

### 3. Private Cloud

b. Perform Creation, Management and Termination of a CentOS instance in Openstack/Opennebula.

#### Aim:

**To Create a Cloud application in Openstack/Opennebula Instance using in centOS.**

**three machines**

```
"vi /etc/hosts"
```

```
192.168.163.132 frontend.saec.com frontend
```

```
192.168.163.134 kvm2.saec.com kvm2
```

```
192.168.163.133 kvm1.saec.com kvm1
```

```
#####VT check#####
```

On kvm1 kvm2 frontend

```
# "grep -E 'svm|vmx' /proc/cpuinfo"
```

```
flags      : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36 clflush dts
mmx fxsr sse sse2 ss syscall nx pdpe1gb rdtscp lm constant_tsc arch_perfmon pebs bts nopl xtopology
tsc_reliable nonstop_tsc aperfmperf eagerfpu pni pclmulqdq vmx ssse3 fma cx16 pcid sse4_1 sse4_2
x2apic movbe popcnt aes xsave avx f16c rdrand hypervisor lahf_lm arat epb xsaveopt pln pts dtherm
tpr_shadow vnmi ept vpid fsgsbase smep
```

```
# "lsmod | grep -i kvm"
```

```
kvm_intel      148081  0
```

```
kvm            461126  1 kvm_intel
```

```
#####
```

all three

```
"vi /etc/selinux/config --> SELINUX=permissive"
```

```
"vi /etc/sysconfig/selinux --> SELINUX=permissive"
```

```
"getsebool -a | grep use_nfs_home_dirs"
```

```
"setsebool -P use_nfs_home_dirs 1"
```

all three

```
systemctl disable firewalld
```

```
systemctl stop firewalld
```

```
systemctl status firewalld
```

```
#####
```

```
reboot kvm1 kvm2 frontend
```

```
To Restart "shutdown -r now"
```

```
#####
```

```
kvm1 and kvm2
```

```
# "systemctl status firewalld |grep -i active"
```

```
Active: inactive (dead)
```

```
# "getsebool -a | grep use_nfs_home_dirs"
```

```
use_nfs_home_dirs --> on
```

```
#####
```

kvm1 kvm2 and frontend

```
# "yum install epel-release"
```

```
# "cat << EOT > /etc/yum.repos.d/opennebula.repo"
```

```
[opennebula]
```

```
name=opennebula
```

```
baseurl=http://downloads.opennebula.org/repo/4.8/CentOS/7/x86_64/
```

```
enabled=1
```

```
gpgcheck=0
```

```
EOT
```

```
#####
```

On frontend

```
# yum -y install opennebula-server opennebula-sunstone
```

kvm1 and kvm2

```
# yum -y install opennebula-node-kvm
```

#####

On frontend

```
# "/usr/share/one/install_gems"
```

lsb\_release command not found. If you are using a RedHat based  
distribution install redhat-lsb

Select your distribution or press enter to continue without  
installing dependencies.

0. Ubuntu/Debian

1. CentOS/RedHat

2. SUSE

give 1 and then press enter

#####

```
gem install --no doc sinatra thin azure
```

error not install ruby rack not installed

#####

```
# gem uninstall sinatra
```

```
# gem install sinatra --version '1.4.4'
```

installed

```
"/usr/share/one/install_gems"
```

```
#####
```

On frontend,

```
"vi /etc/one/sunstone-server.conf "
```

and change :host: 127.0.0.1 to :host: 0.0.0.0.

```
# service opennebula start
```

```
# service opennebula-sunstone start
```

on status if not displayed reboot

```
# "chkconfig --list 2>/dev/null|grep -i open"
```

```
opennebula    0:off 1:off 2:on 3:on 4:on 5:on 6:off
```

```
opennebula-sunstone 0:off 1:off 2:on 3:on 4:on 5:on 6:off
```

```
#####
```

On frontend

```
vi /etc/exports
```

/var/lib/one/ \*(rw, sync, no\_subtree\_check, no\_root\_squash, insecure)----> paste in that

```
# exportfs -ra
```

```
systemctl status nfs.service
```

```
systemctl start nfs.service
```

```
systemctl enable nfs-server.service
```

```
#####
```

Check from kvm1 and kvm2

```
# showmount -e frontend
```

On kvm1 and kvm2

```
systemctl status nfs-client.target
```

```
systemctl start nfs-client.target
```

```
systemctl enable nfs-client.target
```

```
#####
```

On frontend

```
systemctl |grep -i nfs
```

proc-fs-nfsd.mount configuration filesystem	loaded active mounted NFSD
var-lib-nfs-rpc_pipefs.mount System	loaded active mounted RPC Pipe File
nfs-config.service configuration	loaded active exited Preprocess NFS
nfs-idmapd.service mapping service	loaded active running NFSv4 ID-name
nfs-mountd.service Daemon	loaded active running NFS Mount
nfs-server.service services	loaded active exited NFS server and
rpc-statd.service for NFSv2/3 locking.	loaded active running NFS status monitor

```
#####
```

if failed, type "service nfs-idmapd start"

```
#####
```

On kvm1 and kvm2

```
systemctl |grep -i nfs
```

proc-fs-nfsd.mount configuration filesystem	loaded active mounted NFSD
var-lib-nfs-rpc_pipefs.mount System	loaded active mounted RPC Pipe File
nfs-config.service configuration	loaded active exited Preprocess NFS
nfs-client.target	loaded active active NFS client services

On kvm1 and kvm2, mount /var/lib/one from frontend

```
# vi /etc/fstab
```

```
frontend.saec.com:/var/lib/one/ /var/lib/one/ nfs soft,intr,rsize=8192,wsiz=8192 0 0-----  
-> paste
```

```
# mount -a -t nfs
```

```
# "df -h /var/lib/one" (check to see if it is mounted)
```

To check the status frontend.saec.com

Reboot kvm1 and kvm2

```
# df -h /var/lib/one (check to see if it is mounted)
```

```
#####
```

On frontend

```
# su - oneadmin
```

```
$ cat << EOT > ~/.ssh/config
```

```
Host *
```

```
    StrictHostKeyChecking no
```

```
    UserKnownHostsFile /dev/null
```

```
EOT
```

```
$ chmod 600 ~/.ssh/config
```

```
#####
```

On kvm1 and kvm2

```
# systemctl status messagebus.service
```

```
# systemctl status libvirtd.service
```

```
# systemctl start messagebus.service
```

```
# systemctl start libvirtd.service
```

```
#####
```

On kvm1 and kvm2

```
vi /etc/sysconfig/network-scripts/ifcfg-eno16777736
```

```
DEVICE=eno16777736
```

```
BOOTPROTO=none
```

```
NM_CONTROLLED=no
```

```
ONBOOT=yes
```

```
TYPE=Ethernet
```

```
BRIDGE=br0
```

```
vi /etc/sysconfig/network-scripts/ifcfg-br0
```

```
DEVICE=br0
```

```
TYPE=Bridge
```

```
ONBOOT=yes
```

```
BOOTPROTO=dhcp
```

```
NM_CONTROLLED=no
```

Reboot kvm1 and kvm2 to see if devices are configured

network disabled

```
#####
```



```
vi /etc/NetworkManager/NetworkManager.conf
```

```
[main]
```

```
plugins=ifupdown,keyfile
```

```
[ifupdown]
```

```
managed=true
```

```
#####
```

```
Reboot
```

```
#####
```

```
# ip route show | grep -i " br0"
```

```
#####
```

```
To Delete the onehost ID
```

```
"onehost delete 0"
```

```
#####
```

```
Using browser, open http://frontend:9869
```

```
Password is here;
```

```
On frontend
```

```
su - oneadmin
```

```
cat ~/.one/one_auth
```

```
#####
```

If ERROR DISPLAY NO ROUTE

We have to check HOST IP

```
#####
```

On frontend, all activities to be performed as oneadmin

Add both hypervisors;

```
$ onehost create kvm1.saec.com -i kvm -v kvm -n dummy
```

```
$ onehost create kvm2.saec.com -i kvm -v kvm -n dummy
```

Check log to see if all is well

```
"tail -f /var/log/one/oned.log"
```

Check to see both hypervisors are properly added;

```
$ onehost list
```

ID	NAME	CLUSTER	RVM	ALLOCATED_CPU	ALLOCATED_MEM	STAT
0	kvm1.saec.com	-	0	0 / 100 (0%)	0K / 1.8G (0%)	on
1	kvm2.saec.com	-	0	0 / 100 (0%)	0K / 1.8G (0%)	on

Once it's working you need to create a network, an image and a virtual machine template.

Create the image (we are using ttylinux due to size and speed)

```
$ oneimage create --name "TTYLinux_1.0" \  
  --path http://marketplace.c12g.com/appliance/4fc76a938fb81d3517000003/download \  
  --driver raw \  
  -d default
```

Check to see if the image has been created;

```
$ oneimage list
```

ID	USER	GROUP	NAME	DATASTORE	SIZE	TYPE	PER	STAT	RVMS
0	oneadmin	oneadmin	TTYLinux_1.0	default	40M	OS	No lock	0	

\*\* STAT says locked, wait for a few minutes for it to say rdy

```
$ oneimage list
```

ID	USER	GROUP	NAME	DATASTORE	SIZE	TYPE	PER	STAT	RVMS
0	oneadmin	oneadmin	TTYLinux_1.0	default	40M	OS	No rdy	0	

Create the template (need to refer the image created in previous step)

```
$ onetemplate create --name "TTYLinux_1" \  
  --cpu 1 --vcpu 1 --memory 256 --arch x86_64 \  
  --disk "TTYLinux_1.0" \  
  --nic "private" \  
  --vnc --ssh --net_context
```

Check to see if the template has been created;

```
$ onetemplate list
```

ID	USER	GROUP	NAME	REGTIME
0	oneadmin	oneadmin	TTYLinux_1	07/03 18:27:50

Instantiate the template and it will run a VM;

```
$ onetemplate instantiate TTYLinux_1
```

Check to see if the VM is running;

```
$ onevm list
```

ID	USER	GROUP	NAME	STAT	UCPU	UMEM	HOST	TIME
0	oneadmin	oneadmin	TTYLinux_1-0	runn	99	256M	kvm2.cn1.c	0d 00h02

Connect to the VM (can be done from anywhere within the network);

```
$ onevm list -x| grep ETH0
```

```
<ETH0_IP><![CDATA[192.168.35.150]]></ETH0_IP>
```

```
<ETH0_MAC><![CDATA[02:00:c0:a8:23:96]]></ETH0_MAC>
```

```
$ ssh root@192.168.35.150 "uname -a"
```

Warning: Permanently added '192.168.35.150' (RSA) to the list of known hosts.

root@192.168.35.150's password:

```
Linux ttylinux_host 2.6.20 #1 PREEMPT Mon Aug 17 20:32:57 MST 2009 i686 GNU/Linux
```

\$

Migrate the instance from one hypervisor to another;

\*\*\*\* --live will ensure the VM is running

Check current hypervisor;

\$ onevm list

ID	USER	GROUP	NAME	STAT	UCPU	UMEM	HOST	TIME
0	oneadmin	oneadmin	TTYLinux_1-0	runn	99	256M	kvm2.cnl.c	0d 00h02

Migrate the instance;

\$ onevm migrate --live TTYLinux\_1-0 kvm1.cnl.com

Check current hypervisor;

\$ onevm list

ID	USER	GROUP	NAME	STAT	UCPU	UMEM	HOST	TIME
0	oneadmin	oneadmin	TTYLinux_1-0	runn	27	256M	kvm1.cnl.c	0d 00h07

Check instance uptime;

\$ ssh root@192.168.35.150 "uptime"

Warning: Permanently added '192.168.35.150' (RSA) to the list of known hosts.

root@192.168.35.150's password:

13:08:55 up 5 min, load average: 0.00, 0.00, 0.00

No reboot!! Enjoy!!

#####

Addition of DataStore

On frontend1, rescan scsi new disk added

```
echo "- - -" > /sys/class/scsi_host/host#/scan
```

```
fdisk -l
```

\*\*\* - for new scsi controller, please check under the directory for the host number.

Check to see new disks added

```
tail -f /var/log/messages (we see /dev/sdb added (example))
```

Create new partition

```
fdisk /dev/sdb (follow normal process, and then run partprobe)
```

Create new filesystem

```
mkfs.xfs /dev/sdb1
```

Create mountpoint and set entry in /etc/fstab to mount;

```
mkdir -pm 750 /var/lib/one/datastores/3
```

```
vi /etc/fstab
```

```
# New DataStore
```

```
/dev/sdb1          /var/lib/one/datastores/3          xfs    defaults    0 0
```

Mount /var/lib/one/datastores/3 and check to see if mounted;

```
mount /var/lib/one/datastores/3
```

```
df -h /var/lib/one/datastores/3
```

Using frontend1 GUI, add new datastore (called as DS\_System\_3), type System

```
#####
```

Addition of new disk to instances (virtual block)

Using frontend1 GUI, add new disk;

- Volatile
- Size 50MB
- Target Param should be sd

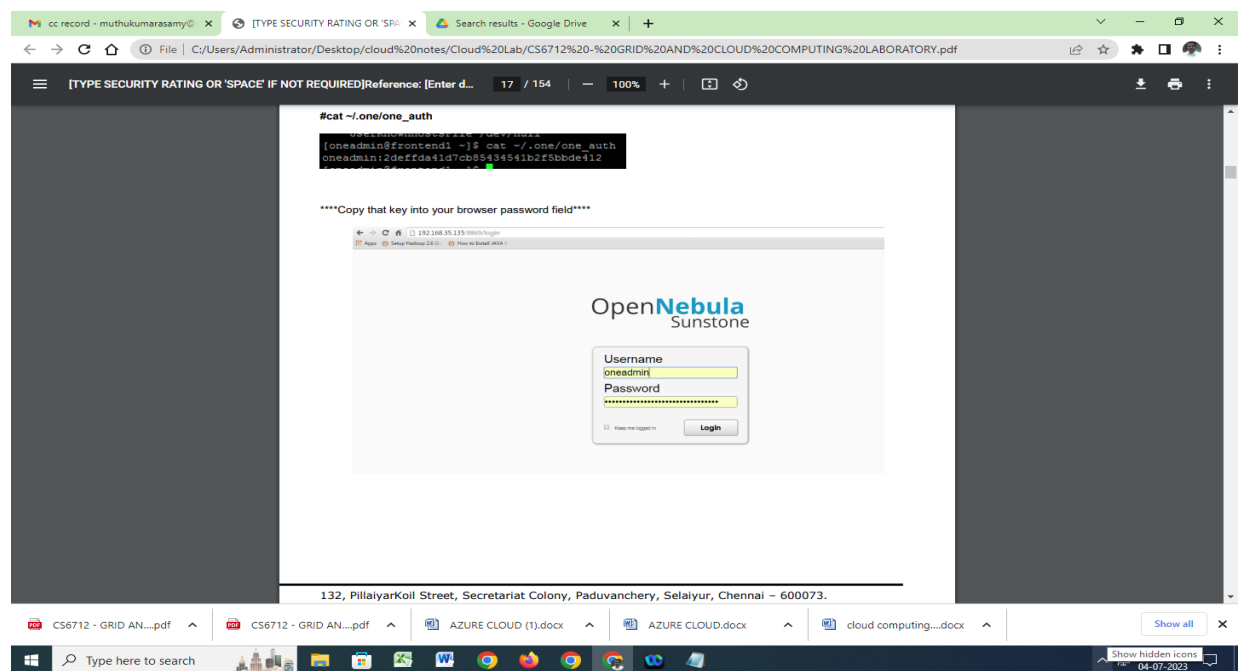
Check logs to see disk added;

Sun Jul 3 19:14:48 2016 [Z0][VMM][I]: Successfully execute transfer manager driver operation: tm\_attach.

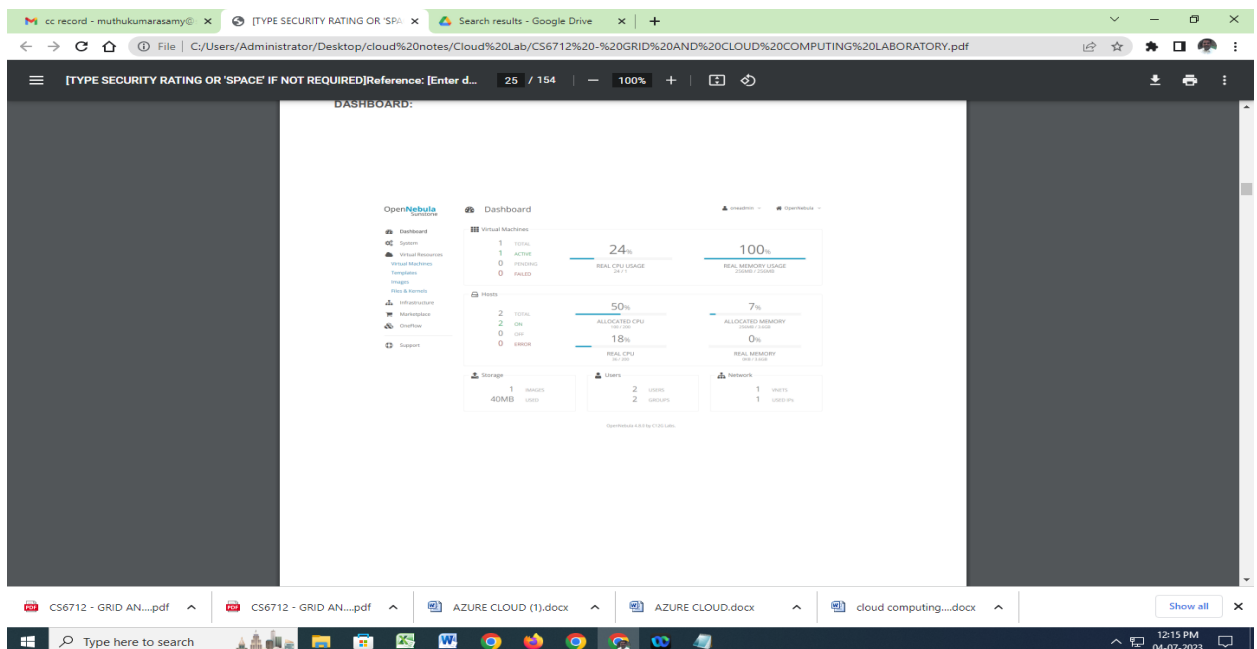
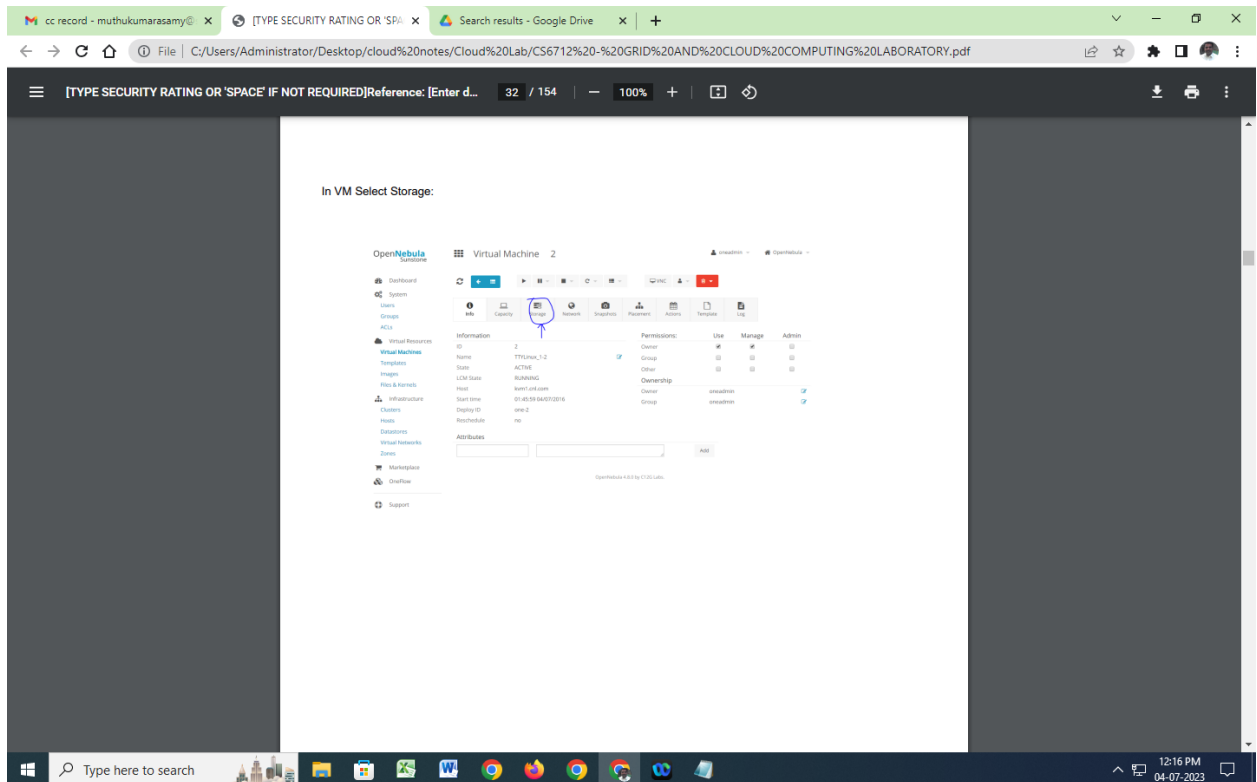
Sun Jul 3 19:14:48 2016 [Z0][VMM][I]: ExitCode: 0

Sun Jul 3 19:14:48 2016 [Z0][VMM][I]: Successfully execute virtualization driver operation: attach\_disk.

Sun Jul 3 19:14:48 2016 [Z0][VMM][I]: VM Disk successfully attached.







## Result:

The above Cloud application in Openstack/Opennebula Instance using in CentOS Created and executed Successfully.