Ex No - 1	Creating Disc Images for Virtual machines

Aim:

To create Virtual Machine Disc images for the following in Opennebula.

1) Centos – 6.5
2) Ubuntu – 14.04
3) Virtual Block of size 10 GB.

Procedure:

CREATING DISC IMAGE FOR CENTOS – 6.5

1) Open the terminal.
2) Login as oneadmin user

```
$ su – oneadmin
```

3) Find the location in which the qcow image of Centos – 6.5 is located and copy its path.
   ➔ ***http://localhost/cloudimages/centos6.5.qcow2.gz***
4) *Execute the below command for creating the disc image*

```
$ oneimage create --name "Centos-6.5-Disc" --path
"http://localhost/cloudimages/centos6.5.qcow2.gz" --driver qcow2 --datastore default
```

5) *Stop*

CREATING DISC IMAGE FOR UBUNTU– 14.04

1) Open the terminal.
2) Login as oneadmin user

```
$ su – oneadmin
```

3) Find the location in which the qcow image of Ubuntu-14.04 is located and copy its path.
   ➔ ***http://localhost/cloudimages/ ubuntu-14.04 .qcow2.gz***
4) *Execute the below command for creating the disc image*

```
$ oneimage create --name "Ubuntu-14.04-Disc" --path
"http://localhost/cloudimages/ubuntu-14.04.qcow2.gz" --driver qcow2 --datastore default
```

5) *Stop*

CREATING DISC IMAGE FOR VIRTUAL BLOCK OF SIZE 10 GB

1) Open the terminal.

2) Login as oneadmin

user **$ su – oneadmin**

3) *Execute the below command for creating the disc image*

$ ***oneimage create -d 1 --name 10gbdisk --size 10G --type DATABLOCK --prefix sd --persistent***

4) *Stop*

OUTPUT :

```
root@cloudlab-OptiPlex-9020: ~
oneadmin@cloudlab-OptiPlex-9020:~$ oneimage create --name "Centos-6.5-Disc" --pa
th "http://localhost/cloudimages/centos6.5.qcow2.gz" --driver qcow2 --datastore
default
ID: 3
oneadmin@cloudlab-OptiPlex-9020:~$ oneimage create --name "Ubuntu-14.04-Disc" --
path "http://localhost/cloudimages/ubuntu-14.04.qcow2.gz" --driver qcow2 --datas
tore default
ID: 4
oneadmin@cloudlab-OptiPlex-9020:~$ oneimage  create -d 1 --name 10gbdisk --size
10G --type DATABLOCK --prefix sd --persistent
ID: 5
oneadmin@cloudlab-OptiPlex-9020:~$ oneimage list
  ID USER       GROUP      NAME            DATASTORE     SIZE TYPE PER STAT RVMS
   3 oneadmin   oneadmin   Centos-6.5-Disc default       267M OS    No rdy     0
   4 oneadmin   oneadmin   Ubuntu-14.04-Di default       287M OS    No rdy     0
   5 oneadmin   oneadmin   10gbdisk        default        10G DB   Yes rdy     0
oneadmin@cloudlab-OptiPlex-9020:~$
```

Result:

Thus the Virtual Machine Disc Images of Centos-6.5, Ubuntu-14.04 and a virtual block of size 10 GB has been created Successfully in Opennebula.

Ex No - 2	Creating Virtual Machine Templates of different Configurations

Aim:

To create Virtual Machine Templates with the provided Operating System disc images as per the given specification in opennebula.

TEMPLATES	SPECIFICATION
Template 1: Centos-6.5-t1	DISC : Centos-6.5-Disc CPU : 1 MEMORY : 512 MB VCPU : 1 NIC : private
Template 2: Centos-6.5-t2	DISC : Centos-6.5-Disc CPU : 2 MEMORY : 1024 MB or 1 G VCPU : 2 NIC : private
Template 3: Ubuntu-14.04-t1	DISC : Ubuntu-14.04-Disc CPU : 2 MEMORY : 2048 MB or 2 G VCPU : 1 NIC : private

Procedure:

CREATING VIRTUAL MACHINE TEMPLATE Centos-6.5-ONE

1) Open the terminal.
2) Login as oneadmin user

```
$ su – oneadmin
```

3) Execute the below commands for creating the Templates

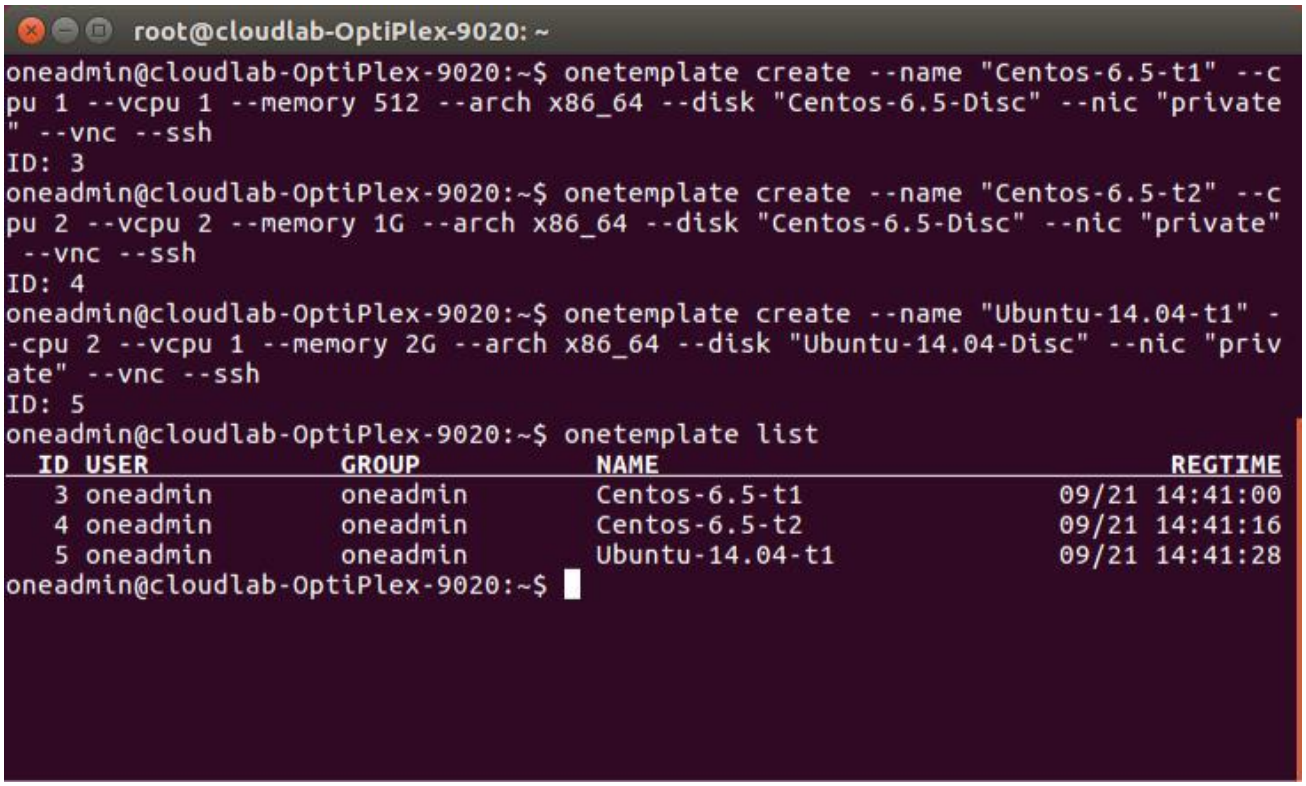
```
--$onetemplatecreate --name"Centos-6.5-t1"cpu 1 ----vcpu1memory 512 --arch x86_64
--disk "Centos-6.5-Disc" --nic "private" -- vnc -- ssh
```

```
$ onetemplate create -- name "Centos-6.5-t2" --cpu 2 --vcpu 2 --memory 1G -- arch x86_64
--disk "Centos-6.5-Disc" --nic "private" -- vnc -- ssh
```

```
$ onetemplate create -- name "Ubuntu-14.04-t1" cpu 2-- --vcpu 1 memory 2G arch----
x86_64 --disk "Ubuntu-14.04-Disc" nic "private"-- -- vnc -- ssh
```

4) *Stop*

OUTPUT:



Result:

Thus the Virtual Machine Templates are created successfully as per the given specification with the provided Disc Images in Opennebula.

Ex No - 3	Running the Virtual Machines of different Configurations

Aim:

To run the virtual machines by instantiating the provided virtual machine templates in Opennebula.

1. *Centos-6.5-t1*
2. *Centos-6.5-t2*
3. *Ubuntu-14.04-t1*

Procedure:

1) Open the terminal.
2) Login as oneadmin user

```
$ su – oneadmin
```

3) *Execute the below commands for running the Virtual Machines*

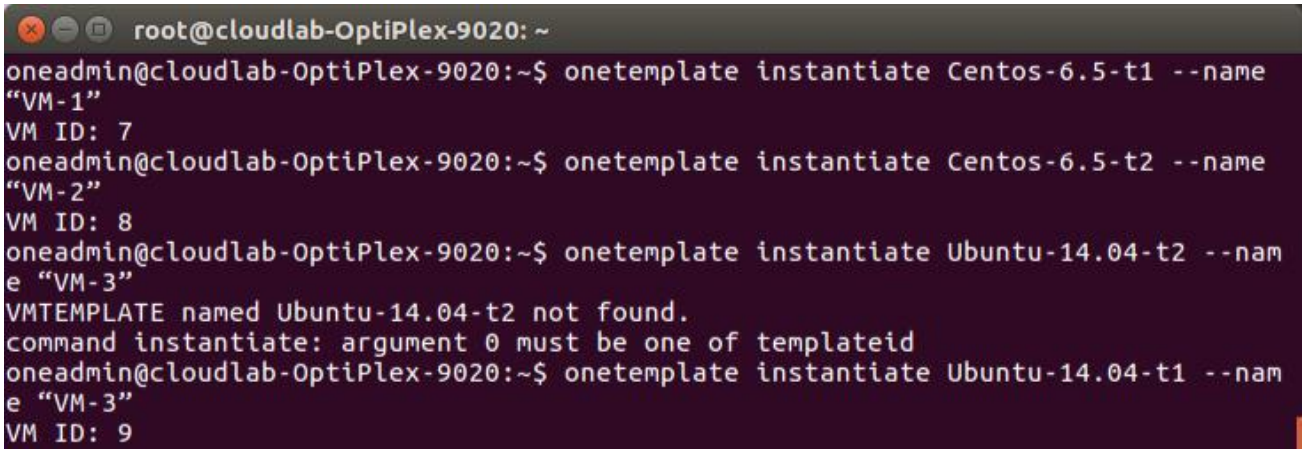
```
$ onetemplate instantiate Centos-6.5-t1 --name “VM-1”
```

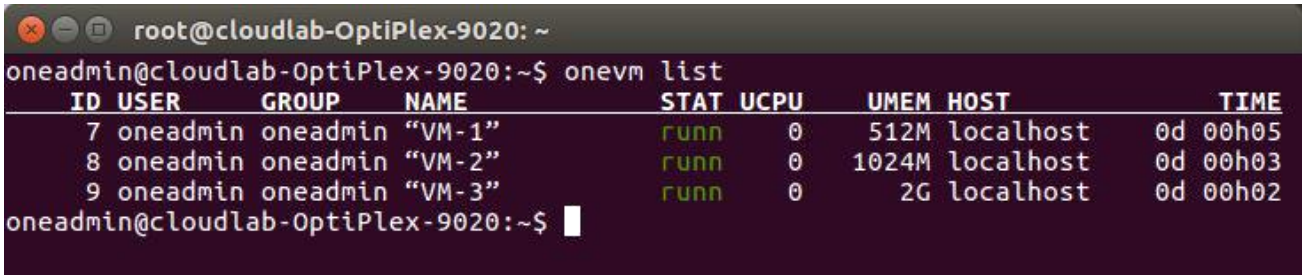
```
$ onetemplate instantiate Centos-6.5-t2 --name “VM-2”
```

```
$ onetemplate instantiate Ubuntu-14.04-t1 --name “VM-3”
```

4) *Stop*

OUTPUT:





Result:

Thus the specified virtual machine templates are instantiated and the corresponding virtual machines are running successfully.

Ex No - 4	Creating and Running a Virtual Machine

Aim:

To create and run a Centos-6.5 virtual machine with the given specification in opennebula.

CentOS Virtual Machine	CPU : 1 MEMORY : 512 MB VCPU : 1 NIC : private

Procedure:

1) Open the terminal.
2) Login as oneadmin user

```
$ su – oneadmin
```

3) Find the location in which the qcow image of Centos – 6.5 is located and copy its path.
   ➔ ***http://localhost/cloudimages/centos6.5.qcow2.gz***

4) *Execute the below command for creating the disc image for Centos-6.5*

```
$ oneimage create --name "Centos-6.5-Disc" --path
"http://localhost/cloudimages/centos6.5.qcow2.gz" --driver qcow2 --datastore default
```

5) *Execute the below commands for creating the vitual machine Template for allocating resources to Centos-6.5 as per the given specification*

```
$ onetemplate create --name "Centos-6.5-t3" --cpu 1 --vcpu 1 --memory 512 --
arch x86_64 --disk "Centos-6.5-Disc" --nic "private" --vnc –ssh
```

6) *Execute the below commands for running the Centos-6.5 Virtual Machine.*

```
$ onetemplate instantiate Centos-6.5-t3 --name “CentOS Virtual Machine”
```

7) *Stop*

Output:

```
root@cloudlab-OptiPlex-9020: ~
oneadmin@cloudlab-OptiPlex-9020:~$ oneimage create --name "Centos-6.5-Disc" --pa
th "http://localhost/cloudimages/centos6.5.qcow2.gz" --driver qcow2 --datastore
default
ID: 3
```

```
oneadmin@cloudlab-OptiPlex-9020:~$ oneimage list
  ID USER     GROUP    NAME           DATASTORE     SIZE TYPE PER STAT RVMS
   3 oneadmin oneadmin Centos-6.5-Disc default      267M OS     No rdy     0
```

```
root@cloudlab-OptiPlex-9020: ~
oneadmin@cloudlab-OptiPlex-9020:~$ onetemplate create --name "Centos-6.5-t3" --c
pu 1 --vcpu 1 --memory 512 --arch x86_64 --disk "Centos-6.5-Disc" --nic "private
" --vnc --ssh
ID: 7
oneadmin@cloudlab-OptiPlex-9020:~$ onetemplate list
  ID USER            GROUP           NAME                                REGTIME
   3 oneadmin        oneadmin        Centos-6.5-t1                 09/21 14:41:00
   4 oneadmin        oneadmin        Centos-6.5-t2                 09/21 14:41:16
   5 oneadmin        oneadmin        Ubuntu-14.04-t1               09/21 14:41:28
   7 oneadmin        oneadmin        Centos-6.5-t3                 09/21 16:30:01
oneadmin@cloudlab-OptiPlex-9020:~$ onetemplate instantiate Centos-6.5-t3 --name
"Centos Virtual Machine"
VM ID: 10
oneadmin@cloudlab-OptiPlex-9020:~$ onevm list
    ID USER     GROUP    NAME            STAT UCPU    UMEM HOST             TIME
     7 oneadmin oneadmin “VM-1”         runn    0     512M localhost    0d 00h54
     8 oneadmin oneadmin “VM-2”         runn    0    1024M localhost    0d 00h52
    10 oneadmin oneadmin Centos Virtual runn  100     512M localhost    0d 00h00
oneadmin@cloudlab-OptiPlex-9020:~$
```

Result:

Thus the Centos-6.5 virtual machine with the given specification is created and successfully instantiated in opennebula.

Ex No - 5	Attaching a Virtual Block to Virtual Machine

Aim:

To create and attach a Virtual Block disk to a Virtual Machine in Opennebula.

Procedure:

1) Open the terminal.
2) Login as oneadmin user

```
$ su – oneadmin
```

3) *Execute the below command for creating the disc image*

```
$ oneimage create -d 1 --name 10gbdisk --size 10G --type DATABLOCK -
-prefix sd --persistent
```

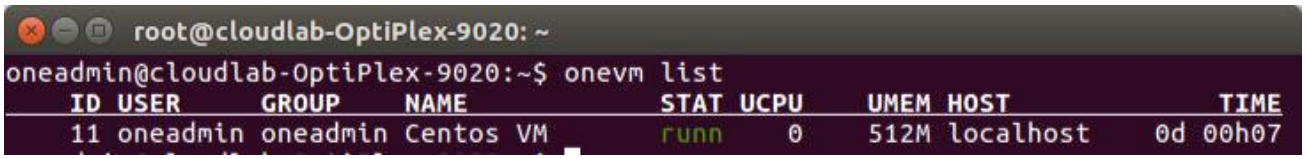
4) *Identify the Virtual Machine ID to which the Disc is to be attached.*
5) *Execute the below command for attaching the Disc to the Virtual Machine which is identified by its ID.*

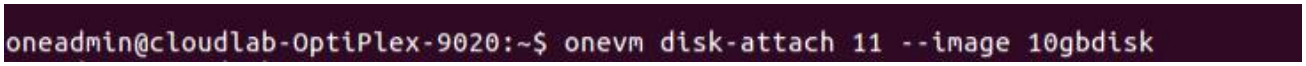
```
$ onevm disk-attach 11 --image 10gbdisk
```

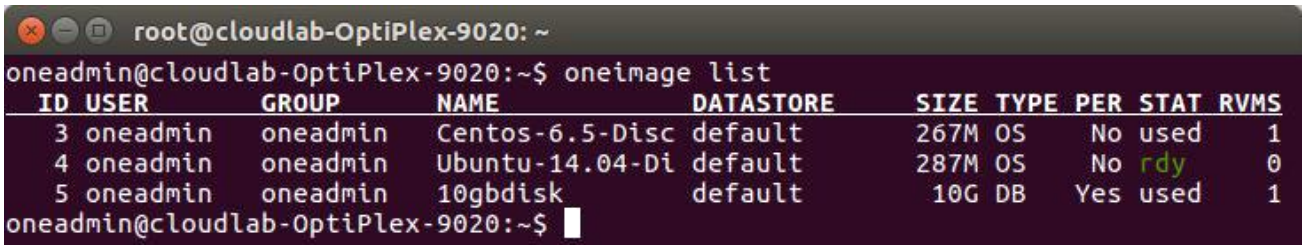
6) *Stop*

OUTPUT :

```
oneadmin@cloudlab-OptiPlex-9020:~$ oneimage  create -d 1 --name 10gbdisk --size
10G --type DATABLOCK --prefix sd --persistent
ID: 5
oneadmin@cloudlab-OptiPlex-9020:~$ oneimage list
  ID USER       GROUP      NAME            DATASTORE     SIZE TYPE PER STAT RVMS
   3 oneadmin   oneadmin   Centos-6.5-Disc default      267M OS    No rdy     0
   4 oneadmin   oneadmin   Ubuntu-14.04-Di default      287M OS    No rdy     0
   5 oneadmin   oneadmin   10gbdisk        default       10G DB   Yes rdy     0
oneadmin@cloudlab-OptiPlex-9020:~$
```







Result:

Thus a Virtual Block disc has been created and attached to a Virtual Machine in Opennebula.

EX NO - 6	**VIRTUAL MACHINE MIGRATION**

AIM:

To perform live migration of a virtual machine running on one host to the other host in opennebula.

PROCEDURE:

1. Open the terminal in the frontend node.
2. Login as oneadmin user.

```
$ su - oneadmin
```

3. List the hosts that are

```
available. $ onehost list
```

4. List the virtual machines to know the hosts in which they are

```
running. $ onevm list
```

5. To migrate virtual machine 11 running in host 0 to host 1, run the below

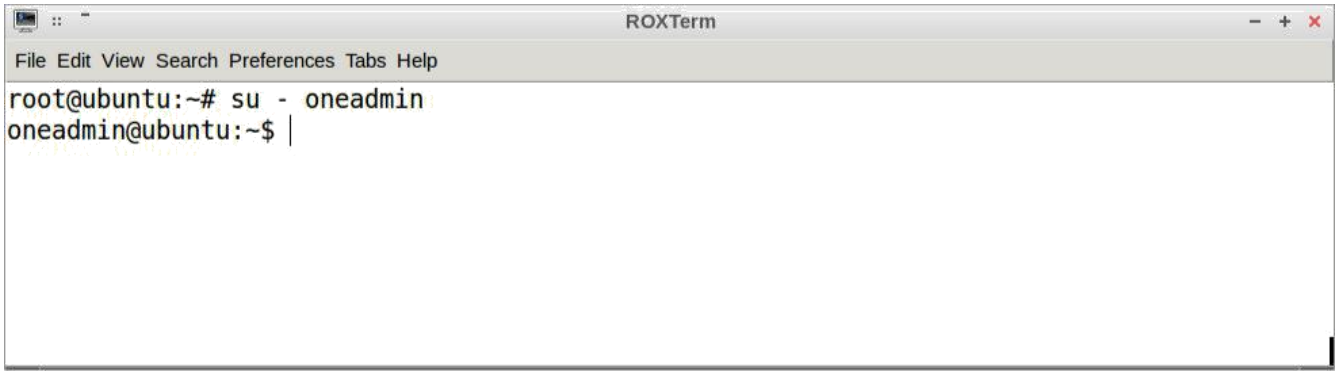
```
command. $ onevm migrate --live 11 1
```

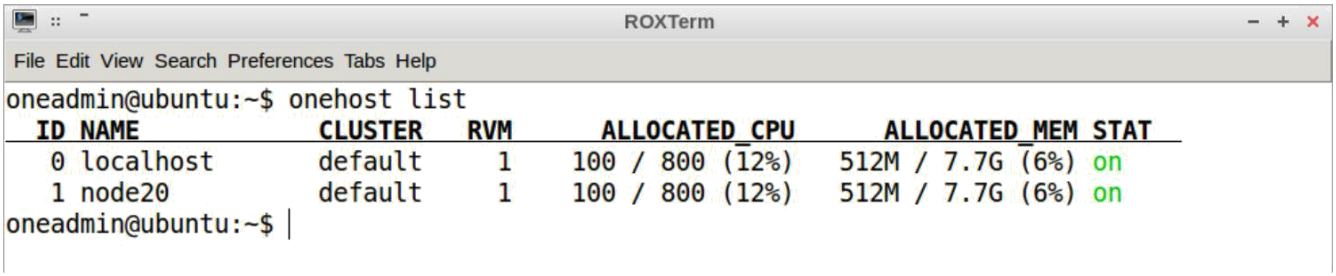
6. Now, List the virtual machines to check if it is migrated to its new host.

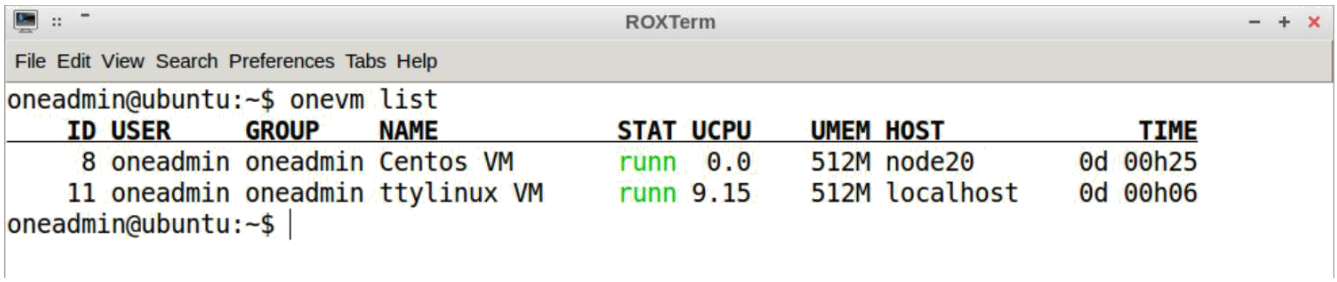
```
$ onevm list
```

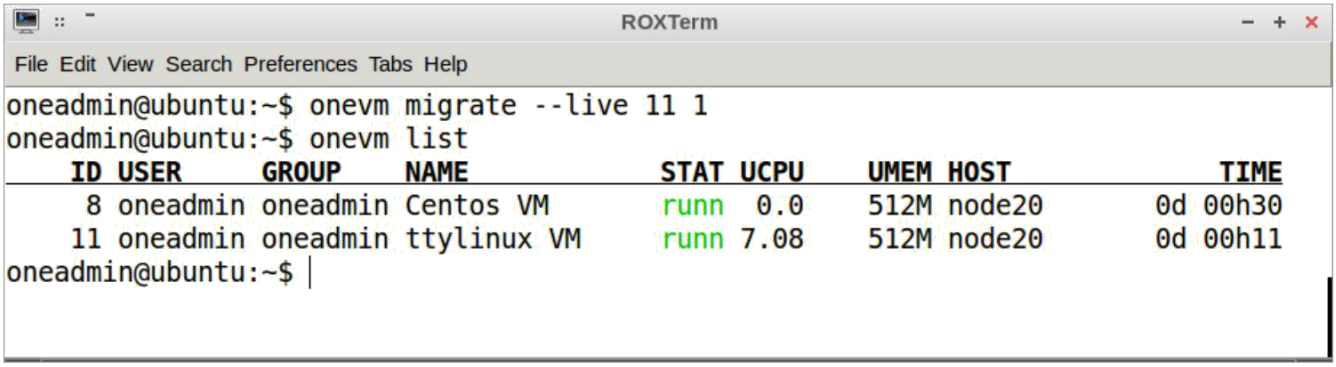
7. Stop.

OUTPUT:


ROXTerm
File Edit View Search Preferences Tabs Help
root@ubuntu:~# su - oneadmin
oneadmin@ubuntu:~$


ROXTerm
File Edit View Search Preferences Tabs Help
oneadmin@ubuntu:~$ onehost list
ID NAME CLUSTER RVM ALLOCATED_CPU ALLOCATED_MEM STAT
0 localhost default 1 100 / 800 (12%) 512M / 7.7G (6%) on
1 node20 default 1 100 / 800 (12%) 512M / 7.7G (6%) on
oneadmin@ubuntu:~$


ROXTerm
File Edit View Search Preferences Tabs Help
oneadmin@ubuntu:~$ onevm list
ID USER GROUP NAME STAT UCPU UMEM HOST TIME
8 oneadmin oneadmin Centos VM runn 0.0 512M node20 0d 00h25
11 oneadmin oneadmin ttylinux VM runn 9.15 512M localhost 0d 00h06
oneadmin@ubuntu:~$


ROXTerm
File Edit View Search Preferences Tabs Help
oneadmin@ubuntu:~$ onevm migrate --live 11 1
oneadmin@ubuntu:~$ onevm list
ID USER GROUP NAME STAT UCPU UMEM HOST TIME
8 oneadmin oneadmin Centos VM runn 0.0 512M node20 0d 00h30
11 oneadmin oneadmin ttylinux VM runn 7.08 512M node20 0d 00h11
oneadmin@ubuntu:~$

RESULT:

Thus the Virtual Machine running on one host has been migrated live to the other host Successfully in opennebula.