参考文档：

<https://github.com/osrg/ryu/wiki/configuration_openstack_havana_with_ryu> 官方安装文档

<https://sourceforge.net/p/ryu/mailman/message/32445611/> 某些bug解决

# 1 节点配置及安装

## 1.1 Openstack侧ryu plugin的安装

* 1. Openstack采用juno版本，隧道配置成GRE（按照官方文档配置）

Controller：controller node的服务和network node的服务

Compute：compute node的服务

* 1. 安装ryu plugin插件：

controller：apt-get install neutron-plugin-ryu-agent

compute: apt-get install neutron-plugin-ryu-agent

neutron-plugin-ryu-agent自动安装 neutron-plugin-ryu依赖

实验中是把controller节点包含controller node和network node的所有服务，若分开：

Controller： apt-get install neutron-plugin-ryu

Network+compute: apt-get install neutron-plugin-ryu-agent

注：openstack默认plugin是ml2，三个节点都安装neutron-plugin-ml2，默认agent是ovs，网络节点和计算节点安装neutron-plugin-openvswitch-agent，依赖是neutron-plugin-ml2。Ryu plugin方案即用neutron-plugin-ryu替换了neutron-plugin-ml2，用neutron-plugin-ryu-agent替换了neutron-plugin-openvswitch-agent。

故可以卸载各节点的neutron-plugin-ml2和 neutron-plugin-openvswitch-agent:

apt-get install purge neutron-plugin-ml2 neutron-plugin-openvswitch-agent

## 1.2 各节点ip

# management internet

192.168.100.2 openstack controller

192.168.100.5 ryu controller

192.168.100.11 compute1

192.168.100.21 compute2

# tunnel internet

192.168.200.2 openstack controller

192.168.200.11 compute1

192.168.200.21 compute2

## 1.3 RYU的安装

RYU能够支持plugin的是3.25版本及以下，所以RYU采用的是3.25版本，这个版本的需要到github上下载，地址是：<https://github.com/osrg/ryu/tree/v3.25>，这个需要直接在这个网址上下载，不能在终端git clone下来，因为git clone下来的源码目录缺少了plugin相关的app。同时RYU与plugin相关的app依赖neutronclient，所以可以把RYU安装在openstack的某一节点上；也可以安装在一个与openstack无关的虚拟机上，此时需要先安装neutronclient（apt-get install python-neutronclient），这里我们把RYU部署在了openstack的controller节点上。

安装RYU：

#apt-get update

#apt-get upgrade

#unzip ryu-3.25.zip

#cd ryu-3.25

#apt-get install python-pip

#python ./setup.py install

这样就安装好了，然后运行ryu-manager，出现报错，显示报错six的版本过低，采用pip install --upgrade six 解决，再运行ryu-manager，出现报错，显示netaddr的版本过低，采用 pip install --upgrade netaddr ，再运行ryu-manager，就不会有问题了。

在一个独立的节点上安装ryu的时候，很多东西没安装，会导致ryu-manager报错，这是后就根据错误提示，用pip install –upgrade 相应的包就可以了，如果中间出现“ [**error: command 'x86\_64-linux-gnu-gcc' failed with exit status 1**](http://blog.csdn.net/wang1144/article/details/42277179)”这个报错，用<http://blog.csdn.net/wang1144/article/details/42277179> 这个链接提供的方法解决。

# 2 服务停止

删除之前测试建立的所有网络、路由、接口

操作以下配置文件前停止服务：

Controller：

service nova-api stop

service nova-cert stop

service nova-consoleauth stop

service nova-scheduler stop

service nova-conductor stop

service nova-novncproxy stop

service neutron-server stop

service neutron-plugin-ryu-agent stop

service neutron-l3-agent stop

service neutron-dhcp-agent stop

compute：

service nova-compute stop

service neutron-plugin-ryu-agent stop

每个节点清理一下之前的ovs配置

service openvswitch-switch stop

rm -rf /var/log/openvswitch/\*

rm -rf /etc/openvswitch/conf.db

service openvswitch-switch start

# 3 配置相应的文件

## 2.1 vi /etc/ryu/ryu.conf

配置ryu controller所在节点的ryu.conf，这个文件存在在 /etc/ryu/ryu.conf ，这个文件需要自己手动创建。

ryu.conf：

[DEFAULT]

# app\_lists = $RYU\_APPS

# mac address based isolation

# app\_lists = ryu.app.simple\_isolation,ryu.app.rest

# vlan

#app\_lists=ryu.app.quantum\_adapter,ryu.app.rest,ryu.app.rest\_conf\_switch,ryu.app.rest\_quantum,ryu.app.rest\_tunnel,ryu.app.simple\_vlan

# GRE tunneling

app\_lists=ryu.app.gre\_tunnel,ryu.app.quantum\_adapter,ryu.app.rest,ryu.app.rest\_conf\_switch,ryu.app.rest\_quantum,ryu.app.rest\_tunnel,ryu.app.tunnel\_port\_updater

#gre\_tunnel 得放到 quantum\_adapter前面,不需要ryu.app.ofp\_rest,顺序不能错

# wsapi\_host = $RYU\_API\_HOST

# wsapi\_port = $RYU\_API\_PORT

# ofp\_listen\_host = $RYU\_OFP\_HOST

# ofp\_tcp\_listen\_port = $RYU\_OFP\_PORT

wsapi\_host = 192.168.100.5

wsapi\_port = 8080

ofp\_listen\_host = 192.168.100.5

ofp\_tcp\_listen\_port = 6633

# the followings must be set according to neutron settings

# neutron\_url = http://$Q\_HOST:$Q\_PORT

# neutron\_admin\_username = $Q\_ADMIN\_USERNAME

# neutron\_admin\_password = $SERVICE\_PASSWORD

# neutron\_admin\_tenant\_name = $SERVICE\_TENANT\_NAME

# neutron\_admin\_auth\_url = $KEYSTONE\_SERVICE\_PROTOCOL://$KEYSTONE\_SERVICE\_HOST:$KEYSTONE\_AUTH\_PORT/v2.0

# neutron\_auth\_strategy = $Q\_AUTH\_STRATEGY

# neutron\_controller\_addr = tcp:$RYU\_OFP\_HOST:$RYU\_OFP\_PORT

neutron\_url = http://192.168.100.2:9696

neutron\_admin\_username = neutron

neutron\_admin\_password = nt123

neutron\_admin\_tenant\_name = service

neutron\_admin\_auth\_url = http://192.168.100.2:5000/v2.0

neutron\_auth\_strategy = keystone

neutron\_controller\_addr = tcp:192.168.100.5:6633

## 2.2 vi /etc/neutron/neutron.conf

Controller节点和compute节点都要改。

[DEFAULT]

core\_plugin = neutron.plugins.ryu.ryu\_neutron\_plugin.RyuNeutronPluginV2

注释掉service\_plugin = router那行

否则会报ValueError: Multiple plugins for service L3\_ROUTER\_NAT were configured错误，因为L3RouterPlugin service plugin should be configured for plugins that delegate away L3 routing functionality. RYUNeutronPluginV2 implements l3 functionality itself.

## 2.3 vi /etc/neutron/plugins/ryu/ryu.ini

Controller节点和compute节点都安，compute节点不用配置database

[database]

connection = mysql://neutron:ntd123@controller/neutron

[ovs]

integration\_bridge = br-int

# IP address of Ryu REST API service ryu的ip

openflow\_rest\_api = 192.168.100.5:8080

# If GRE tunneling is used, specify the network interface to used

# for tunneling 本机数据网络的网卡

tunnel\_interface = eth2

# network interface through which Ryu controller accesses to OVSDB

# 本机控制网络的网卡

ovsdb\_interface = eth1

# Instead of interface name, the pair of ip address and port can be

# specified

# ovsdb\_port = <IP address ovsdb server is listening to>

# ovsdb\_ip = <port number ovsdb server is listening to>

[securitygroup]

firewall\_driver = neutron.agent.linux.iptables\_firewall.OVSHybridIptablesFirewallDriver

## 2.4 vi /etc/neutron/dhcp\_agent.ini, l3\_agent.ini

控制节点（即启动dhcp-agent和l3-agent的网络节点）

[DEFAULT]

interface\_driver = neutron.agent.linux.interface.OVSInterfaceDriver

ovs\_use\_veth = True

use\_namespace = True

## 2.5 vi /etc/nova/nova.conf

所有节点：

[DEFAULT]

libvirt\_vif\_driver = nova.virt.libvirt.vif.LibvirtHybridOVSBridgeDriver

## 2.6 vi /etc/default/neutron-server

NEUTRON\_PLUGIN\_CONFIG="/etc/neutron/plugins/ryu/ryu.ini"

否则vi /var/log/neutron/ryu-agent.log报错

vi/var/log/neutron/ryu-agent

2016-11-07 16:59:32.541 115813 TRACE neutron File "/usr/bin/neutron-ryu-agent", line 10, in <module>

2016-11-07 16:59:32.541 115813 TRACE neutron sys.exit(main())

2016-11-07 16:59:32.541 115813 TRACE neutron File "/usr/lib/python2.7/dist-packages/neutron/plugins/ryu/agent/ryu\_neutron\_agent.py", line 300, in main

2016-11-07 16:59:32.541 115813 TRACE neutron root\_helper)

2016-11-07 16:59:32.541 115813 TRACE neutron File "/usr/lib/python2.7/dist-packages/neutron/plugins/ryu/agent/ryu\_neutron\_agent.py", line 195, in \_\_init\_\_

2016-11-07 16:59:32.541 115813 TRACE neutron ovsdb\_port, ovsdb\_ip)

2016-11-07 16:59:32.541 115813 TRACE neutron File "/usr/lib/python2.7/dist-packages/neutron/plugins/ryu/agent/ryu\_neutron\_agent.py", line 213, in \_setup\_integration\_br

2016-11-07 16:59:32.541 115813 TRACE neutron rest\_api\_addr = self.plugin\_rpc.get\_ofp\_rest\_api\_addr(self.context)

2016-11-07 16:59:32.541 115813 TRACE neutron File "/usr/lib/python2.7/dist-packages/neutron/plugins/ryu/agent/ryu\_neutron\_agent.py", line 170, in get\_ofp\_rest\_api\_addr

2016-11-07 16:59:32.541 115813 TRACE neutron self.make\_msg('get\_ofp\_rest\_api'))

2016-11-07 16:59:32.541 115813 TRACE neutron File "/usr/lib/python2.7/dist-packages/neutron/common/log.py", line 34, in wrapper

2016-11-07 16:59:32.541 115813 TRACE neutron return method(\*args, \*\*kwargs)

2016-11-07 16:59:32.541 115813 TRACE neutron File "/usr/lib/python2.7/dist-packages/neutron/common/rpc.py", line 161, in call

2016-11-07 16:59:32.541 115813 TRACE neutron context, msg, rpc\_method='call', \*\*kwargs)

2016-11-07 16:59:32.541 115813 TRACE neutron File "/usr/lib/python2.7/dist-packages/neutron/common/rpc.py", line 187, in \_\_call\_rpc\_method

2016-11-07 16:59:32.541 115813 TRACE neutron return func(context, msg['method'], \*\*msg['args'])

2016-11-07 16:59:32.541 115813 TRACE neutron File "/usr/lib/python2.7/dist-packages/oslo/messaging/rpc/client.py", line 389, in call

2016-11-07 16:59:32.541 115813 TRACE neutron return self.prepare().call(ctxt, method, \*\*kwargs)

2016-11-07 16:59:32.541 115813 TRACE neutron File "/usr/lib/python2.7/dist-packages/oslo/messaging/rpc/client.py", line 152, in call

2016-11-07 16:59:32.541 115813 TRACE neutron retry=self.retry)

2016-11-07 16:59:32.541 115813 TRACE neutron File "/usr/lib/python2.7/dist-packages/oslo/messaging/transport.py", line 90, in \_send

2016-11-07 16:59:32.541 115813 TRACE neutron timeout=timeout, retry=retry)

2016-11-07 16:59:32.541 115813 TRACE neutron retry=retry)

2016-11-07 16:59:32.541 115813 TRACE neutron File "/usr/lib/python2.7/dist-packages/oslo/messaging/\_drivers/amqpdriver.py", line 405, in \_send

2016-11-07 16:59:32.541 115813 TRACE neutron result = self.\_waiter.wait(msg\_id, timeout)

2016-11-07 16:59:32.541 115813 TRACE neutron File "/usr/lib/python2.7/dist-packages/oslo/messaging/\_drivers/amqpdriver.py", line 293, in wait

2016-11-07 16:59:32.541 115813 TRACE neutron reply, ending = self.\_poll\_connection(msg\_id, timer)

2016-11-07 16:59:32.541 115813 TRACE neutron File "/usr/lib/python2.7/dist-packages/oslo/messaging/\_drivers/amqpdriver.py", line 240, in \_poll\_connection

2016-11-07 16:59:32.541 115813 TRACE neutron self.\_raise\_timeout\_exception(msg\_id)

2016-11-07 16:59:32.541 115813 TRACE neutron File "/usr/lib/python2.7/dist-packages/oslo/messaging/\_drivers/amqpdriver.py", line 209, in \_raise\_timeout\_exception

2016-11-07 16:59:32.541 115813 TRACE neutron \_('Timed out waiting for a reply to message ID %s.') % msg\_id)

2016-11-07 16:59:32.541 115813 TRACE neutron MessagingTimeout: Timed out waiting for a reply to message ID dfa4bb4a91484f99ad6289f3cb4902df.

# 4 服务启动顺序

## 4.1 先启动ryu-mananger

RYU控制节点

ryu-manager --config-file=/etc/ryu/ryu.conf

## 4.2 再启动nova服务

Controller：

service nova-api start

service nova-cert start

service nova-consoleauth start

service nova-scheduler start

service nova-conductor start

service nova-novncproxy start

compute：

service nova-compute start

## 4.3 然后启动neutron-server

Controller：

service neutron-server start

## 4.4 最后启动neutron的各个agent

Controller：

service neutron-plugin-ryu-agent start

service neutron-l3-agent start

service neutron-dhcp-agent start

compute：

service neutron-plugin-ryu-agent start

# 5 验证

root@controller:~# neutron net-list

（空）

root@controller:~# neutron ext-list

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

| alias | name |

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

| security-group | security-group |

| ext-gw-mode | Neutron L3 Configurable external gateway mode |

| binding | Port Binding |

| quotas | Quota management support |

| external-net | Neutron external network |

| router | Neutron L3 Router |

| extraroute | Neutron Extra Route |

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

root@controller:~# neutron agent-list

Not Found (HTTP 404) (Request-ID: req-438b55ed-7c1d-4f60-8ace-e95b18217c6d)

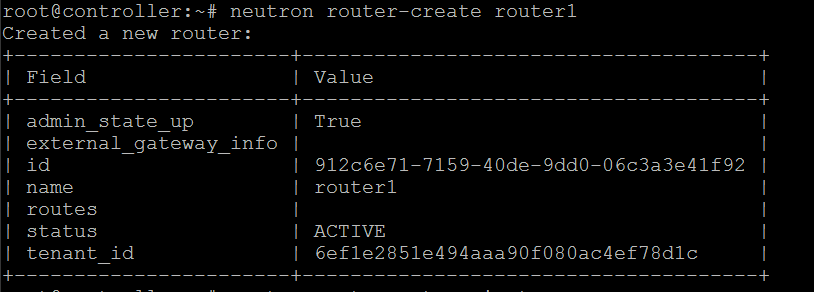
（这是正常的：'agent-list' fails because it requires neutron plugin to support 'agent extension' and ryu plugin isn't supporting the extension.）

root@controller:~# neutron port-list

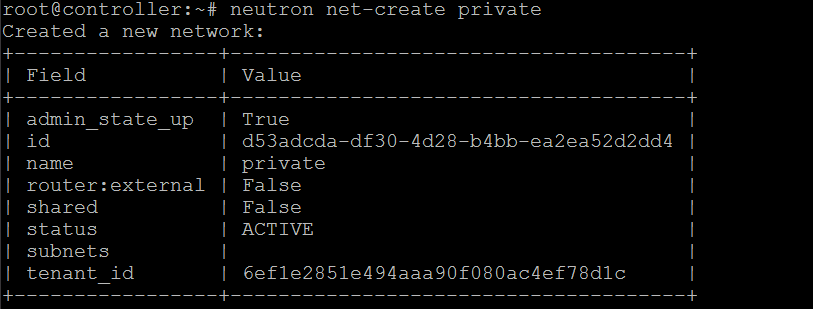
（空）

root@controller:~#

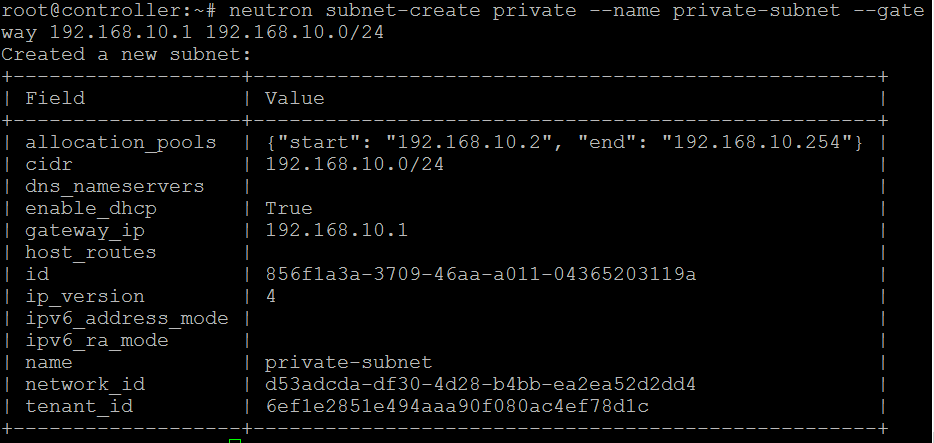
# neutron router-create router1



# neutron net-create private



# neutron subnet-create private --name private\_subnet --gateway 192.168.1.1 192.168.1.0/24



# neutron router-interface-add router1 private\_subnet

# nova boot --flavor <flavor> --image <image id> --nic net-id=<network id> vinoth-vm1