云操作系统应用

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以下操作在控制节点完成。

运行云主机

1.创建云网络

生效 admin 用户环境变量

```
# . admin-openrc
```

```
[root@controller ~]# . admin-openrc
```

创建Provider network：

```
# neutron net-create --shared --provider:physical_network provider --provider:network_type flat provider
```

运行云主机

1.创建云网络

创建子网

```
# neutron subnet-create --name provider \
  --allocation-pool start=192.168.200.100,end=192.168.200.200 \
  --dns-nameserver 114.114.114.114 --gateway 192.168.200.2 \
  provider 192.168.200.0/24
```

```
[root@controller ~]# neutron subnet-create --name provider\
>   --allocation-pool start=192.168.200.100,end=192.168.200.200\
>   --dns-nameserver 8.8.4.4 --gateway 192.168.200.1 \
>   provider 192.168.200.0/24
Created a new subnet:
+--------------------+----------------------------------------------+
| Field              | Value                                        |
+--------------------+----------------------------------------------+
| allocation_pools   | {"start": "192.168.200.100", "end":          |
|                    | "192.168.200.200"}                           |
| cidr               | 192.168.200.0/24                             |
| created_at         | 2017-12-21T05:44:15                          |
| description        |                                              |
| dns_nameservers    | 8.8.4.4                                      |
| enable_dhcp        | True                                         |
| gateway_ip         | 192.168.200.1                                |
| host_routes        |                                              |
| id                 | 2d86e495-3f86-4455-b4ff-06af1890bbbf         |
| ip_version         | 4                                            |
| ipv6_address_mode  |                                              |
| ipv6_ra_mode       |                                              |
| name               | provider                                     |
| network_id         | e703fcf3-82f5-416c-81bf-1bc304808fab         |
| subnetpool_id      |                                              |
| tenant_id          | 385019403ba14f97b1e59b9363790680             |
| updated_at         | 2017-12-21T05:44:15                          |
+--------------------+----------------------------------------------+
```

运行云主机

1.创建云网络

生效 admin 用户环境变量

```
# . admin-openrc
```

创建Self-service Network

```
# neutron net-create selfservice
```

```
[root@controller ~]# neutron net-create selfservice
Created a new network:
+---------------------------+--------------------------------------+
| Field                     | Value                                |
+---------------------------+--------------------------------------+
| admin_state_up            | True                                 |
| availability_zone_hints   |                                      |
| availability_zones        |                                      |
| created_at                | 2017-12-21T05:47:29                  |
| description               |                                      |
| id                        | 106ce52f-ab67-45de-8649-c0bd61b7c76d |
| ipv4_address_scope        |                                      |
| ipv6_address_scope        |                                      |
| mtu                       | 1450                                 |
| name                      | selfservice                          |
| port_security_enabled     | True                                 |
| provider:network_type     | vxlan                                |
| provider:physical_network |                                      |
| provider:segmentation_id  | 76                                   |
| router:external           | False                                |
| shared                    | False                                |
| status                    | ACTIVE                               |
| subnets                   |                                      |
| tags                      |                                      |
| tenant_id                 | 385019403ba14f97b1e59b9363790680    |
| updated_at                | 2017-12-21T05:47:29                  |
+---------------------------+--------------------------------------+
```

运行云主机

1.创建云网络

创建子网

```
# neutron subnet-create --name selfservice \
  --dns-nameserver 114.114.114.114 --gateway 10.0.0.1 \
  selfservice 10.0.0.0/24
```

```
[root@controller ~]# neutron subnet-create --name selfservice \
> --dns-nameserver 8.8.4.4 --gateway 10.0.0.1 \
> selfservice 10.0.0.0/24
Created a new subnet:
+--------------------+------------------------------------------------+
| Field              | Value                                          |
+--------------------+------------------------------------------------+
| allocation_pools   | {"start": "10.0.0.2", "end": "10.0.0.254"}     |
| cidr               | 10.0.0.0/24                                     |
| created_at         | 2017-12-21T05:50:20                            |
| description        |                                                |
| dns_nameservers    | 8.8.4.4                                        |
| enable_dhcp        | True                                           |
| gateway_ip         | 10.0.0.1                                        |
| host_routes        |                                                |
| id                 | ba434ca3-5303-424d-89b8-53debf691504           |
| ip_version         | 4                                              |
| ipv6_address_mode  |                                                |
| ipv6_ra_mode       |                                                |
| name               | selfservice                                    |
| network_id         | 106ce52f-ab67-45de-8649-c0bd61b7c76d           |
| subnetpool_id      |                                                |
| tenant_id          | 385019403ba14f97b1e59b9363790680               |
| updated_at         | 2017-12-21T05:50:20                            |
+--------------------+------------------------------------------------+
```

运行云主机

1.创建云网络

设置 provider 网络为外部网络：

neutron net-update provider --router:external

```
[root@controller ~]# neutron net-update provider --router:external
Updated network: provider
```

创建路由器：

neutron router-create router

```
[root@controller ~]# neutron router-create router
Created a new router:
+------------------------+--------------------------------------+
| Field                  | Value                                |
+------------------------+--------------------------------------+
| admin_state_up         | True                                 |
| availability_zone_hints|                                      |
| availability_zones     |                                      |
| description            |                                      |
| external_gateway_info  |                                      |
| id                     | c91815e7-724f-4e3d-90db-10eaa442623b |
| name                   | router                               |
| routes                 |                                      |
| status                 | ACTIVE                               |
| tenant_id              | e82384ca0bf44d35b6844aecfd4a09b0     |
+------------------------+--------------------------------------+
```

运行云主机

1.创建云网络

添加 self-service 网络的子网的路由器口：

neutron router-interface-add router selfservice

```
[root@controller ~]#neutron router-interface-add router selfservice
Added interface 475afbed-7023-4638-baec-b060873e45c4 to router router.
```

设置路由器的 provider 网络的网关：

neutron router-gateway-set router provider

```
[root@controller ~]# neutron router-gateway-set router provider
Set gateway for router router
```

查看网络命名空间：

ip netns

```
[root@controller ~]# ip netns
qrouter-c91815e7-724f-4e3d-90db-10eaa442623b (id: 2)
qdhcp-106ce52f-ab67-45de-8649-c0bd61b7c76d (id: 1)
qdhcp-e703fcf3-82f5-416c-81bf-1bc304808fab (id: 0)
```

运行云主机

1.创建云网络

列出路由器端口地址，查看 provider 网络网关 IP 地址

neutron router-port-list router

```
[root@controller ~]# neutron router-port-list router
+----------------------+------+-------------------+----------------------------+
| id                   | name | mac_address       | fixed_ips                  |
+----------------------+------+-------------------+----------------------------+
| 475afbed-7023-4638   |      | fa:16:3e:72:8f:2c | {"subnet_id":              |
| -baec-b060873e45c4   |      |                   | "ba434ca3-5303-424d-       |
|                      |      |                   | 89b8-53debf691504",        |
|                      |      |                   | "ip_address":              |
|                      |      |                   | "10.0.0.1"}                |
| 79868cdf-3673-451a-  |      | fa:16:3e:26:21:a4 | {"subnet_id":              |
| 8d24-b5f303def697    |      |                   | "2d86e495-3f86-4455        |
|                      |      |                   | -b4ff-06af1890bbbf",       |
|                      |      |                   | "ip_address":              |
|                      |      |                   | "192.168.200.101"}         |
+----------------------+------+-------------------+----------------------------+
```

运行云主机

2. 设置密钥对

创建密钥对：

ssh-keygen -q -N ""

```
[root@controller ~]# ssh-keygen -q -N ""
Enter file in which to save the key (/root/.ssh/id_rsa):
```

openstack keypair create --public-key ~/.ssh/id_rsa.pub mykey

```
[root@controller ~]# openstack keypair create --public-key ~/.ssh/id_rsa.pu
b mykey
+-------------+-------------------------------------------------+
| Field       | Value                                           |
+-------------+-------------------------------------------------+
| fingerprint | 46:6d:d1:d8:ea:33:19:6b:c7:6a:65:a2:21:ee:53:54 |
| name        | mykey                                           |
| user_id     | 6f89446709a04120b672f288473fbced                |
+-------------+-------------------------------------------------+
```

运行云主机

2. 设置密钥对

查看密钥对：

```
# openstack keypair list
```

```
[root@controller ~]# openstack keypair list
+--------+-------------------------------------------------+
| Name   | Fingerprint                                     |
+--------+-------------------------------------------------+
| mykey  | 46:6d:d1:d8:ea:33:19:6b:c7:6a:65:a2:21:ee:53:54 |
+--------+-------------------------------------------------+
```

运行云主机

3.添加安全规则

为默认安全组 default 添加规则。
允许 ICMP（ping）

```
# openstack security group rule create --proto icmp default
```

```
[root@controller ~]# openstack security group rule create --proto icmp default
+-------------------------+--------------------------------------+
| Field                   | Value                                |
+-------------------------+--------------------------------------+
| id                      | 20c63486-8d54-4e0c-b675-1a7a05fe8ad0 |
| ip_protocol             | icmp                                 |
| ip_range                | 0.0.0.0/0                            |
| parent_group_id         | 2af07211-6f34-4f4e-a7f6-35f2604fd101 |
| port_range              |                                      |
| remote_security_group   |                                      |
+-------------------------+--------------------------------------+
```

允许 SSH 访问：

```
# openstack security group rule create --proto tcp --dst-port 22 default
```

```
[root@controller ~]# openstack security group rule create --proto tcp --dst-port 22 default
+-------------------------+--------------------------------------+
| Field                   | Value                                |
+-------------------------+--------------------------------------+
| id                      | 43e4894d-7bfe-4f52-843f-474fbffbd2ab |
| ip_protocol             | tcp                                  |
| ip_range                | 0.0.0.0/0                            |
| parent_group_id         | 2af07211-6f34-4f4e-a7f6-35f2604fd101 |
| port_range              | 22:22                                |
| remote_security_group   |                                      |
+-------------------------+--------------------------------------+
```

运行云主机

3.创建云主机

查看可用云主机类型

openstack flavor list

```
[root@controller ~]# openstack flavor list
+----+-----------+-------+------+-----------+-------+-----------+
| ID | Name      |   RAM | Disk | Ephemeral | VCPUs | Is Public |
+----+-----------+-------+------+-----------+-------+-----------+
|  1 | m1.tiny   |   512 |    1 |         0 |     1 | True      |
|  2 | m1.small  |  2048 |   20 |         0 |     1 | True      |
|  3 | m1.medium |  4096 |   40 |         0 |     2 | True      |
|  4 | m1.large  |  8192 |   80 |         0 |     4 | True      |
|  5 | m1.xlarge | 16384 |  160 |         0 |     8 | True      |
+----+-----------+-------+------+-----------+-------+-----------+
```

运行云主机

3.创建云主机

查看可用镜像

openstack image list

```
[root@controller ~]# openstack image list
+--------------------------------------+-------+--------+
| ID                                   | Name  | Status |
+--------------------------------------+-------+--------+
| 62e0f80c-7f08-4be4-999c-ad94e37f5de2 | image | active |
+--------------------------------------+-------+--------+
```

查看可用网络列表

openstack network list

```
[root@controller ~]# openstack network list
+--------------------------------+-------------+-------------------------+
| ID                             | Name        | Subnets                 |
+--------------------------------+-------------+-------------------------+
| e703fcf3-82f5-416c-81bf-       | provider    | 2d86e495-3f86-4455-b4ff-|
| 1bc304808fab                   |             | 06af1890bbbf            |
| 106ce52f-                      | selfservice | ba434ca3-5303-424d-     |
| ab67-45de-8649-c0bd61b7c76d    |             | 89b8-53debf691504       |
+--------------------------------+-------------+-------------------------+
```

运行云主机

3.创建云主机

查看可用安全组

```
[root@controller ~]# openstack security group list
+---------------------+----------+------------------+---------------------------+
| ID                  | Name     | Description      | Project                   |
+---------------------+----------+------------------+---------------------------+
| 2af07211-6f34       | default  | Default security | e82384ca0bf44d35b684      |
| -4f4e-              |          | group            | 4aecfd4a09b0              |
| a7f6-35f2604fd101   |          |                  |                           |
+---------------------+----------+------------------+---------------------------+
```

运行云主机

3.创建云主机

创建云主机

openstack server create --flavor m1.tiny --image cirros --nic net-id=9094fc0d-8507-4cd0-823b-3b314919a08d --security-group default --key-name mykey selfservice-instance

```
[root@controller ~]# openstack server create --flavor m1.tiny --image image
--nic net-id=106ce52f-ab67-45de-8649-c0bd61b7c76d --security-group default -
-key-name mykey selfservice-instance
+-------------------------------------+-------------------------------------+
| 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       | instance-00000004                   |
| OS-EXT-STS:power_state              | 0                                   |
| 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                           | TeKNzFUWq54s                        |
| config_drive                        |                                     |
| created                             | 2017-12-21T08:44:28Z                |
| flavor                              | m1.tiny (1)                         |
| hostId                              |                                     |
| id                                  | d78727bf-edb8-4b4b-a05c-            |
|                                     | 1e95b0d6ffe7                        |
| image                               | image (62e0f80c-7f08-4be4-999c-     |
|                                     | ad94e37f5de2)                       |
| key_name                            | mykey                               |
| name                                | selfservice-instance                |
| os-extended-                        | []                                  |
| volumes:volumes_attached            |                                     |
| progress                            | 0                                   |
| project_id                          | 385019403ba14f97b1e59b9363790680    |
| properties                          |                                     |
| security_groups                     | [{u'name': u'default'}]             |
| status                              | BUILD                               |
| updated                             | 2017-12-21T08:44:29Z                |
| user_id                             | fd5fbec430794c45a7c7d2043d007459    |
+-------------------------------------+-------------------------------------+
```

运行云主机

3.创建云主机

查看云主机

```
# openstack server list
```

```
+----------------------+---------------+--------+---------------------+
| ID                   | Name          | Status | Networks            |
+----------------------+---------------+--------+---------------------+
| d78727bf-edb8-4b4b-  | selfservice-  | ACTIVE | selfservice=10.0.0.4|
| a05c-1e95b0d6ffe7    | instance      |        |                     |
+----------------------+---------------+--------+---------------------+
```

运行云主机

4.远程访问云主机

创建 provider 网络浮动 IP 地址：

```
# openstack ip floating create provider
```

```
[root@controller ~]# openstack ip floating create provider
+-------------+--------------------------------------+
| Field       | Value                                |
+-------------+--------------------------------------+
| fixed_ip    | None                                 |
| id          | 459515d0-7a75-47da-879c-2d618b8f1b3d |
| instance_id | None                                 |
| ip          | 192.168.200.102                      |
| pool        | provider                             |
+-------------+--------------------------------------+
```

云主机与浮动 IP 地址关联：

```
# openstack ip floating add 192.168.200.102 selfservice-instance
```

```
[root@controller ~]# openstack ip floating add 192.168.200.102 selfservice-i
nstance
```

运行云主机

3.创建云主机

验证并远程登录：

```
# ping -c 4 192.168.200.102
```

```
[root@controller ~]# ping -c 4 192.168.200.102
PING 192.168.200.102 (192.168.200.102) 56(84) bytes of data.
64 bytes from 192.168.200.102: icmp_seq=1 ttl=63 time=0.570 ms
64 bytes from 192.168.200.102: icmp_seq=2 ttl=63 time=1.12 ms
64 bytes from 192.168.200.102: icmp_seq=3 ttl=63 time=0.756 ms
64 bytes from 192.168.200.102: icmp_seq=4 ttl=63 time=0.536 ms
```

```
# ssh cirros@192.168.200.102
```

```
[root@controller ~]# ssh cirros@192.168.200.102
cirros@192.168.200.102's password:
$
$ ifconfig
eth0      Link encap:Ethernet  HWaddr FA:16:3E:CF:6D:4A
          inet addr:10.0.0.4  Bcast:10.0.0.255  Mask:255.255.255.0
          inet6 addr: fe80::f816:3eff:fecf:6d4a/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1450  Metric:1
          RX packets:379 errors:0 dropped:0 overruns:0 frame:0
          TX packets:379 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:48942 (47.7 KiB)  TX bytes:41779 (40.7 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:16436  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)
```

运行云主机

3.创建云主机

验证并本地登录：

```
nova get-vnc-console  selfservice-instance novnc
```

谢谢观看