root@master:~# neutron agent-list

```
+--------------------------------------+--------------------+--------+-------+----------------+
| id                                   | agent_type         | host   | alive | admin_state_up |
+--------------------------------------+--------------------+--------+-------+----------------+
| 3fc2dc9f-0fcb-4e74-a092-73d5f987c53a | Open vSwitch agent | master | :-)   | True           |
| a6212316-d960-4a87-ad3a-c52fa7726119 | Open vSwitch agent | agent  | :-)   | True           |
| da1f7ead-4813-4b5e-a463-9b79cc9c11e8 | L3 agent           | master | :-)   | True           |
| e1046138-6df2-4e54-8fff-a5ccd04563d3 | DHCP agent         | master | :-)   | True           |
+--------------------------------------+--------------------+--------+-------+----------------+
```

root@master:~# neutron net-list

```
+--------------------------------------+----------+-------------------------------------------------------+
| id                                   | name     | subnets                                               |
+--------------------------------------+----------+-------------------------------------------------------+
| 9700d94b-2075-4080-9384-3c0c8c785bd8 | external | 882a64b8-0169-4084-807a-213e900d6be2 192.168.80.0/24  |
| cad52b64-d72c-4333-896a-db5705728e5d | internal | 462285bc-d7c7-4113-82b3-694b2e241517 192.168.0.0/24   |
+--------------------------------------+----------+-------------------------------------------------------+
```

root@master:~# neutron net-show 9700d94b-2075-4080-9384-3c0c8c785bd8

```
+-------------------------+--------------------------------------+
| Field                   | Value                                |
+-------------------------+--------------------------------------+
| admin_state_up          | True                                 |
| id                      | 9700d94b-2075-4080-9384-3c0c8c785bd8 |
| name                    | external                             |
| provider:network_type   | gre                                  |
| provider:physical_network |                                    |
| provider:segmentation_id | 1                                   |
| router:external         | True                                 |
| shared                  | True                                 |
| status                  | ACTIVE                               |
| subnets                 | 882a64b8-0169-4084-807a-213e900d6be2 |
| tenant_id               | af815a36314c487dbf9f4234db87076a     |
+-------------------------+--------------------------------------+
```

root@master:~# neutron subnet-list

```
+--------------------------------------+------+----------------+-------------------------------------------------+
| id                                   | name | cidr           | allocation_pools                                |
+--------------------------------------+------+----------------+-------------------------------------------------+
| 462285bc-d7c7-4113-82b3-694b2e241517 | int  | 192.168.0.0/24 | {"start": "192.168.0.2", "end": "192.168.0.254"} |
| 882a64b8-0169-4084-807a-213e900d6be2 | ext  | 192.168.80.0/24 | {"start": "192.168.80.140", "end": "192.168.80.150"} |
+--------------------------------------+------+----------------+-------------------------------------------------+
```

root@master:~# neutron subnet-show 882a64b8-0169-4084-807a-213e900d6be2

```
+-----------------+----------------------------------------------------+
| Field           | Value                                              |
+-----------------+----------------------------------------------------+
```

allocation_pools	{"start": "192.168.80.140", "end": "192.168.80.150"}
cidr	192.168.80.0/24
dns_nameservers	
enable_dhcp	False
gateway_ip	192.168.80.1
host_routes	
id	882a64b8-0169-4084-807a-213e900d6be2
ip_version	4
name	ext
network_id	9700d94b-2075-4080-9384-3c0c8c785bd8
tenant_id	af815a36314c487dbf9f4234db87076a
+----------------+--+

root@master:~# ip a

1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN

   link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00

   inet 127.0.0.1/8 scope host lo

   inet6 ::1/128 scope host

      valid_lft forever preferred_lft forever

2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP ql
en 1000

   link/ether 00:0c:29:94:76:9f brd ff:ff:ff:ff:ff:ff

   inet 192.168.81.139/24 brd 192.168.81.255 scope global eth0

   inet6 fe80::20c:29ff:fe94:769f/64 scope link

      valid_lft forever preferred_lft forever

3: eth1: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP ql
en 1000

   link/ether 00:0c:29:94:76:a9 brd ff:ff:ff:ff:ff:ff

   inet 192.168.80.135/24 brd 192.168.80.255 scope global eth1

   inet6 fe80::20c:29ff:fe94:76a9/64 scope link

      valid_lft forever preferred_lft forever

4: eth2: <BROADCAST,MULTICAST,PROMISC,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast sta
te UP qlen 1000

link/ether 00:0c:29:94:76:b3 brd ff:ff:ff:ff:ff:ff

inet6 fe80::20c:29ff:fe94:76b3/64 scope link

valid_lft forever preferred_lft forever

5: ovs-system: <BROADCAST,MULTICAST> mtu 1500 qdisc noop state DOWN

link/ether 32:02:ab:1c:d2:88 brd ff:ff:ff:ff:ff:ff

6: br-ex: <BROADCAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UNKNOWN

link/ether 00:0c:29:94:76:b3 brd ff:ff:ff:ff:ff:ff

inet6 fe80::ccaf:aff:fe23:7778/64 scope link

valid_lft forever preferred_lft forever

7: br-int: <BROADCAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UNKNOWN

link/ether ee:89:9e:29:e3:45 brd ff:ff:ff:ff:ff:ff

inet6 fe80::9849:c4ff:fe70:7701/64 scope link

valid_lft forever preferred_lft forever

8: br-tun: <BROADCAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UNKNOWN

link/ether da:5f:5c:a1:85:47 brd ff:ff:ff:ff:ff:ff

inet6 fe80::7c8a:b0ff:fecc:f897/64 scope link

valid_lft forever preferred_lft forever

root@master:~# neutron router-list

```
+----------------------------------+-----------+------------------------
--------------------------------------------------+
| id                      | name      | external_gateway_info
|
+----------------------------------+-----------+------------------------
--------------------------------------------------+
| 93e02a25-9b3b-4a87-b439-b8f29eadb05f | ext-to-int | {"network_id": "9700d94b-2
075-4080-9384-3c0c8c785bd8", "enable_snat": true} |
+----------------------------------+-----------+------------------------
--------------------------------------------------+
```

root@master:~# ip netns

qdhcp-cad52b64-d72c-4333-896a-db5705728e5d

qrouter-93e02a25-9b3b-4a87-b439-b8f29eadb05f

root@master:~# ip netns exec qrouter-93e02a25-9b3b-4a87-b439-b8f29eadb05f iptables -S -t na t

-P PREROUTING ACCEPT

-P INPUT ACCEPT

-P OUTPUT ACCEPT

-P POSTROUTING ACCEPT

-N neutron-l3-agent-OUTPUT

-N neutron-l3-agent-POSTROUTING

-N neutron-l3-agent-PREROUTING

-N neutron-l3-agent-float-snat

-N neutron-l3-agent-snat

-N neutron-postrouting-bottom

-A PREROUTING -j neutron-l3-agent-PREROUTING

-A OUTPUT -j neutron-l3-agent-OUTPUT

-A POSTROUTING -j neutron-l3-agent-POSTROUTING

-A POSTROUTING -j neutron-postrouting-bottom

-A neutron-l3-agent-OUTPUT -d 192.168.80.141/32 -j DNAT --to-destination 192.168.0.2

-A neutron-l3-agent-POSTROUTING ! -i qg-ee27cc62-10 ! -o qg-ee27cc62-10 -m conntrack ! --cts tate DNAT -j ACCEPT

-A neutron-l3-agent-PREROUTING -d 169.254.169.254/32 -p tcp -m tcp --dport 80 -j REDIRECT --to-ports 9697

-A neutron-l3-agent-PREROUTING -d 192.168.80.141/32 -j DNAT --to-destination 192.168.0.2

-A neutron-l3-agent-float-snat -s 192.168.0.2/32 -j SNAT --to-source 192.168.80.141

-A neutron-l3-agent-snat -j neutron-l3-agent-float-snat

-A neutron-l3-agent-snat -s 192.168.0.0/24 -j SNAT --to-source 192.168.80.140

-A neutron-postrouting-bottom -j neutron-l3-agent-snat

root@master:~# ip netns exec qrouter-93e02a25-9b3b-4a87-b439-b8f29eadb05f ip a

1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN

   link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00

   inet 127.0.0.1/8 scope host lo

   inet6 ::1/128 scope host

     valid_lft forever preferred_lft forever

9: qg-ee27cc62-10: <BROADCAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UNKNOWN

link/ether fa:16:3e:19:5d:9f brd ff:ff:ff:ff:ff:ff

inet 192.168.80.140/24 brd 192.168.80.255 scope global qg-ee27cc62-10

inet 192.168.80.141/32 brd 192.168.80.141 scope global qg-ee27cc62-10

inet6 fe80::f816:3eff:fe19:5d9f/64 scope link

valid_lft forever preferred_lft forever

10: qr-28e7774e-fb: <BROADCAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UNKNOWN

link/ether fa:16:3e:85:03:25 brd ff:ff:ff:ff:ff:ff

inet 192.168.0.1/24 brd 192.168.0.255 scope global qr-28e7774e-fb

inet6 fe80::f816:3eff:fe85:325/64 scope link

valid_lft forever preferred_lft forever

root@master:~# ip netns exec qrouter-93e02a25-9b3b-4a87-b439-b8f29eadb05f ifconfig

lo   Link encap:Local Loopback

inet addr:127.0.0.1 Mask:255.0.0.0

inet6 addr: ::1/128 Scope:Host

UP LOOPBACK RUNNING MTU:65536 Metric:1

RX packets: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)

qg-ee27cc62-10 Link encap:Ethernet HWaddr fa:16:3e:19:5d:9f

inet addr:192.168.80.140 Bcast:192.168.80.255 Mask:255.255.255.0

inet6 addr: fe80::f816:3eff:fe19:5d9f/64 Scope:Link

UP BROADCAST RUNNING MTU:1500 Metric:1

RX packets:892 errors:0 dropped:0 overruns:0 frame:0

TX packets:12 errors:0 dropped:0 overruns:0 carrier:0

collisions:0 txqueuelen:0

RX bytes:83483 (83.4 KB) TX bytes:924 (924.0 B)

qr-28e7774e-fb Link encap:Ethernet HWaddr fa:16:3e:85:03:25

inet addr:192.168.0.1 Bcast:192.168.0.255 Mask:255.255.255.0

inet6 addr: fe80::f816:3eff:fe85:325/64 Scope:Link

          UP BROADCAST RUNNING MTU:1500 Metric:1

          RX packets:6 errors:0 dropped:0 overruns:0 frame:0

          TX packets:13 errors:0 dropped:0 overruns:0 carrier:0

          collisions:0 txqueuelen:0

          RX bytes:468 (468.0 B) TX bytes:810 (810.0 B)

root@master:~# ovs-vsctl show

565d639b-0c32-4cef-8277-ad67775a1b86

    Bridge br-ex

        Port "qg-ee27cc62-10"

            Interface "qg-ee27cc62-10"

                type: internal

        Port "eth2"

            Interface "eth2"

        Port br-ex

            Interface br-ex

                type: internal

    Bridge br-int

        Port br-int

            Interface br-int

                type: internal

        Port "tap3ef73448-cb"

            tag: 1

            Interface "tap3ef73448-cb"

                type: internal

        Port "qr-28e7774e-fb"

            tag: 1

            Interface "qr-28e7774e-fb"

                type: internal

        Port patch-tun

Interface patch-tun

type: patch

options: {peer=patch-int}

Bridge br-tun

Port patch-int

Interface patch-int

type: patch

options: {peer=patch-tun}

Port "gre-192.168.80.139"

Interface "gre-192.168.80.139"

type: gre

options: {in_key=flow, local_ip="192.168.80.135", out_key=flow, remote_ip="1
92.168.80.139"}

Port br-tun

Interface br-tun

type: internal

ovs_version: "1.10.2"

root@master:~# tcpdump -i br-ex –vv

07:33:51.282880 IP (tos 0x0, ttl 128, id 17494, offset 0, flags [none], proto UDP (17), length 78)

192.168.80.1.netbios-ns > 192.168.80.255.netbios-ns: [udp sum ok]

>>> NBT UDP PACKET(137): QUERY; REQUEST; BROADCAST

TrnID=0xE7EB

OpCode=0

NmFlags=0x11

Rcode=0

QueryCount=1

AnswerCount=0

AuthorityCount=0

AddressRecCount=0

QuestionRecords:

Name=GHASSEN-PC   NameType=0x1C (Unknown)

QuestionType=0x20

QuestionClass=0x1

07:33:53.943329 IP (tos 0x0, ttl 128, id 17496, offset 0, flags [none], proto UDP (17), length 143)

   192.168.80.1.17500 > 192.168.80.255.17500: [udp sum ok] UDP, length 115

07:34:00.382244 ARP, Ethernet (len 6), IPv4 (len 4), Request who-has 192.168.80.141 tell 192.168.80.1, length 46

^C

5 packets captured

5 packets received by filter

0 packets dropped by kernel

root@master:~# tcpdump -i br-int -vv

tcpdump: WARNING: br-int: no IPv4 address assigned

tcpdump: listening on br-int, link-type EN10MB (Ethernet), capture size 65535 bytes

07:35:34.750344 ARP, Ethernet (len 6), IPv4 (len 4), Request who-has 192.168.0.2 tell 192.168.0.1, length 28

07:35:35.750318 ARP, Ethernet (len 6), IPv4 (len 4), Request who-has 192.168.0.2 tell 192.168.0.1, length 28

07:35:36.750070 ARP, Ethernet (len 6), IPv4 (len 4), Request who-has 192.168.0.2 tell 192.168.0.1, length 28

^C

3 packets captured

3 packets received by filter

0 packets dropped by kernel