**Lab 3. THỰC HÀNH HỆ THỐNG ĐIỆN TOÁN ĐÁM MÂY OPENSTACK SỬ DỤNG LỆNH**

[**1.**     **Giới thiệu bộ lệnh OpenStack**](http://14.185.225.243/LabOpenStack02-ThucHanhHeThongSuDungLenh.htm#_Toc83923954)

[**2.**     **Truy xuất từ xa vào máy OpenStack**](http://14.185.225.243/LabOpenStack02-ThucHanhHeThongSuDungLenh.htm#_Toc83923955)

[2.1         Cách 1: Sử dụng lệnh ssh](http://14.185.225.243/LabOpenStack02-ThucHanhHeThongSuDungLenh.htm#_Toc83923956)

[2.2         Cách 2: Sử dụng putty](http://14.185.225.243/LabOpenStack02-ThucHanhHeThongSuDungLenh.htm#_Toc83923957)

[**3.**     **Kiểm tra thông tin mạng**](http://14.185.225.243/LabOpenStack02-ThucHanhHeThongSuDungLenh.htm#_Toc83923958)

[**4.**     **Xem thông tin hệ thống OpenStack**](http://14.185.225.243/LabOpenStack02-ThucHanhHeThongSuDungLenh.htm#_Toc83923959)

[**5.**     **Tạo và quản lý mạng internal intnetXYZ**](http://14.185.225.243/LabOpenStack02-ThucHanhHeThongSuDungLenh.htm#_Toc83923960)

[**6.**     **Tạo và quản lý router routerXYZ**](http://14.185.225.243/LabOpenStack02-ThucHanhHeThongSuDungLenh.htm#_Toc83923961)

[6.1         Tạo mới một router](http://14.185.225.243/LabOpenStack02-ThucHanhHeThongSuDungLenh.htm#_Toc83923962)

[6.2         Xem lại danh sách các router](http://14.185.225.243/LabOpenStack02-ThucHanhHeThongSuDungLenh.htm#_Toc83923963)

[6.3         Gắn subnetXYZ01 vào routerXYZ01](http://14.185.225.243/LabOpenStack02-ThucHanhHeThongSuDungLenh.htm#_Toc83923964)

[**7.**     **Tạo và quản lý security group và keypairs**](http://14.185.225.243/LabOpenStack02-ThucHanhHeThongSuDungLenh.htm#_Toc83923965)

[**8.**     **Tạo máy ảo instance vmXYZ và gắn vào mạng inetXYZ01**](http://14.185.225.243/LabOpenStack02-ThucHanhHeThongSuDungLenh.htm#_Toc83923966)

[8.1         Tải các file ảnh cirros-0.3.4-x86\_64-disk.img từ internet](http://14.185.225.243/LabOpenStack02-ThucHanhHeThongSuDungLenh.htm#_Toc83923967)

[8.2         Tạo một instance vmCirrosXYZ01 mới](http://14.185.225.243/LabOpenStack02-ThucHanhHeThongSuDungLenh.htm#_Toc83923968)

[8.3         Tạo và gắn địa chỉ IP floating cho máy vmCirrosXYZ01](http://14.185.225.243/LabOpenStack02-ThucHanhHeThongSuDungLenh.htm#_Toc83923969)

[**9.**     **Gắn routerXYZ01 vào mạng provider để kết nối ra mạng bên ngoài**](http://14.185.225.243/LabOpenStack02-ThucHanhHeThongSuDungLenh.htm#_Toc83923970)

[**10.**        **Các lệnh thao tác trên instance**](http://14.185.225.243/LabOpenStack02-ThucHanhHeThongSuDungLenh.htm#_Toc83923971)

[**11.**        **Các lệnh thao tác trên network/router**](http://14.185.225.243/LabOpenStack02-ThucHanhHeThongSuDungLenh.htm#_Toc83923972)

[**12.**        **Xem thông tin hệ thống OpenStack (dành cho admin)**](http://14.185.225.243/LabOpenStack02-ThucHanhHeThongSuDungLenh.htm#_Toc83923973)

[**13.**        **Tạo và quản lý flavor (NOTE for admin)**](http://14.185.225.243/LabOpenStack02-ThucHanhHeThongSuDungLenh.htm#_Toc83923974)

[**14.**        **Zone**](http://14.185.225.243/LabOpenStack02-ThucHanhHeThongSuDungLenh.htm#_Toc83923975)

**1.    Giới thiệu bộ lệnh OpenStack**

https://docs.openstack.org/python-openstackclient/queens/cli/command-list.html

**2.    Truy xuất từ xa vào máy OpenStack**

**2.1         Cách 1: Sử dụng lệnh ssh**

Mở cửa sổ lệnh, gõ:

**C:\> ssh  MaSV@<IP>**

Kết quả xuất hiện

**102445566@compute11:~$**

**2.2         Cách 2: Sử dụng putty**

**3.    Kiểm tra thông tin mạng**

**102445566@compute11:~$ ping 192.168.1.10**

Pinging 192.168.1.10 with 32 bytes of data:

Reply from 192.168.1.10: bytes=32 time=508ms TTL=64

…

**102445566@compute11:~$ ping 192.168.1.11**

Pinging 192.168.1.11 with 32 bytes of data:

Reply from 192.168.1.11: bytes=32 time=3ms TTL=64

…

**102445566@compute11:~$ ping 192.168.1.12**

Pinging 192.168.1.12 with 32 bytes of data:

Reply from 192.168.1.12: bytes=32 time=8ms TTL=64

…

**102445566@compute11:~$ ping 192.168.1.13**

Pinging 192.168.1.13 with 32 bytes of data:

Reply from 192.168.1.13: bytes=32 time=8ms TTL=64

…

102445566@compute11:~$

§  Xem không gian đĩa cứng còn sẵn và được sử dụng của hệ thống tập tin trên hệ thống Linux

**102445566@compute11:~$ df -h**

Filesystem      Size  Used Avail Use% Mounted on

udev            4.9G     0  4.9G   0% /dev

tmpfs           999M  9.0M  990M   1% /run

/dev/sda1       118G  8.6G  103G   8% /

tmpfs           4.9G     0  4.9G   0% /dev/shm

tmpfs           5.0M     0  5.0M   0% /run/lock

tmpfs           4.9G     0  4.9G   0% /sys/fs/cgroup

tmpfs           999M     0  999M   0% /run/user/0

tmpfs           999M     0  999M   0% /run/user/1000

**102445566@compute11:~$ df -h /**

Filesystem      Size  Used Avail Use% Mounted on

/dev/sda1       118G  8.6G  103G   8% /

102445566@compute11:~$

§  Xem file /etc/hosts

**102445566@compute11:~$ cat /etc/hosts**

§  Xem file /etc/hostname

**102445566@compute11:~$ cat /etc/hostname**

§  Xem file /etc/network/interfaces

**102445566@compute11:~$ cat /etc/network/interfaces**

**4.    Xem thông tin hệ thống OpenStack**

§  Xem quotas

**102445566@compute11:~$ source user-openrc**

**102445566@compute11:~$ nova quota-show**

+-----------------------------+-------+

| Quota                       | Limit |

+-----------------------------+-------+

| instances                   | 10    |

| cores                       | 20    |

| ram                         | 51200 |

| floating\_ips                | 10    |

| fixed\_ips                   | -1    |

| metadata\_items              | 128   |

| injected\_files              | 5     |

| injected\_file\_content\_bytes | 10240 |

| injected\_file\_path\_bytes    | 255   |

| key\_pairs                   | 100   |

| security\_groups             | 10    |

| security\_group\_rules        | 20    |

+-----------------------------+-------+

**102445566@compute11:~$ neutron quota-show**

+---------------------+-------+

| Field               | Value |

+---------------------+-------+

| floatingip          | 50    |

| network             | 50    |

| port                | 50    |

| rbac\_policy         | 10    |

| router              | 30    |

| security\_group      | 30    |

| security\_group\_rule | 100   |

| subnetXYZ              | 10    |

| subnetXYZpool          | -1    |

+---------------------+-------+

§  Xem thông tin dịch vụ Keystone trên máy Controller

**102445566@compute11:~$ openstack token issue**

+------------+----------------------------------+

| Field      | Value                            |

+------------+----------------------------------+

| expires    | 2017-09-25T08:52:43.852859Z      |

| id         | c7cc86605b354d5aa2f55221c5c5b2af |

| project\_id | 8db297b01cd74f36a5c6b44f1dcf6b66 |

| user\_id    | 6498de5bfbbe4a39852da7e21a388b1f |

+------------+----------------------------------+

§  Xem thông tin dịch vụ Glance trên máy Controller

**102445566@compute11:~$ nova service-list**

+----+------------------+------------+----------+---------+-------+----------------------------+-----------------+

| Id | Binary           | Host       | Zone     | Status  | State | Updated\_at                 | Disabled Reason |

+----+------------------+------------+----------+---------+-------+----------------------------+-----------------+

| 1  | nova-cert        | controller | internal | enabled | up    | 2017-05-10T09:01:39.000000 | -               |

| 2  | nova-consoleauth | controller | internal | enabled | up    | 2017-05-10T09:01:45.000000 | -               |

| 3  | nova-scheduler   | controller | internal | enabled | up    | 2017-05-10T09:01:39.000000 | -               |

| 4  | nova-conductor   | controller | internal | enabled | up    | 2017-05-10T09:01:45.000000 | -               |

| 5  | nova-compute     | compute1   | nova     | enabled | down  | 2017-05-10T08:06:27.000000 | -               |

+----+------------------+------------+----------+---------+-------+----------------------------+-----------------+

**5.    Tạo và quản lý mạng internal intnetXYZ**

**102445566@compute11:~$ source user-openrc**

**102445566@compute11:~$ neutron net-create intnetXYZ01**

Created a new network:

+---------------------------+--------------------------------------+

| Field                     | Value                                |

+---------------------------+--------------------------------------+

| admin\_state\_up            | True                                 |

| id                        | b09a2efe-ee9a-4330-82d9-135cf6846361 |

| mtu                       | 0                                    |

| name                      | intnetXYZ01                          |

| port\_security\_enabled     | True                                 |

| provider:network\_type     | vxlan                                |

| provider:physical\_network |                                      |

| provider:segmentation\_id  | 33                                   |

| router:external           | False                                |

| shared                    | False                                |

| status                    | ACTIVE                               |

| subnetXYZs                |                                      |

| tenant\_id                 | 8db297b01cd74f36a5c6b44f1dcf6b66     |

+---------------------------+--------------------------------------+

Kiểm tra kết quả trên giao diện Web dashboard (Chụp hình và bổ sung ngay dưới)!

Graphical user interface, application, website

Description automatically generated

Graphical user interface, application

Description automatically generated

//Nên chọn các địa chỉ khác để tránh trùnh lặp. Ví dụ 171.171.1.0/24, ….

**102445566@compute11:~$ neutron subnet-create intnetXYZ01 170.17.1.0/24 --name subnetXYZ01  --allocation-pool start=170.17.1.10,end=170.17.1.100  --gateway 170.17.1.1 --dns-nameserver 8.8.8.8**

Created a new subnet:

+-------------------+-------------------------------------------------+

| Field             | Value                                           |

+-------------------+-------------------------------------------------+

| allocation\_pools  | {"start": "170.17.1.10", "end": "170.17.1.100"} |

| cidr              | 170.17.1.0/24                                   |

| created\_at        | 2021-05-13T04:34:29Z                            |

| description       |                                                 |

| dns\_nameservers   | 8.8.8.8                                         |

| enable\_dhcp       | True                                            |

| gateway\_ip        | 170.17.1.1                                      |

| host\_routes       |                                                 |

| id                | 5324730d-244f-4054-9fcb-0903ec802705            |

| ip\_version        | 4                                               |

| ipv6\_address\_mode |                                                 |

| ipv6\_ra\_mode      |                                                 |

| name              | subnetXYZ01                                     |

| network\_id        | 3527fe7b-e946-4fbd-a8bc-3b8ce76c9111            |

| project\_id        | ec8b2652b0b54b0ba1f2599dab5597f8                |

| revision\_number   | 0                                               |

| service\_types     |                                                 |

| subnetpool\_id     |                                                 |

| tags              |                                                 |

| tenant\_id         | ec8b2652b0b54b0ba1f2599dab5597f8                |

| updated\_at        | 2021-05-13T04:34:29Z                            |

+-------------------+-------------------------------------------------+

102445566@compute11:~$

Kiểm tra kết quả trên giao diện Web dashboard (Chụp hình và bổ sung ngay dưới)!

Graphical user interface, application, website

Description automatically generated

Graphical user interface, application

Description automatically generated

Graphical user interface, application, website

Description automatically generated

Graphical user interface, application

Description automatically generated

Graphical user interface, text, application

Description automatically generated

§  Xem danh sách các network trong hệ thống

**102445566@compute11:~$ openstack network list**

+--------------------------------------+-------------+--------------------------------------+

| ID                                   | Name        | SubnetXYZs                              |

+--------------------------------------+-------------+--------------------------------------+

| 4f31a0bc-9753-425e-a395-d115634c1a4c | intnetXYZ01 | a68b25d6-b11f-4260-98a9-5e8123fc012f |

| bbc820f9-9687-4349-aeb6-4e49a9675fa1 | intnetXYZ02 | 187b4668-d648-4168-8d87-6e5015b34d99 |

+--------------------------------------+-------------+--------------------------------------+

Kiểm tra kết quả trên giao diện Web dashboard (Chụp hình và bổ sung ngay dưới)!

§  Xem thông tin mạng

**102445566@compute11:~$ nova net-list**

**102445566@compute11:~$ neutron net-list**

**102445566@compute11:~$ openstack network list**

**102445566@compute11:~$ neutron port-list --device\_owner network:dhcp**

**102445566@compute11:~$ neutron subnet-list**

**102445566@compute11:~$ neutron router-list**

**6.    Tạo và quản lý router routerXYZ**

**6.1         Tạo mới một router**

**102445566@compute11:~$ source user-openrc**

**102445566@compute11:~$ neutron router-create routerXYZ01**

Created a new router:

+-----------------------+--------------------------------------+

| Field                 | Value                                |

+-----------------------+--------------------------------------+

| admin\_state\_up        | True                                 |

| distributed           | False                                |

| external\_gateway\_info |                                      |

| ha                    | False                                |

| id                    | c7c187df-2f10-4707-8981-3c06a8adaab2 |

| name                  | routerXYZ01                         |

| routes                |                                      |

| status                | ACTIVE                               |

| tenant\_id             | 8db297b01cd74f36a5c6b44f1dcf6b66     |

+-----------------------+--------------------------------------+

Kiểm tra kết quả trên giao diện Web dashboard (Chụp hình và bổ sung ngay dưới)!

Graphical user interface, application, website

Description automatically generated

Graphical user interface, application

Description automatically generated

**6.2         Xem lại danh sách các router**

**102445566@compute11:~$ openstack router list**

+--------------------------------------+-------------+--------+-------+-------------+-------+----------------------------------+

| ID                                   | Name        | Status | State | Distributed | HA    | Project                          |

+--------------------------------------+-------------+--------+-------+-------------+-------+----------------------------------+

| 06e21e58-ae92-46a4-84d0-a0a00e40bf73 | routerXYZ01 | ACTIVE | UP    | False       | False | ec8b2652b0b54b0ba1f2599dab5597f8 |

+--------------------------------------+-------------+--------+-------+-------------+-------+----------------------------------+

**6.3         Gắn subnetXYZ01 vào routerXYZ01**

**102445566@compute11:~$ neutron router-interface-add routerXYZ01 subnetXYZ01**

Added interface 586a45eb-bc19-4346-b2c0-10a9e319b20c to router routerXYZ01.

102445566@compute11:~$

Kiểm tra kết quả trên giao diện Web dashboard (Chụp hình và bổ sung ngay dưới)!

**Graphical user interface, application, website

Description automatically generated**

Graphical user interface, application, website

Description automatically generated

Kiểm tra kết quả trên giao diện Web dashboard (Chụp hình và bổ sung ngay dưới)!

Graphical user interface, text, application

Description automatically generated

Chart

Description automatically generated with medium confidence

**7.      Tạo và quản lý security group và keypairs**

§  Xem danh sách các nhóm security

**102445566@compute11:~$ source user-openrc**

**102445566@compute11:~$ openstack security group list**

+--------------------------------------+---------+------------------------+

| Id                                   | Name    | Description            |

+--------------------------------------+---------+------------------------+

| 516cd340-64e6-4336-baa1-87ae1a68563b | default | Default security group |

|  |  |  |
| --- | --- | --- |
|  |  |  |

+--------------------------------------+----------+----------------+

Kiểm tra kết quả trên giao diện Web dashboard (Chụp hình và bổ sung ngay dưới)!

Graphical user interface, application

Description automatically generated

§  Associate an IP address with an instance in the project

**102445566@compute11$** **nova secgroup-list-rules default**

+----------------+-----------+---------+------------+--------------+

| IP Protocol    | From Port | To Port | IP Range   | Source Group |

+----------------+-----------+---------+------------+--------------+

|                |           |         | default    |              |

| icmp           | -1        | -1      | 0.0.0.0/0  |              |

| tcp            | 1         | 65535   | 0.0.0.0/0  |              |

|                |           |         |            | default      |

| udp            | 1         | 65535   | 0.0.0.0/0  |              |

+----------------+-----------+---------+-------------+-------------+

102445566@compute11 (admin) $> #...................................................................

Let’s find out security group of any one of VM.

Kiểm tra kết quả trên giao diện Web dashboard (!)

Graphical user interface, application

Description automatically generated

§  Lệnh nova show

**102445566@compute11$ nova show greenboxes-b2647e00-81e3-4290-b9c3-ce5e584c7265 | grep security\_groups**

| security\_groups                      | default                   |

102445566@compute11 (admin) $> #...................................................................

This suggests, our VM1 (greenboxes-b2647e00-81e3-4290-b9c3-ce5e584c7265) is booted with default security group. Now let’s add a rule to default to allow ssh connections(port 22).

§  Lệnh nova secgroup-add-rule

 Listing security groups for default security groups, we can verify that default secgrup has a rule for port 22. This means on any virtual machines booted with default security group, port 22 will be open for incoming connection and hence we can make ssh connection. These security group rules are project specific, and project members can edit the default rules for their group and add new rules sets.

**102445566@compute11$ nova secgroup-add-rule default tcp 22 22 0.0.0.0/0**

+----------------+-----------+---------+------------+------------+

| IP Protocol    | From Port | To Port | IP Range | Source Group |

+----------------+-----------+---------+------------+------------+

| tcp            | 22        | 22      | 0.0.0.0/0  |            |

+----------------+-----------+---------+------------+------------+

102445566@compute11 (admin) $> nova secgroup-list-rules default | grep 22

| tcp            | 22        | 22      | 0.0.0.0/0  |            |

102445566@compute11 (admin) $> #...................................................................

§  Lệnh openstack security group rule create

**102445566@VMUbuntu:~$ openstack security group rule create --proto icmp default**

+-------------------+--------------------------------------+

| Field             | Value                                |

+-------------------+--------------------------------------+

| created\_at        | 2017-02-06T14:02:05Z                 |

| description       |                                      |

| direction         | ingress                              |

| ethertype         | IPv4                                 |

| headers           |                                      |

| id                | ca215cd0-db00-4190-b9d3-4af8846659eb |

| port\_range\_max    | None                                 |

| port\_range\_min    | None                                 |

| project\_id        | cc19a5b580d34199b534e2e8e87c1be8     |

| project\_id        | cc19a5b580d34199b534e2e8e87c1be8     |

| protocol          | icmp                                 |

| remote\_group\_id   | None                                 |

| remote\_ip\_prefix  | 0.0.0.0/0                            |

| revision\_number   | 1                                    |

| security\_group\_id | 4a7b2e8e-6caf-4a59-9510-1cae9d0ac89f |

| updated\_at        | 2017-02-06T14:02:05Z                 |

+-------------------+--------------------------------------+

**102445566@VMUbuntu:~$ openstack security group rule create --proto tcp --dst-port 22 default**

+-------------------+--------------------------------------+

| Field             | Value                                |

+-------------------+--------------------------------------+

| created\_at        | 2017-02-06T14:02:15Z                 |

| description       |                                      |

| direction         | ingress                              |

| ethertype         | IPv4                                 |

| headers           |                                      |

| id                | 8247408c-e782-4236-a805-977f309d6a51 |

| port\_range\_max    | 22                                   |

| port\_range\_min    | 22                                   |

| project\_id        | cc19a5b580d34199b534e2e8e87c1be8     |

| project\_id        | cc19a5b580d34199b534e2e8e87c1be8     |

| protocol          | tcp                                  |

| remote\_group\_id   | None                                 |

| remote\_ip\_prefix  | 0.0.0.0/0                            |

| revision\_number   | 1                                    |

| security\_group\_id | 4a7b2e8e-6caf-4a59-9510-1cae9d0ac89f |

| updated\_at        | 2017-02-06T14:02:15Z                 |

+-------------------+--------------------------------------+

Kiểm tra kết quả trên giao diện Web dashboard (Chụp hình và bổ sung ngay dưới)!

Graphical user interface, application

Description automatically generated

**102445566@compute11:~$ ssh-keygen -q -N ""**

Enter file in which to save the key (/home/ubuntu/.ssh/id\_rsa): keyXYZ01

**102445566@compute11:~$ ssh-keygen -q -N ""**

Enter file in which to save the key (/home/ubuntu/.ssh/id\_rsa): keyXYZ03

§  Xem lại key vừa tạo

**102445566@compute11:~$** **openstack keypair create --public-key ~/.ssh/id\_rsa.pub keyXYZ01**

+-------------+-------------------------------------------------+

| Field       | Value                                           |

+-------------+-------------------------------------------------+

| fingerprint | c6:b9:c0:df:dc:c3:ba:c2:c2:aa:18:eb:c2:9b:b9:3b |

| name        | keyXYZ01                                        |

| user\_id     | 6498de5bfbbe4a39852da7e21a388b1f                |

+-------------+-------------------------------------------------+

Kiểm tra kết quả trên giao diện Web dashboard (Chụp hình và bổ sung ngay dưới)!

Graphical user interface, text

Description automatically generated

§  Xem danh sách key trên hệ thống

**102445566@compute11:~$ openstack keypair list**

+-------------------------+-------------------------------------------------+

| Name                    | Fingerprint                                     |

+-------------------------+-------------------------------------------------+

| keypair01               | 78:41:84:f6:4a:31:c3:6f:81:8c:f6:20:05:83:3b:bf |

| keypair02               | fd:8d:d9:53:73:39:23:b7:5e:ed:64:36:df:60:d3:6f |

| keypair03               | b7:d1:3c:ff:5a:ef:63:a8:83:3b:b5:83:e8:45:38:88 |

+-------------------------+-------------------------------------------------+

Kiểm tra kết quả trên giao diện Web dashboard (Chụp hình và bổ sung ngay dưới)!

§  Add the new security group, as follows:

**$ openstack security group create secgroupXYZ01 --description ‘Security group XYZ01’**

§  Create global\_http --description "Allows Web traffic anywhere on the Internet."

§  Add a new group rule:

**$ openstack security group rule create SEC\_GROUP\_NAME --protocol PROTOCOL --dst-port FROM\_PORT:TO\_PORT --remote-ip CIDR**

§  The arguments are positional, and the from-port and to-port arguments specify the local port range connections are allowed to access, not the source and destination ports of the connection:

**$ openstack security group rule create global\_http  --protocol tcp --dst-port 80:80 --remote-ip 0.0.0.0/0**

§  Create complex rule sets by creating additional rules. Pass both HTTP and HTTPS traffic:

**$ openstack security group rule create global\_http --protocol tcp --dst-port 443:443 --remote-ip 0.0.0.0/0**

§  Xóa một Security Group

**102445566@compute11:~$ openstack security group delete   a5a567ee-d497-4069-a193-c0599a0f571c**

**8.    Tạo máy ảo instance vmXYZ và gắn vào mạng inetXYZ01**

§  Xem danh sách các flavor

**102445566@compute11:~$ source user-openrc**

**102445566@compute11:~$ nova flavor-list**

+----+-----------+-----------+------+-----------+------+-------+-------------+-----------+

| ID | Name      | Memory\_MB | Disk | Ephemeral | Swap | VCPUs | RXTX\_Factor | Is\_Public |

+----+-----------+-----------+------+-----------+------+-------+-------------+-----------+

| 0  | m1.nano   | 64        | 1    | 0         |      | 1     | 1.0         | True      |

| 1  | m2.tiny   | 512       | 5    | 0         |      | 1     | 1.0         | True      |

| 2  | m3.small  | 1024      | 10   | 0         |      | 1     | 1.0         | True      |

| 3  | m5.large  | 4096      | 40   | 0         |      | 2     | 1.0         | True      |

| 4  | m4.medium | 2048      | 20   | 0         |      | 4     | 1.0         | True      |

+----+-----------+-----------+------+-----------+------+-------+-------------+-----------+

102445566@compute11:~$

§  Xem danh sách các images trong hệ thống

**102445566@VMUbuntu:~$ openstack image list**

+--------------------------------------+--------------------------+--------+--------+

| ID                                   | Name                     | Status | Server |

+--------------------------------------+--------------------------+--------+--------+

| ee58cb48-8cc0-4a95-b30d-8e7f9c2cd08c | Debian Jessie 64-bit     | ACTIVE |        |

| bb45d9f5-d2fb-45b8-bc32-79203bc4fbc5 | cirros-0.3.5-x86\_64-disk | ACTIVE |        |

| 4ddf49cc-1c3a-45f6-8288-0f1d724760e2 | linux-tinycore-6.4       | ACTIVE |        |

| 08bcc39d-a6bb-48b6-b0fe-ce30a046bc9e | window-xp-sp3            | ACTIVE |        |

+--------------------------------------+--------------------------+--------+--------+

Kiểm tra kết quả trên giao diện Web dashboard (Chụp hình và bổ sung ngay dưới)!

§  Xem danh sách các nhóm security

**102445566@compute11:~$ openstack security group list**

+--------------------------------------+---------+------------------------+

| Id                                   | Name    | Description            |

+--------------------------------------+---------+------------------------+

| 516cd340-64e6-4336-baa1-87ae1a68563b | default | Default security group |

+--------------------------------------+---------+------------------------+

Kiểm tra kết quả trên giao diện Web dashboard (Chụp hình và bổ sung ngay dưới)!

§  Xem danh sách các key

**102445566@compute11:~$ openstack keypair list**

+----------------+-------------------------------------------------+

| Name           | Fingerprint                                     |

+----------------+-------------------------------------------------+

| keypair01      | 78:41:84:f6:4a:31:c3:6f:81:8c:f6:20:05:83:3b:bf |

| keypair02      | fd:8d:d9:53:73:39:23:b7:5e:ed:64:36:df:60:d3:6f |

| keypair03      | b7:d1:3c:ff:5a:ef:63:a8:83:3b:b5:83:e8:45:38:88 |

+----------------+-------------------------------------------------+

Kiểm tra kết quả trên giao diện Web dashboard (Chụp hình và bổ sung ngay dưới)!

§  Xem danh sách các network

**102445566@compute11:~$ openstack network list**

+--------------------------------------+-----------------------+------+

| ID                                   | Label                 | CIDR |

+--------------------------------------+-----------------------+------+

| 1415c79d-40c5-4b92-aad0-9b02a7b8db21 | intnet 10.10.10.0/24  | None |

| 12198c9a-65d1-49bc-854f-7ad51aae3d68 | intnetXYZ50           | None |

| 77a45c58-0699-42ec-ae65-9fb20f01e1f5 | extnet 192.168.1.0/24 | None |

| 54430db5-1974-4f2e-8fef-6174c3e57660 | intnet 20.20.20.0/24  | None |

+--------------------------------------+-----------------------+------+

**8.1         Tải các file ảnh cirros-0.3.4-x86\_64-disk.img từ internet**

>> Có thể bỏ qua mục này

**102445566@compute11:~$ wget https://download.cirros-cloud.net/0.3.4/cirros-0.3.4-x86\_64-disk.img**

**102445566@compute11:~$ wget https://excellmedia.dl.sourceforge.net/project/qcow2image/TinyCoreLinux/TinyCoreLinuxGUI.qcow2**

**8.2         Tạo một instance vmCirrosXYZ01 mới**

§  Tạo mới instance vmCirrosXYZ01 từ image Cirros  kết nối vào mạng intnetXYZ01

**102445566@compute11:~$ source user-openrc**

**102445566@compute11:~$ openstack server create --flavor m1.tiny --image cirros-0.3.5-x86\_64-disk --nic net-id=intnetXYZ01 vmCirrosXYZ01**

+-------------------------------------+-----------------------------------------------------------------+

| Field                               | Value                                                           |

+-------------------------------------+-----------------------------------------------------------------+

| OS-DCF:diskConfig                   | MANUAL                                                          |

| OS-EXT-AZ:availability\_zone         |                                                                 |

| OS-EXT-SRV-ATTR:host                | None                                                            |

| OS-EXT-SRV-ATTR:hypervisor\_hostname | None                                                            |

| OS-EXT-SRV-ATTR:instance\_name       |                                                                 |

| OS-EXT-STS:power\_state              | NOSTATE                                                         |

| OS-EXT-STS:task\_state               | scheduling                                                      |

| OS-EXT-STS:vm\_state                 | building                                                        |

| OS-SRV-USG:launched\_at              | None                                                            |

| OS-SRV-USG:terminated\_at            | None                                                            |

| accessIPv4                          |                                                                 |

| accessIPv6                          |                                                                 |

| addresses                           |                                                                 |

| adminPass                           | exEkVsECk58p                                                    |

| config\_drive                        |                                                                 |

| created                             | 2021-05-13T05:19:08Z                                            |

| flavor                              | m1.nano (0)                                                     |

| hostId                              |                                                                 |

| id                                  | 6b4f5451-0609-4786-b802-68935fbc4c61                            |

| image                               | cirros-0.3.5-x86\_64-disk (c59a27c1-1828-49c9-9e00-2835ffda2eff) |

| key\_name                            | None                                                            |

| name                                | vmCirrosXYZ01                                                   |

| progress                            | 0                                                               |

| project\_id                          | ec8b2652b0b54b0ba1f2599dab5597f8                                |

| properties                          |                                                                 |

| security\_groups                     | name='default'                                                  |

| status                              | BUILD                                                           |

| updated                             | 2021-05-13T05:19:08Z                                            |

| user\_id                             | 146da1b45a4247099e10cf6a1bf03a28                                |

| volumes\_attached                    |                                                                 |

+-------------------------------------+-----------------------------------------------------------------+

102445566@compute11:~$

Kiểm tra kết quả trên giao diện Web dashboard (Chụp hình và bổ sung ngay dưới)!

A screenshot of a computer

Description automatically generated with medium confidence

Graphical user interface, application, website

Description automatically generated

Graphical user interface, text

Description automatically generated

Graphical user interface, text, application

Description automatically generated

Kiểm tra kết quả trên giao diện Web dashboard (Chụp hình và bổ sung ngay dưới)!

Graphical user interface, text, application

Description automatically generated

Diagram

Description automatically generated with low confidence

**8.3         Tạo và gắn địa chỉ IP floating cho máy vmCirrosXYZ01**

§  To list all floating IP addresses that are allocated to your project

**102445566@compute11:~$ openstack floating ip list**

+--------------------------------------+-----------------------+--------------+-------------+--------------------------------------+

| ID                                   | Pool                  | IP           | Fixed IP    | Instance ID                          |

+--------------------------------------+-----------------------+--------------+-------------+--------------------------------------+

| 0eb680dc-c659-4a79-81fa-a0df17ad3890 | extnet 192.168.1.0/24 | 192.168.1.51 | 10.10.10.20 | bb0e63f6-150b-4f13-985d-0aeba01724f3 |

| 5097d3ca-ff6a-4156-9225-d05f69127fae | extnet 192.168.1.0/24 | 192.168.1.90 | None        | None                                 |

| af086be9-8591-4c30-8546-a6f5f445b19e | extnet 192.168.1.0/24 | 192.168.1.93 | 10.10.10.21 | eafbb1bd-a281-48fd-9963-2f29cb2471b6 |

| b8e5f7d4-3be0-4f4c-bd0f-2fb0c5b79937 | extnet 192.168.1.0/24 | 192.168.1.91 | None        | None                                 |

+--------------------------------------+-----------------------+--------------+-------------+--------------------------------------+

102445566@compute11:~$

Kiểm tra kết quả trên giao diện Web dashboard (Chụp hình và bổ sung ngay dưới)!

Graphical user interface, text, application

Description automatically generated

§  List all project instances with which a floating IP address could be associated

**102445566@compute11:~$ openstack server list --ip 192.168.**

§  Associate an IP address with an instance in the project

**102445566@compute11:~$** **openstack ip floating add 192.168.1.51 b1ed6d24-214a-48aa-b08b-34aa911d8977**

**ssh 102190081@14.185.225.243**

openstack server add floating ip d9fae452-acc0-4d06-99ee-028aac8e817b [192.168.1.71](http://192.168.1.71/?fbclid=IwAR1xC6q2aenGgbURr19EdpN7K_VX_o-X7fFphOyGl44mNaKiLckn1rUkXGU)

§  Kết nối từ bên ngoài vào máy instance qua địa chỉ IP floating

Kiểm tra kết quả trên giao diện Web dashboard (Chụp hình và bổ sung ngay dưới)!

Text

Description automatically generated

Graphical user interface, application, Word

Description automatically generated

Graphical user interface, application

Description automatically generated

Text

Description automatically generated

§  Tham khảo: Disassociate floating IP addresses

**102445566@compute11:~$ openstack ip floating delete 192.168.1.51**

**9.    Gắn routerXYZ01 vào mạng provider để kết nối ra mạng bên ngoài**

//Lệnh này do admin xử lý

**102445566@compute11:~$ source user-openrc**

**102445566@compute11:~$ neutron router-interface-add routerNh99901 subnet1\_provider**

Kiểm tra kết quả trên giao diện Web dashboard (Chụp hình và bổ sung ngay dưới)!

Graphical user interface, application, website

Description automatically generated

Graphical user interface

Description automatically generated

Chart

Description automatically generated with low confidence

Chart

Description automatically generated with medium confidence

Kết quả từ máy vmCirros03 ping đến máy 192.168.1.200

Graphical user interface, text

Description automatically generated

**10.      Các lệnh thao tác trên instance**

§  Xem danh sách các instances trong hệ thống

**102445566@compute11:~$ source user-openrc**

**102445566@compute11:~$ nova list**

**102445566@compute11:~$ openstack server list**

§  Khởi động lại một instance

**102445566@compute11:~$ openstack server reboot vmCirrosXYZ01**

§  Xóa một instance

**102445566@compute11:~$ openstack server delete vmCirrosXYZ01**

**102445566@compute11:~$ openstack server list**

§  Pause an instance:

**[user@localhost]$ openstack server pause <myInstance>**

§  Unpause an instance:

**[user@localhost]$ openstack server unpause myInstance**

§  Suspend and resume an instance

§  To suspend an instance:

**[user@localhost]$ openstack server suspend myInstance**

§  To resume a suspended instance:

**[user@localhost]$ openstack server resume myInstance**

§  Stop and start an instance

**[user@localhost]$ openstack server stop myInstance**

§  Start a stopped instance

**[user@localhost]$ openstack server start myInstance**

§  Checking your instance's status

**[user@localhost]$ openstack server show myInstance**

**11.      Các lệnh thao tác trên network/router**

§  Delete the subnetXYZ

**102445566@compute11:~$ neutron subnet-delete subnetXYZ01**

§  Delete the Neutron network

**102445566@compute11:~$ neutron net-delete intnetXYZ01**

**12.      Xem thông tin hệ thống OpenStack (dành cho admin)**

§  Xem thông tin các thành phần của neutron

**102445566@compute11:~$ source admin-openrc**

**102445566@compute11:~$ openstack network agent list**

+--------------------------------------+--------------------+------------+-------------------+-------+-------+---------------------------+

| ID                                   | Agent Type         | Host       | Availability Zone | Alive | State | Binary                    |

+--------------------------------------+--------------------+------------+-------------------+-------+-------+---------------------------+

| 43fbb666-f74e-4177-96fd-9994d42ab872 | L3 agent           | controller | nova              | :-)   | UP    | neutron-l3-agent          |

| 47f47eca-4771-4c97-896e-3779872d0c9d | Open vSwitch agent | compute1   | None              | :-)   | UP    | neutron-openvswitch-agent |

| 52a24a4a-da0e-4542-ad4e-576b6824d9b1 | Metadata agent     | controller | None              | :-)   | UP    | neutron-metadata-agent    |

| 53d47920-ec4b-4558-85af-37f584fde698 | DHCP agent         | controller | nova              | :-)   | UP    | neutron-dhcp-agent        |

| b27e64ee-1da0-4164-84a1-18170deb8889 | Open vSwitch agent | controller | None              | :-)   | UP    | neutron-openvswitch-agent |

+--------------------------------------+--------------------+------------+-------------------+-------+-------+---------------------------+

102445566@compute11:~$

§  Xem thông tin dịch vụ Keystone trên Controller

**102445566@compute11:~$ source admin-openrc**

**102445566@compute11:~$ openstack token issue**

+------------+----------------------------------+

| Field      | Value                            |

+------------+----------------------------------+

| expires    | 2017-05-10T09:52:15.929378Z      |

| id         | 81fbfc13f50246af93a9ed8ab7bea3db |

| project\_id | 8db297b01cd74f36a5c6b44f1dcf6b66 |

| user\_id    | 6498de5bfbbe4a39852da7e21a388b1f |

+------------+----------------------------------+

§  Xem thông tin dịch vụ Nova trên Controller

**102445566@compute11:~$ nova service-list**

**102445566@compute11:~$ openstack compute service list**

http://10.10.10.10:9696

http://10.10.10.10:35357

§  Xem thông tin dịch vụ Glance  trên Controller

**102445566@compute11:~$ nova service-list**

+----+------------------+------------+----------+---------+-------+----------------------------+-----------------+

| Id | Binary           | Host       | Zone     | Status  | State | Updated\_at                 | Disabled Reason |

+----+------------------+------------+----------+---------+-------+----------------------------+-----------------+

| 1  | nova-cert        | controller | internal | enabled | up    | 2017-05-10T09:01:39.000000 | -               |

| 2  | nova-consoleauth | controller | internal | enabled | up    | 2017-05-10T09:01:45.000000 | -               |

| 3  | nova-scheduler   | controller | internal | enabled | up    | 2017-05-10T09:01:39.000000 | -               |

| 4  | nova-conductor   | controller | internal | enabled | up    | 2017-05-10T09:01:45.000000 | -               |

| 5  | nova-compute     | compute1   | nova     | enabled | down  | 2017-05-10T08:06:27.000000 | -               |

+----+------------------+------------+----------+---------+-------+----------------------------+-----------------+

102445566@compute11:~$

**102445566@compute11:~$ neutron agent-list**

+--------------------------------------+--------------------+------------+-------+----------------+---------------------------+

| id                                   | agent\_type         | host       | alive | admin\_state\_up | binary                    |

+--------------------------------------+--------------------+------------+-------+----------------+---------------------------+

| 2a645d1d-e653-4c7c-9277-e47a040be9ab | L3 agent           | controller | :-)   | True           | neutron-l3-agent          |

| 8f7db2d0-8da4-4c97-b9d8-3fce21fc596d | DHCP agent         | controller | :-)   | True           | neutron-dhcp-agent        |

| c89d4f97-c179-446a-ab52-bbfd09f128fa | Linux bridge agent | controller | :-)   | True           | neutron-linuxbridge-agent |

| dd1bd5b7-deb7-4d32-bdc5-953025b9eaf2 | Linux bridge agent | compute1   | :-)   | True           | neutron-linuxbridge-agent |

| ddf4a57e-e4d6-4672-aec4-97e61a8f4518 | Metadata agent     | controller | :-)   | True           | neutron-metadata-agent    |

+--------------------------------------+--------------------+------------+-------+----------------+---------------------------+

**102445566@compute11:~$ openstack host list**

+------------+-------------+----------+

| host\_name  | service     | zone     |

+------------+-------------+----------+

| controller | cert        | internal |

| controller | consoleauth | internal |

| controller | scheduler   | internal |

| controller | conductor   | internal |

| compute1   | compute     | nova     |

+------------+-------------+----------+

102445566@compute11:~$ nova hypervisor-list

+----+---------------------+-------+---------+

| ID | Hypervisor hostname | State | Status  |

+----+---------------------+-------+---------+

| 1  | compute1            | up    | enabled |

+----+---------------------+-------+---------+

102445566@compute11:~$

§  Xem danh sách các dịch vụ của nova

**102445566@compute11:~$ openstack compute service list**

+------------------+------------+----------+---------+-------+----------------------------+

| Binary           | Host       | Zone     | Status  | State | Updated At                 |

+------------------+------------+----------+---------+-------+----------------------------+

| nova-cert        | controller | internal | enabled | up    | 2017-09-25T07:51:23.000000 |

| nova-consoleauth | controller | internal | enabled | up    | 2017-09-25T07:51:23.000000 |

| nova-scheduler   | controller | internal | enabled | up    | 2017-09-25T07:51:23.000000 |

| nova-conductor   | controller | internal | enabled | up    | 2017-09-25T07:51:23.000000 |

| nova-compute     | compute1   | nova     | enabled | up    | 2017-09-25T07:51:21.000000 |

+------------------+------------+----------+---------+-------+----------------------------+

§  Xem file cấu hình dịch vụ neutron (dành cho admin)

**102445566@compute11:~$ cat /etc/neutron/neutron.conf**

**13.      Tạo và quản lý flavor (NOTE for admin)**

**102445566@compute11:~$ source admin-openrc**

**102445566@compute11:~$ openstack flavor create --id 0 --vcpus 1 --ram 64 --disk 1 m1.nano**

**102445566@compute11:~$ openstack flavor create --id 1 --vcpus 1 --ram 512 --disk 2  m2.tiny**

**102445566@compute11:~$ openstack flavor create --id 2 --vcpus 1 --ram 1024 --disk 3  m3.small**

**102445566@compute11:~$ openstack flavor create --id 4 --vcpus 1 --ram 2048 --disk 20  m4.medium**

§  Xem danh sách các flavor trong hệ thống

**102445566@compute11:~$ nova flavor-list**

+----+-----------+-----------+------+-----------+------+-------+-------------+-----------+

| ID | Name      | Memory\_MB | Disk | Ephemeral | Swap | VCPUs | RXTX\_Factor | Is\_Public |

+----+-----------+-----------+------+-----------+------+-------+-------------+-----------+

| 1  | m1.tiny   | 512       | 1    | 0         |      | 1     | 1.0         | True      |

| 2  | m1.small  | 2048      | 20   | 0         |      | 1     | 1.0         | True      |

| 3  | m1.small | 4096      | 40   | 0         |      | 2     | 1.0         | True      |

| 4  | m1.large  | 8192      | 80   | 0         |      | 4     | 1.0         | True      |

| 5  | m1.xlarge | 16384     | 160  | 0         |      | 8     | 1.0         | True      |

+----+-----------+-----------+------+-----------+------+-------+-------------+-----------+

Kiểm tra kết quả trên giao diện Web dashboard (Chụp hình và bổ sung ngay dưới)!

**14.      Zone**

§  To view the list of valid zones, use the openstack availability zone list command.

**102445566@compute11:~$ openstack availability zone list**

+-----------+-------------+

| Zone Name | Zone Status |

+-----------+-------------+

| zone1     | available   |

| zone2     | available   |

+-----------+-------------+

§  To view the list of valid compute hosts, use the openstack host list command.

**102445566@compute11:~$ openstack host list**

+----------------+-------------+----------+

| Host Name      | Service     | Zone     |

+----------------+-------------+----------+

| compute01      | compute     | nova     |

| compute02      | compute     | nova     |

+----------------+-------------+----------+

§  To view the list of valid compute nodes, use the openstack hypervisor list command.

**102445566@compute11:~$ openstack hypervisor list**

+----+---------------------+

| ID | Hypervisor Hostname |

+----+---------------------+

|  1 | server2             |

|  2 | server3             |

|  3 | server4             |

+----+---------------------+

==================================================

*@Bộ môn Mạng & Truyền thông*

**KHOA CÔNG NGHỆ THÔNG TIN, TRƯỜNG ĐẠI HỌC BÁCH KHOA – ĐẠI HỌC ĐÀ NẴNG**