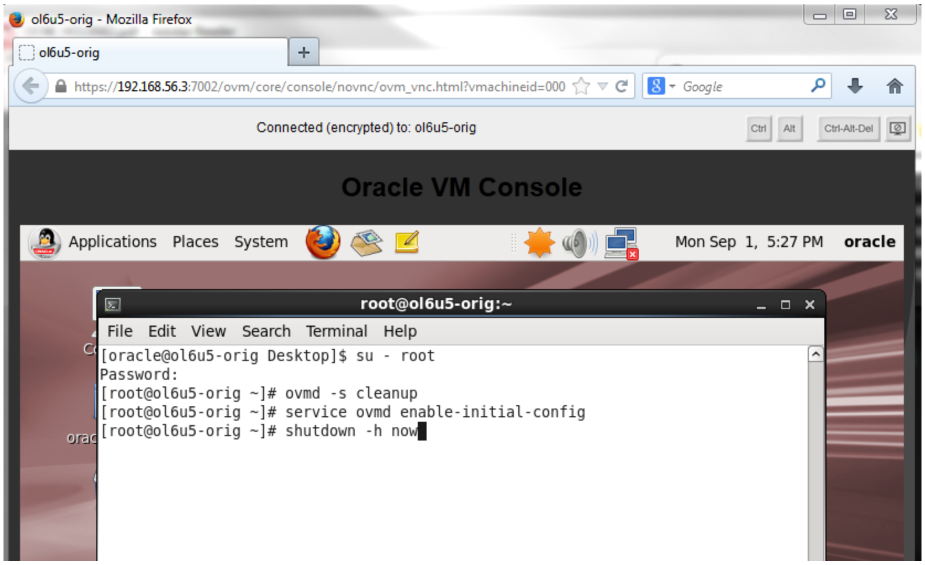
```
[root@ol6u5-orig yum.repos.d]# yum install ovm-template*
Loaded plugins: refresh-packagekit, security
Setting up Install Process
Package ovm-template-config-3.0-75.el6.noarch already installed and latest version
Resolving Dependencies
--> Running transaction check
---> Package ovm-template-config-authentication.noarch 0:3.0-75.el6 will be installed
---> Package ovm-template-config-datetime.noarch 0:3.0-75.el6 will be installed
---> Package ovm-template-config-firewall.noarch 0:3.0-75.el6 will be installed
---> Package ovm-template-config-network.noarch 0:3.0-75.el6 will be installed
---> Package ovm-template-config-selinux.noarch 0:3.0-75.el6 will be installed
---> Package ovm-template-config-ssh.noarch 0:3.0-75.el6 will be installed
---> Package ovm-template-config-system.noarch 0:3.0-75.el6 will be installed
---> Package ovm-template-config-user.noarch 0:3.0-75.el6 will be installed
--> Finished Dependency Resolution

Dependencies Resolved

==============================================================================================
======================
 Package                                       Arch              Version
Repository             Size
==============================================================================================
======================
Installing:
 ovm-template-config-authentication            noarch            3.0-75.el6
ol6_addons             17 k
 ovm-template-config-datetime                  noarch            3.0-75.el6
ol6_addons             18 k
 ovm-template-config-firewall                  noarch            3.0-75.el6
ol6_addons             17 k
 ovm-template-config-network                   noarch            3.0-75.el6
ol6_addons             18 k
 ovm-template-config-selinux                   noarch            3.0-75.el6
ol6_addons             17 k
 ovm-template-config-ssh                       noarch            3.0-75.el6
ol6_addons             18 k
 ovm-template-config-system                    noarch            3.0-75.el6
ol6_addons             17 k
 ovm-template-config-user                      noarch            3.0-75.el6
ol6_addons             18 k

Transaction Summary
==============================================================================================
======================
Install       8 Package(s)

Total download size: 140 k
Installed size: 38 k
Is this ok [y/N]:y
```

- To enable ovmd do :

```
[root@ol6u5-orig yum.repos.d]# chkconfig ovmd on
[root@ol6u5-orig yum.repos.d]# /etc/init.d/ovmd start
Starting OVM guest daemon:                                   [  OK  ]
[root@ol6u5-orig yum.repos.d]#
```

- **Next commands are going to blank your VM network** configuration so that **it should be run from the Oracle VM console** of the VM (the one you minimized in Step ….)

```
[root@ol6u5-orig yum.repos.d]# su – root
Password : ovsroot
[root@ol6u5-orig yum.repos.d]# ovmd –s cleanup
[root@ol6u5-orig yum.repos.d]# service ovmd enable-initial-config
[root@ol6u5-orig yum.repos.d]# shutdown –h now
```



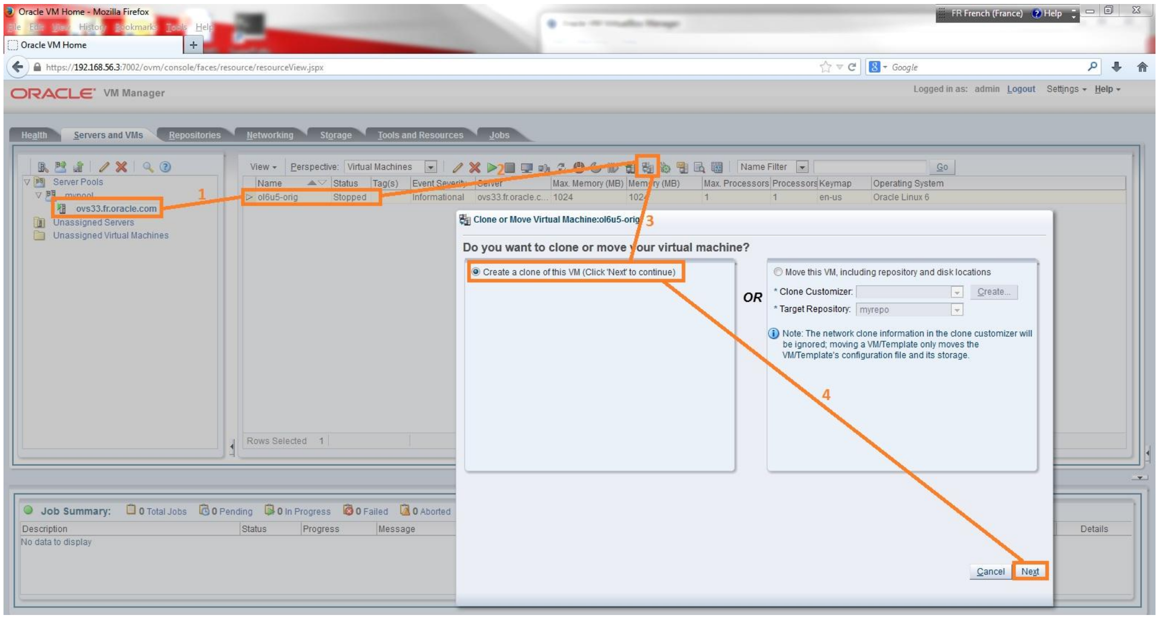
```
[oracle@ol6u5-orig Desktop]$ su - root
Password:
[root@ol6u5-orig ~]# ovmd -s cleanup
[root@ol6u5-orig ~]# service ovmd enable-initial-config
[root@ol6u5-orig ~]# shutdown -h now
```

CLONE THIS VM AS AN ORACLE VM TEMPLATE

This Virtual Machine is now stopped and is ready to be cloned as an Oracle VM template.

TO DO :

- Select Virtual Machine ol6u5-orig and click on to clone this VM
- On “Clone or Move Virtual Machine” wizard select “Create a clone of this VM” and click Next


Clone or Move Virtual Machine:ol6u5-orig

Do you want to clone or move your virtual machine?

● Create a clone of this VM (Click 'Next' to continue)

OR

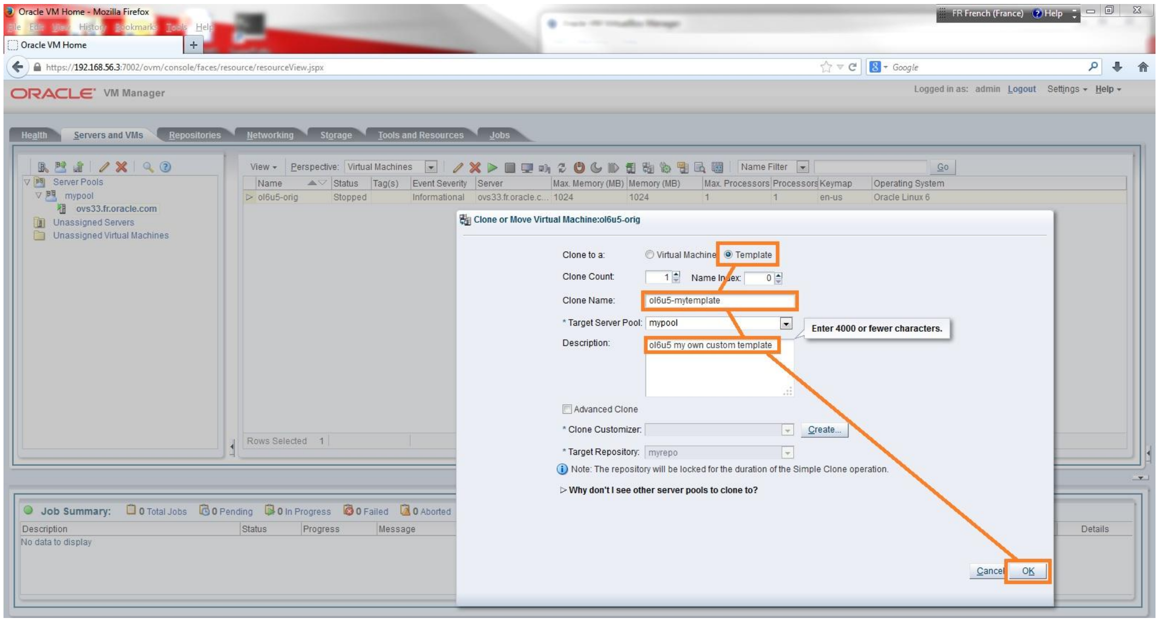
○ Move this VM, including repository and disk locations

* Clone Customizer:

* Target Repository: myrepo

Note: The network clone information in the clone customizer will be ignored; moving a VM/Template only moves the VM/Template's configuration file and its storage.

- On the next “Clone or Move your virtual machine” wizard select :
  - Clone to a : Template
  - Clone Name : ol6u5-mytemplate
  - Description : ol6u5 my own custom template
  - Click on OK


Clone or Move Virtual Machine:ol6u5-orig

Clone to a: ○ Virtual Machine ● Template

Clone Count: 1 Name Index: 0

Clone Name: ol6u5-mytemplate

* Target Server Pool: mypool

Description: ol6u5 my own custom template

Enter 4000 or fewer characters.

□ Advanced Clone

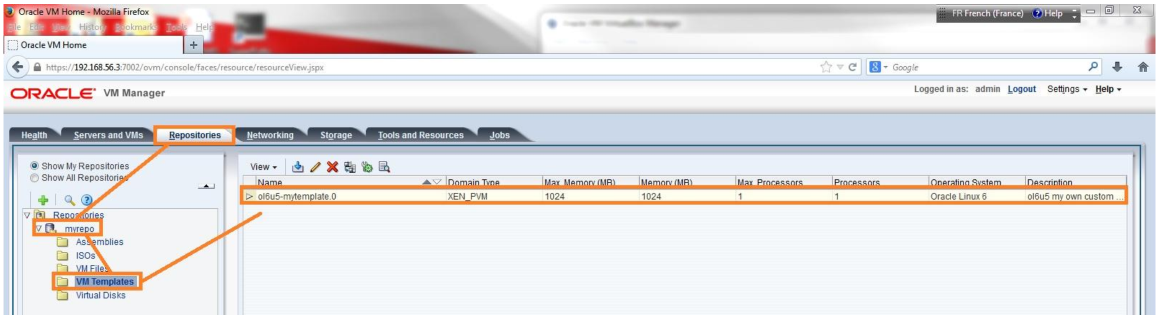
* Clone Customizer:

* Target Repository: myrepo

Note: The repository will be locked for the duration of the Simple Clone operation.

▷ Why don't I see other server pools to clone to?

- In Repositories Tab, under myrepo and VM Templates check ol6u5-mytemplate.0 has been created



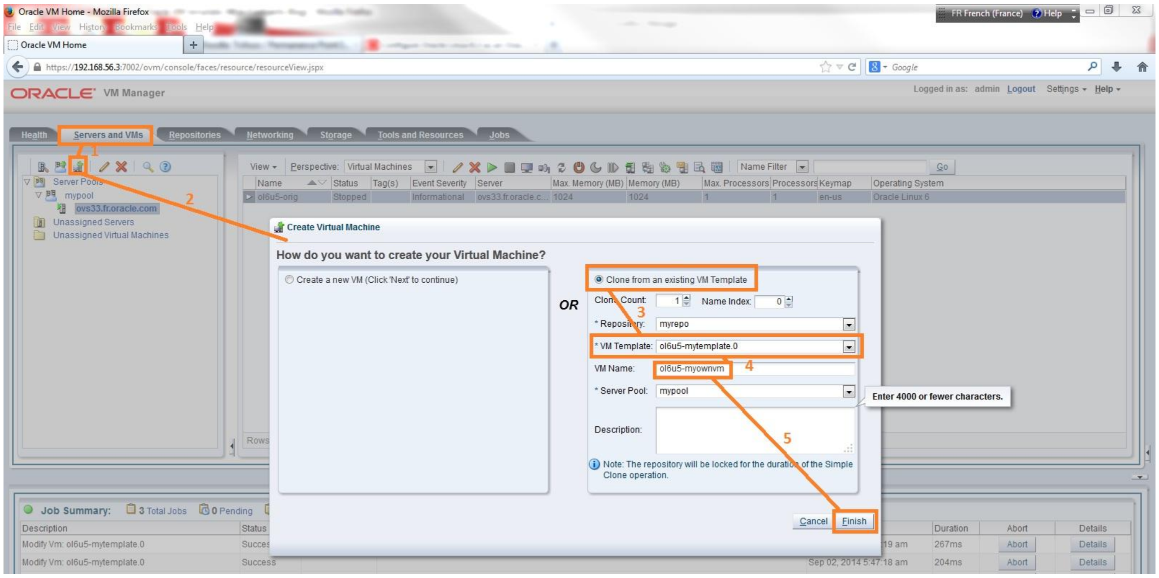
Name	Domain Type	Max. Memory (MB)	Memory (MB)	Max. Processors	Processors	Operating System	Description
ol6u5-mytemplate.0	XEN_PVM	1024	1024	1	1	Oracle Linux 6	ol6u5 my own custom ...

CLONE YOUR OWN ORACLE VM TEMPLATE AS A NEW VM

Now you have created you first template, we will clone a new VM from this template and check that this new VM will act as a first time boot VM and it will require configuration input through the the Virtual Machine console.

TO DO :

- In Servers and Vms Tab, click on to create a new VM
- In “Create Virtual Machine” wizard,
  - Select Clone from an existing VM Template
  - In VM Template choose ol6u5-mytemplate.0
  - In VM Name enter the name of your vm : ol6u5-myownvm
  - Click on Finish



Name	Status	Tag(s)	Event Severity	Server	Max. Memory (MB)	Memory (MB)	Max. Processors	Processors	Keymap	Operating System
ol6u5-orig	Stopped		Informational	ovs33.fr.oracle.c...	1024	1024	1	1	en-us	Oracle Linux 6

Create Virtual Machine

How do you want to create your Virtual Machine?

○ Create a new VM (Click 'Next' to continue)

● Clone from an existing VM Template

Clone Count: 1 Name Index: 0

* Repository: myrepo

* VM Template: ol6u5-mytemplate.0

VM Name: ol6u5-myownvm

* Server Pool: mypool

Description:

Enter 4000 or fewer characters.

Note: The repository will be locked for the duration of the Simple Clone operation.

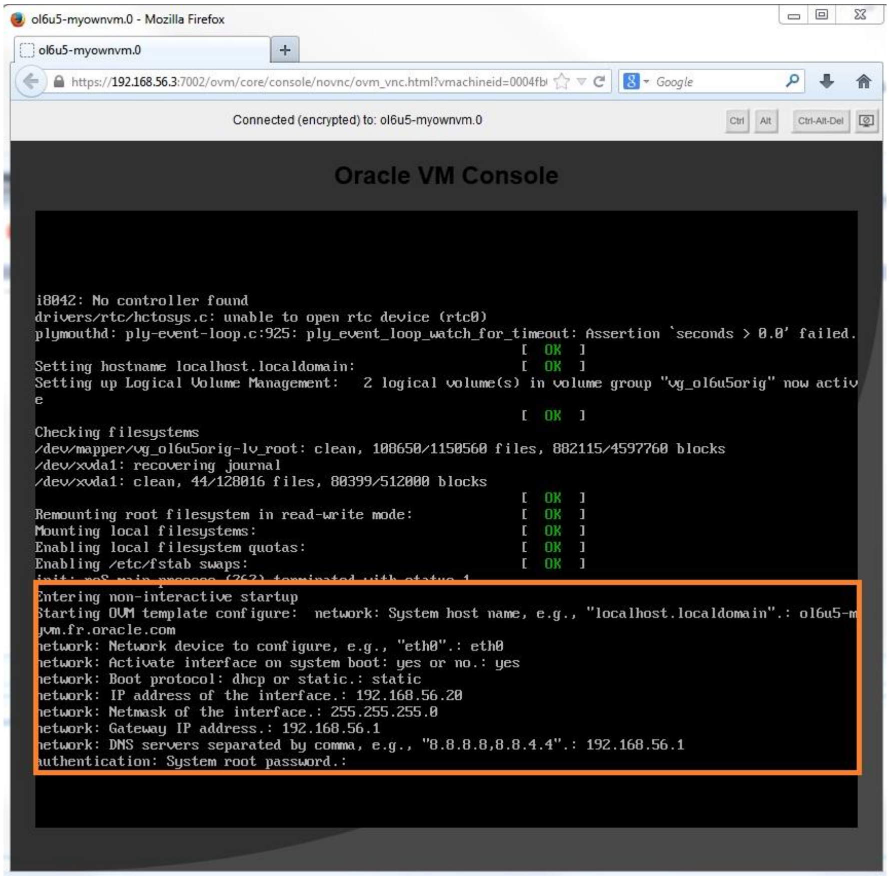
Description	Status		Duration	Abort	Details
Modify Vm: ol6u5-mytemplate.0	Succes	...19 am	267ms	Abort	Details
Modify Vm: ol6u5-mytemplate.0	Success	Sep 02, 2014 5:47:18 am	204ms	Abort	Details

START YOUR NEW BLANK VM FOR FIRST CONFIGURATION

Your new VM is now ready to be started. This is a first boot VM with no network configuration. You will need to configure this VM using Oracle VM console.

TO DO :

- Select ol6u5-myownvm.0 and open a console by clicking on 🖥
- Start the VM by clicking on ▶
- In the OVM Console windows, complete requested information **(you need to fulfill all fields, don’t leave any empty)** :
  - System host name : ***ol6u5-myvm.fr.oracle.com***
  - Network device to configure : ***eth0***
  - Activate interface on system boot : ***yes***
  - Boot protocol : ***static***
  - IP address : ***192.168.56.20***
  - Netmask : ***255.255.255.0***
  - Gateway : ***192.168.56.1***
  - DNS : ***192.168.56.1***
  - System root password : ***jungle1234***


ol6u5-myownvm.0 - Mozilla Firefox
ol6u5-myownvm.0
https://192.168.56.3:7002/ovm/core/console/novnc/ovm_vnc.html?vmachineid=0004fb
Google
Connected (encrypted) to: ol6u5-myownvm.0
Ctrl
Alt
Ctrl-Alt-Del
Oracle VM Console

```
i8042: No controller found
drivers/rtc/hctosys.c: unable to open rtc device (rtc0)
plymouthd: ply-event-loop.c:925: ply_event_loop_watch_for_timeout: Assertion `seconds > 0.0' failed.
                                                           [  OK  ]
Setting hostname localhost.localdomain:                    [  OK  ]
Setting up Logical Volume Management:   2 logical volume(s) in volume group "vg_ol6u5orig" now activ
e
                                                           [  OK  ]
Checking filesystems
/dev/mapper/vg_ol6u5orig-lv_root: clean, 108650/1150560 files, 882115/4597760 blocks
/dev/xvda1: recovering journal
/dev/xvda1: clean, 44/128016 files, 80399/512000 blocks
                                                           [  OK  ]
Remounting root filesystem in read-write mode:             [  OK  ]
Mounting local filesystems:                                [  OK  ]
Enabling local filesystem quotas:                          [  OK  ]
Enabling /etc/fstab swaps:                                 [  OK  ]
init: rcS main process (262) terminated with status 1
Entering non-interactive startup
Starting OVM template configure:  network: System host name, e.g., "localhost.localdomain".: ol6u5-m
yvm.fr.oracle.com
network: Network device to configure, e.g., "eth0".: eth0
network: Activate interface on system boot: yes or no.: yes
network: Boot protocol: dhcp or static.: static
network: IP address of the interface.: 192.168.56.20
network: Netmask of the interface.: 255.255.255.0
network: Gateway IP address.: 192.168.56.1
network: DNS servers separated by comma, e.g., "8.8.8.8,8.8.4.4".: 192.168.56.1
authentication: System root password.:
```

- From a terminal windows in your host system, check you are able to access the VM using ssh root@192.168.56.20 using credential you defined before.

```
[ocanonge.OCANONGE-FR]> ssh root@192.168.56.20
Permanently added '192.168.56.20' (RSA) to the list of known hosts.
root@192.168.56.20's password: jungle1234
[root@ol6u5-myvm ~]#
```

You have now created your first Oracle Linux VM Template. Next steps will show you how to customize this VM and deploy an application. As an example we are going to deploy a mysql database and create a template from this VM.

INSTALL MYSQL RPMs

The installation of the software required for the template can either be done when we build the initial virtual machine or we deploy the VM. Some software (such as Enterprise Manager or Weblogic) depend on the hostname and IP address for example, in this case it makes more sense to do a silent installation at deployment time, a template initialization script would take care of this silent installation. MySQL binaries do not depend on the hostname nor the network configuration, therefore we can install them at the creation of the initial VM. However the MySQL database will be created when the template is deployed. We install the packages for MySQL 5.6 available on our local yum repository

- ssh on your ol6u5-myvm.fr.oracle.com
- Install MySQL5.6

```
[ocanonge.OCANONGE-FR]> ssh root@192.168.56.20
[root@ol6u5-myvm ~]# yum install mysql-community-server
```

BUILDING THE TEMPLATE INITIALIZATION SCRIPTS

The packages ovm-template-config-<something> install the template initialization scripts in /etc/template.d/script. Review the installed scripts, authentication, system, network, etc. they are Python scripts with the following structure:

- Plugin info

  The name of the script and when the execution order is set there

- Python import

  The declaration of the Python dependencies

- The function do_enumerate(target)

  It defines and reports the input keys for the script. For each keys, the administration will send a value to deploy the template.

- The function do_configure(param)

  This is the code to be executed when the template in deployed.

- The function do_cleanup(param)

  This is the code to be executed when the VM is being initialized before converting it to a Template. It should be cleaned up of any specific configuration (network setting, passwords, application setting and data…).

- The main function

  It calls either one of the 3 functions above depending of the argument passed to the script. This should not be modified.

Here is the structure of a generic script :

```
### BEGIN PLUGIN INFO
# name: [script name]
# [target]: [priority]
# [target]: [priority]
# description: a description that can cross multiple lines.
### END PLUGIN INFO

try:
        import json
except ImportError:
        import simplejson as json
from templateconfig.cli import main
from templateconfig.common import shell_cmd

def do_enumerate(target):
    param = []
    if target == 'configure':
        param += [{'key': 'com.oracle.linux.XXXXXX',
                      'description': 'Description for the key'},
                    {'key': 'com.oracle.linux.YYYYYY',
                      'description': 'Description for the key',
                      'choices': ['yes', 'no']}]
    return json.dumps(param)

def do_configure(param):
        param = json.loads(param)
        # your code
        return json.dumps(param)

def do_cleanup(param):
param = json.loads(param)
        # your code
        return json.dumps(param)

if __name__ == '__main__':
        main(do_enumerate, {'configure': do_configure, 'cleanup': do_cleanup})
```

We are going to make our own script to configure and unconfigure MySQL automatically. This script must have the same structure as show above. We add several procedures and functions:

- do_mysql_install_db()

  This procedure create the MySQL database and starts it up. It is called from the do_configure function.

- do_mysql_delete_db()

  This procedure stops MySQL and delete the database. It is called from the do_cleanup function.

- do_mysql_secure_installation(removeAnonymousUser, desallowRemoteRootLogin, removeTestDatabase)

  This procedure calls the “mysql_secure_installation” script. It provides script input via expect commands. This procedure is called from the do_configure function.

- set_mysql_root_password(password)

This procedure sets a password for the mysql database root user. It is called from the do_configure function.

- str2bool(v)

  This is a tiny function that converts a string, yes or no, to a Boolean. It is called from the do_configure function. The purpose of this function is to make the code more readable.

For simplicity and time saving, the script was already created and is located on the Oracle VM Manager VM.

TO DO :

- Copy mysql script to your vm in “/etc/template.d/scripts”

```
[root@ol6u5-myvm]# cd /etc/template.d/scripts/
[root@ol6u5-myvm]# scp root@192.168.56.3:/root/mysql .
```

- Set correct access rights to the file and have a look to the file

```
[root@ol6u5-myvm]# chmod 755 /etc/template.d/scripts/mysql
```

- Add this script in the Template initialization list with the command

```
[root@ol6u5-myvm]# ovm-chkconfig --add mysql
```

- Review the “configure” and “cleanup” order with the command

```
[root@ol6u5-myvm]# ovm-chkconfig -list
name configure unconfigure reconfigure cleanup suspend resume migrate shutdown
authentication on:90 off off off off off off off
datetime on:50 off off on:50 off off off off
firewall on:41 off off off off off off off
mysql on:70 off off on:30 off off off off
network on:50 off off on:50 off off off off
selinux on:30 off off off off off off off
ssh on:70 off off on:30 off off off off
system on:60 off off on:60 off off off off
user on:60 off off on:40 off off off off
```

TESTING TEMPLATES INITIALIZATION SCRIPTS

You have 3 options to choose from to test your Templates initialization scripts, there are documented in the Oracle whitepaper Oracle VM Templates Automated Virtual Machine Provisioning in the section “Appendix: Testing of Template Configuration Scripts”.

TO DO :

- First, in order to validate our function “do_enumerate”, we enumerate the keys that the script is expecting with the following command :

```
[root@ol6u5-myvm scripts]# ovm-template-config --human-readable --enumerate -
-script mysql configure

[('70',
  'mysql',
  [{u'choices': [u'yes', u'no'],
    u'description': u'Remove anonymous user from MySQL? : yes or no.',
    u'key': u'com.oracle.linux.mysql.remove-anonymous-user'},
   {u'choices': [u'yes', u'no'],
    u'description': u'Disallow root login remotely? : yes or no.',
    u'key': u'com.oracle.linux.mysql.desallow-remote-root-login'},
   {u'choices': [u'yes', u'no'],
    u'description': u'Remove test database and access to it? : yes or no.',
    u'key': u'com.oracle.linux.mysql.remove-test-database'},
   {u'description': u'root password for MySQL',
    u'key': u'com.oracle.linux.mysql.mysql-root-password',
    u'password': True,
    u'required': True}])]
```

Then we create a file in json format that contain the key/value pair to be used as input for our script as follow. We name this file mysql.json.

- Go in /var/tmp of ol6u5-myvm and copy or create a simple mysql.json, content of the file :

```
[root@ol6u5-myvm /var/tmp]# scp root@192.168.56.3:/root/mysql.json .
[root@ol6u5-myvm /var/tmp]# cat /var/tmp/mysql.json
{
"com.oracle.linux.mysql.remove-anonymous-user":"yes",
"com.oracle.linux.mysql.desallow-remote-root-login":"yes",
"com.oracle.linux.mysql.remove-test-database":"no",
"com.oracle.linux.mysql.mysql-root-password":"ovsroot"
}
```

- We can then execute the cleanup and configure part of our script with the following commands:

```
[root@ol6u5-myvm ]# /etc/template.d/scripts/mysql cleanup \
< /var/tmp/mysql.json
{"com.oracle.linux.mysql.remove-anonymous-user":"yes",
"com.oracle.linux.mysql.desallow-remote-root-login":"yes",
"com.oracle.linux.mysql.remove-test-database":"no",
"com.oracle.linux.mysql.mysql-root-password":"ovsroot"}

[root@ol6u5-myvm ]# /etc/template.d/scripts/mysql configure \
< /var/tmp/mysql.json
{"com.oracle.linux.mysql.remove-anonymous-user":"yes",
"com.oracle.linux.mysql.desallow-remote-root-login":"yes",
"com.oracle.linux.mysql.remove-test-database":"no",
"com.oracle.linux.mysql.mysql-root-password":"ovsroot"}
```

CONVERTING THE VM TO A TEMPLATE

TO DO :

- To enable ovmd do :

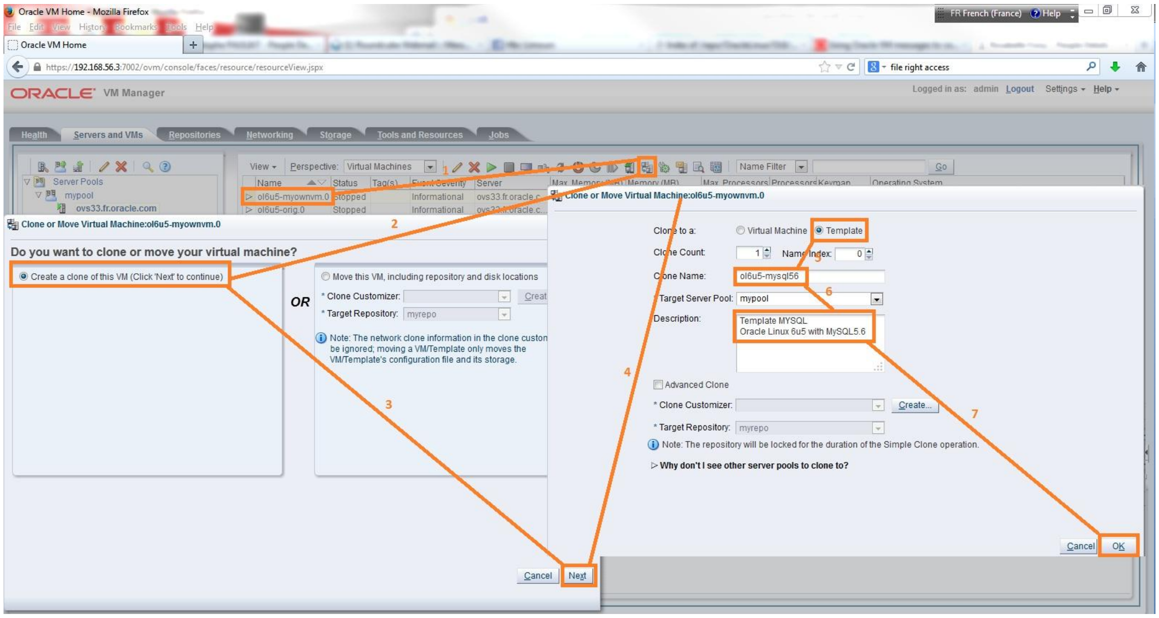
```
[root@ol6u5-orig yum.repos.d]# chkconfig ovmd on
[root@ol6u5-orig yum.repos.d]# /etc/init.d/ovmd start
Starting OVM guest daemon:                             [  OK  ]
[root@ol6u5-orig yum.repos.d]#
```

- **Next commands are going to blank your VM network** configuration so that **it should be run from the Oracle VM console** of the VM (the one you minimized in Step ….)

```
[root@ol6u5-orig yum.repos.d]# su - root
Password : jungle1234
[root@ol6u5-orig yum.repos.d]# ovmd -s cleanup
[root@ol6u5-orig yum.repos.d]# service ovmd enable-initial-config
[root@ol6u5-orig yum.repos.d]# shutdown -h now
```

The Virtual Machine ol6u5-myownvm.0 is now stopped and is ready to be cloned as an Oracle VM template with mysql database inside.

- Select Virtual Machine ol6u5-myownvm and click on to clone this VM
- On “Clone or Move Virtual Machine” wizard select “Create a clone of this VM” and click Next
- On “Clone or Move Virtual Machine” wizard set :
  - Template
  - Clone Name : ol6u5-mysql56
  - Description field is optional



Clone or Move Virtual Machine:ol6u5-myownvm.0

Do you want to clone or move your virtual machine?

● Create a clone of this VM (Click 'Next' to continue)

OR

○ Move this VM, including repository and disk locations

* Clone Customizer:

* Target Repository: myrepo

Note: The network clone information in the clone custon be ignored; moving a VM/Template only moves the VM/Template's configuration file and its storage.

Clone or Move Virtual Machine:ol6u5-myownvm.0

Clone to a: ○ Virtual Machine ● Template

Clone Count: 1 Name Index: 0

Clone Name: ol6u5-mysql56

* Target Server Pool: mypool

Description: Template MYSQL
Oracle Linux 6u5 with MySQL5.6

□ Advanced Clone

* Clone Customizer:

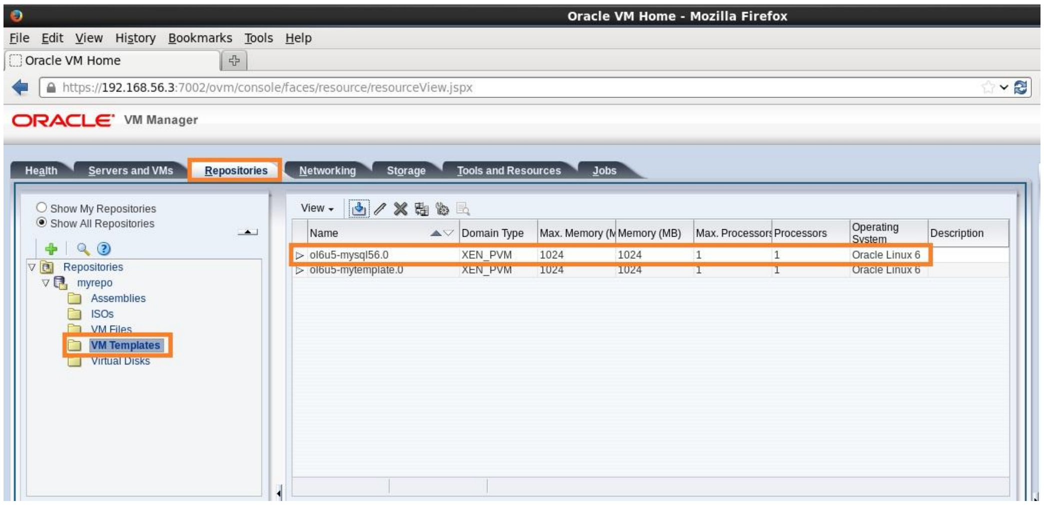
* Target Repository: myrepo

Note: The repository will be locked for the duration of the Simple Clone operation.

▷ Why don't I see other server pools to clone to?

Oracle VM Home - Mozilla Firefox
https://192.168.56.3:7002/ovm/console/faces/resource/resourceView.jspx
ORACLE VM Manager
Logged in as: admin Logout Settings Help
Health
Servers and VMs
Repositories
Networking
Storage
Tools and Resources
Jobs
Server Pools
mypool
ovs33.fr.oracle.com
View
Perspective: Virtual Machines
Name
Status
ol6u5-myownvm.0 Stopped Informational
ol6u5-orig.0 Stopped Informational
Name Filter
Go
1
2
3
4
5
6
7
Create...
Cancel
Next
Cancel
OK

- Click OK
- In Repositories Tab, under myrepo and VM Templates check ol6u5-mytemplate.0 has been created



Name	Domain Type	Max. Memory (M	Memory (MB)	Max. Processors	Processors	Operating System	Description
ol6u5-mysql56.0	XEN_PVM	1024	1024	1	1	Oracle Linux 6	
ol6u5-mytemplate.0	XEN_PVM	1024	1024	1	1	Oracle Linux 6	

CLONE YOUR OWN ORACLE VM MYSQL TEMPLATE AS A NEW VM

To deploy the Oracle VM Template, we have 2 options. Either we use the Oracle VM Manager Web interface (as we did before) or we use a command line script. Alternatively, we can deploy the VM and send the key/value messages using a shell script executed from the Oracle VM Manager. We chose to write this script in expect to call Oracle VM CLI commands.

TO DO :

- On the host laptop, open a terminal and connect on the Oracle VM Manager using ssh :

```
[root@hostlaptop]# cd HOL9121
[root@hostlaptop]# scp exp* tcl* crea* root@192.168.56.3:/root   (password : ovsroot)
[root@hostlaptop]# ssh root@192.168.56.3  (password : ovsroot)
[root@ovm33]# cd /root
[root@ovm33]# rpm -ivh tcl-8.5.7-6.el6.x86_64.rpm
[root@ovm33]# rpm -ivh expect-5.44.1.15-5.el6_4.x86_64.rpm
[root@ovm33]# chmod 755 create_MySQL56_PVM.cli
```

Set the variables defined at the beginning of the script with the values you want to set for MySQL VM deployment. A script create_MySQL56_PVM.cli has been created for you on the OVM Manager in /root directory :

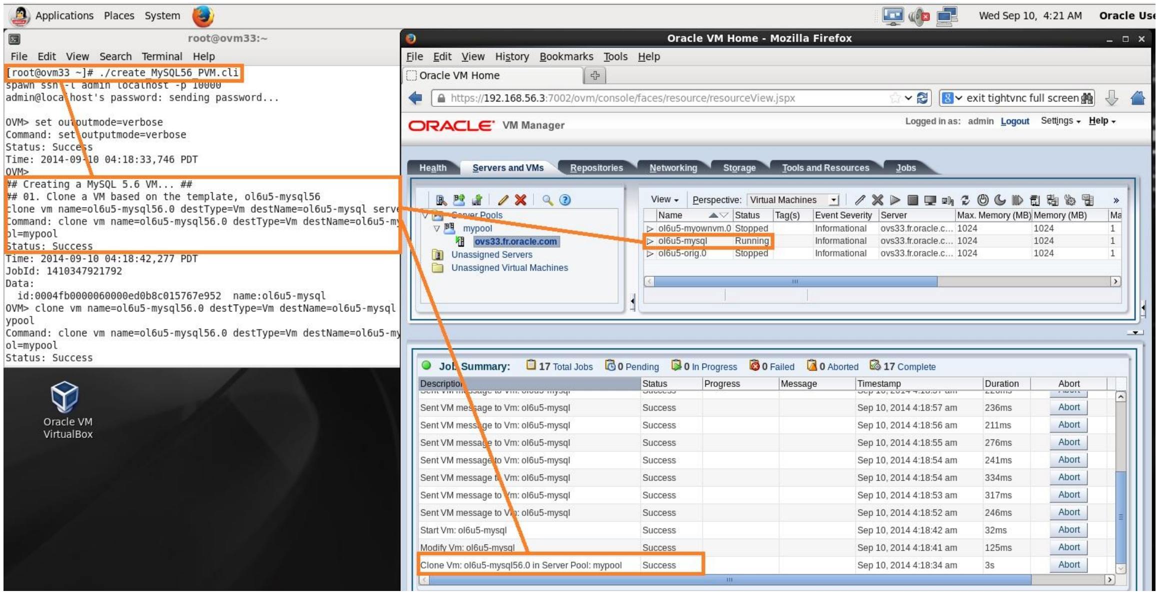
- Check content of create_MySQL56_PVM.cli script :

```
#################### Variables to set ##################
### OVM Manager
set ovmUser admin
set adminServer localhost
set ovmPassword Welcome1
### VM
set vmName ol6u5-mysql
set vmTemplateName ol6u5-mysql56.0
set serverPoolName mypool
### OS
set hostname mysql.fr.oracle.com
set host {"192.168.56.30 mysql.fr.oracle.com mysql"}
set device eth0
set onboot yes
set bootproto static
set ipaddr 192.168.56.30
set netmask 255.255.255.0
set gateway 192.168.56.1
set dnsserver 192.168.56.1
set rootpassword jungle1234
### MySQL
set removeanonymoususer yes
set desallowremoterootlogin yes
set removetestdatabase yes
set mysqlrootpassword ovsroot
```

The Timeout value has to be adapted to the time it takes to clone a VM. If the template is on a OCFS2 repository, the Timeout value can be set to 10, if it is NFS, it should be around 180.

- Run the script create_MySQL_PVM.cli and **check ouput in the Job Summary windows of the Oracle VM manager GUI**

```
[root@ovm33]# cd /root
[root@ovm33]# ./create_MySQL56_PVM.cli
```



```
[root@ovm33 ~]# ./create_MySQL56_PVM.cli
spawn ssh -l admin localhost -p 10000
admin@localhost's password: sending password...

OVM> set outputmode=verbose
Command: set outputmode=verbose
Status: Success
Time: 2014-09-10 04:18:33,746 PDT
OVM>
## Creating a MySQL 5.6 VM... ##
## 01. Clone a VM based on the template, ol6u5-mysql56
clone vm name=ol6u5-mysql56.0 destType=Vm destName=ol6u5-mysql serve
Command: clone vm name=ol6u5-mysql56.0 destType=Vm destName=ol6u5-my
ol=mypool
Status: Success
Time: 2014-09-10 04:18:42,277 PDT
JobId: 1410347921792
Data:
  id:0004fb0000060000ed0b8c015767e952  name:ol6u5-mysql
OVM> clone vm name=ol6u5-mysql56.0 destType=Vm destName=ol6u5-mysql
ypool
Command: clone vm name=ol6u5-mysql56.0 destType=Vm destName=ol6u5-my
ol=mypool
Status: Success
```

Name	Status	Tag(s)	Event Severity	Server	Max. Memory (MB)	Memory (MB)	Ma
ol6u5-myownvm.0	Stopped		Informational	ovs33.fr.oracle.c...	1024	1024	1
ol6u5-mysql	Running		Informational	ovs33.fr.oracle.c...	1024	1024	1
ol6u5-orig.0	Stopped		Informational	ovs33.fr.oracle.c...	1024	1024	1

Job Summary: 17 Total Jobs 0 Pending 0 In Progress 0 Failed 0 Aborted 17 Complete

Description	Status	Progress	Message	Timestamp	Duration	Abort
Sent VM message to Vm: ol6u5-mysql	Success			Sep 10, 2014 4:18:57 am	236ms	Abort
Sent VM message to Vm: ol6u5-mysql	Success			Sep 10, 2014 4:18:56 am	211ms	Abort
Sent VM message to Vm: ol6u5-mysql	Success			Sep 10, 2014 4:18:55 am	276ms	Abort
Sent VM message to Vm: ol6u5-mysql	Success			Sep 10, 2014 4:18:54 am	241ms	Abort
Sent VM message to Vm: ol6u5-mysql	Success			Sep 10, 2014 4:18:54 am	334ms	Abort
Sent VM message to Vm: ol6u5-mysql	Success			Sep 10, 2014 4:18:53 am	317ms	Abort
Sent VM message to Vm: ol6u5-mysql	Success			Sep 10, 2014 4:18:52 am	246ms	Abort
Start Vm: ol6u5-mysql	Success			Sep 10, 2014 4:18:42 am	32ms	Abort
Modify Vm: ol6u5-mysql	Success			Sep 10, 2014 4:18:41 am	125ms	Abort
Clone Vm: ol6u5-mysql56.0 in Server Pool: mypool	Success			Sep 10, 2014 4:18:34 am	3s	Abort

Once the VM is deployed, you can ssh to the network address you provided. The hostname is set, a mysql database is running. Validate by running the following command :

```
[root@hostlaptop]# ssh root@192.168.56.30       (Password is jungle1234)
[root@mysql ~]# mysql -h localhost -u root -p
Enter password: ovsroot
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 7
Server version: 5.6.20 MySQL Community Server (GPL)

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owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| mysql              |
| performance_schema |
+--------------------+
3 rows in set (0,00 sec)

mysql>
```

CONGRATULATIONS

You are now at the end of this Hands-On LAB session.

You have learn how to create your own Oracle VM Template and how to customize this template with your own application inside.

Oracle VM Template is a key feature of the Oracle VM virtualization solution to enable rapid deployment of enterprise applications. Oracle already provides over 100 ready-to-use Oracle VM Templates for Oracle applications.

ANNEXES / REFERENCES :

- Oracle VM Documentation

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

- Wim Coekaerts Blog

  https://blogs.oracle.com/wim/

- Create a local yum repository

  http://www.oracle.com/technetwork/articles/servers-storage-admin/yum-repo-setup-1659167.html