# Controller节点安装Neutron服务

## 1.创建neutron数据库并授权 （Controller节点）

[root@controller ~]# mysql -uroot

MariaDB [(none)]> CREATE DATABASE neutron;

Query OK, 1 row affected (0.000 sec)

neutron数据库的登录密码是NEUTRON\_DBPASS

MariaDB [(none)]> GRANT ALL PRIVILEGES ON neutron.\* TO 'neutron'@'localhost' IDENTIFIED BY 'NEUTRON\_DBPASS';

Query OK, 0 rows affected (0.001 sec)

MariaDB [(none)]> GRANT ALL PRIVILEGES ON neutron.\* TO 'neutron'@'%' IDENTIFIED BY 'NEUTRON\_DBPASS';

Query OK, 0 rows affected (0.000 sec)

## 2. 创建neutron用户

创建openstack用户neutron，它的domain是default，密码是NEUTRON\_PASS，用于在keystone做认证

[root@controller ~]# openstack user create --domain default --password NEUTRON\_PASS neutron

## 3. 向neutron用户添加admin角色

角色是admin，所在的项目是service

[root@controller ~]# openstack role add --project service --user neutron admin

## 4. 创建neutron服务实体

neutron服务实体，类型为network

[root@controller ~]# openstack service create --name neutron --description "OpenStack Networking" network

## 5. 创建neutron服务端点

[root@controller ~]# openstack endpoint create --region RegionOne network public <http://192.168>.112.146:9696

[root@controller ~]# openstack endpoint create --region RegionOne network internal http://192.168.112.146:9696

[root@controller ~]# openstack endpoint create --region RegionOne network admin http://192.168.112.146:9696

## 6. 安装软件包{配置二层网络}

[root@controller ~]# yum install openstack-neutron openstack-neutron-ml2 openstack-neutron-linuxbridge ebtables conntrack-tools -y

说明：

openstack-neutron：neutron-server的包

openstack-neutron-ml2：ML2 plugin的包

openstack-neutron-linuxbridge：linux bridge network provider相关的包

ebtables：防火墙相关的包，配置iptables规则

## 7. 修改 neutron 配置文件

### （1）neutron server的配置文件neutron.conf

精简配置neutron.conf配置文件

[root@controller ~]# cp -a /etc/neutron/neutron.conf{,.bak}

[root@controller ~]# grep -Ev '^$|#' /etc/neutron/neutron.conf.bak > /etc/neutron/neutron.conf

设置mysql连接地址

openstack-config --set /etc/neutron/neutron.conf database connection mysql+pymysql://neutron:NEUTRON\_DBPASS@192.168.112.146/neutron

设置二层网络core-plugin为ML2

openstack-config --set /etc/neutron/neutron.conf DEFAULT core\_plugin ml2

设置三层网络插件service-plugin为router

openstack-config --set /etc/neutron/neutron.conf DEFAULT service\_plugins router

配置rabbitmq连接

openstack-config --set /etc/neutron/neutron.conf DEFAULT transport\_url rabbit://openstack:RABBIT\_PASS@192.168.112.146

设置认证方式为keystone

openstack-config --set /etc/neutron/neutron.conf DEFAULT auth\_strategy keystone

当网络接口发生变化时，通知给计算节点

openstack-config --set /etc/neutron/neutron.conf DEFAULT notify\_nova\_on\_port\_status\_changes true

当端口数据发生变化，通知计算节点

openstack-config --set /etc/neutron/neutron.conf DEFAULT notify\_nova\_on\_port\_data\_changes true

配置keystone的认证地址url

openstack-config --set /etc/neutron/neutron.conf keystone\_authtoken www\_authenticate\_uri <http://192.168.112.146:5000>

配置keystone的认证地址uri

openstack-config --set /etc/neutron/neutron.conf keystone\_authtoken auth\_url <http://192.168.112.146:5000>

Memcached服务器地址

openstack-config --set /etc/neutron/neutron.conf keystone\_authtoken memcached\_servers 192.168.112.146:11211

认证方式为password

openstack-config --set /etc/neutron/neutron.conf keystone\_authtoken auth\_type password

项目所属Domain为default

openstack-config --set /etc/neutron/neutron.conf keystone\_authtoken project\_domain\_name default

用户所属Domain为default

openstack-config --set /etc/neutron/neutron.conf keystone\_authtoken user\_domain\_name default

认证所属项目service

openstack-config --set /etc/neutron/neutron.conf keystone\_authtoken project\_name service

认证的用户名为neutron

openstack-config --set /etc/neutron/neutron.conf keystone\_authtoken username neutron

认证的密码：NEUTRON\_PASS

openstack-config --set /etc/neutron/neutron.conf keystone\_authtoken password NEUTRON\_PASS

配置锁的路径

openstack-config --set /etc/neutron/neutron.conf oslo\_concurrency lock\_path /var/lib/neutron/tmp

neutron需要给nova返回数据：

设置nova的认证地址：

openstack-config --set /etc/neutron/neutron.conf nova auth\_url <http://192.168.112.146:5000>

设置nova 的认证方式

openstack-config --set /etc/neutron/neutron.conf nova auth\_type password

设置nova的项目所属Domain为default

openstack-config --set /etc/neutron/neutron.conf nova project\_domain\_name default

设置nova的用户所属Domain为default

openstack-config --set /etc/neutron/neutron.conf nova user\_domain\_name default

设置nova的Region名称

openstack-config --set /etc/neutron/neutron.conf nova region\_name RegionOne

设置nova的项目名为service

openstack-config --set /etc/neutron/neutron.conf nova project\_name service

设置nova的用户名为nova

openstack-config --set /etc/neutron/neutron.conf nova username nova

设置nova的密码为NOVA\_PASS

openstack-config --set /etc/neutron/neutron.conf nova password NOVA\_PASS

### （2）ML2 plugin的配置文件ml2\_conf.ini

精简ml2\_conf.ini配置文件：

[root@controller ~]# cp -a /etc/neutron/plugins/ml2/ml2\_conf.ini{,.bak}

[root@controller ~]# grep -Ev '^$|#' /etc/neutron/plugins/ml2/ml2\_conf.ini.bak > /etc/neutron/plugins/ml2/ml2\_conf.ini

配置驱动类型；单一扁平网络(桥接)和vlan；让二层网络支持桥接，支持基于vlan做子网划分

openstack-config --set /etc/neutron/plugins/ml2/ml2\_conf.ini ml2 type\_drivers flat,vlan,vxlan

租户网络类型

openstack-config --set /etc/neutron/plugins/ml2/ml2\_conf.ini ml2 tenant\_network\_types vxlan

启用Linuxbridge和l2机制，(l2population机制是为了简化网络通信拓扑，减少网络广播)：

openstack-config --set /etc/neutron/plugins/ml2/ml2\_conf.ini ml2 mechanism\_drivers linuxbridge,l2population

启用端口安全扩展驱动程序，基于iptables实现访问控制；但配置了扩展安全组会导致一些端口限制，造成一些服务无法启动

openstack-config --set /etc/neutron/plugins/ml2/ml2\_conf.ini ml2 extension\_drivers port\_security

配置公共虚拟网络为flat网络

openstack-config --set /etc/neutron/plugins/ml2/ml2\_conf.ini ml2\_type\_flat flat\_networks provider

为私有网络配置VXLAN网络识别的网络范围

openstack-config --set /etc/neutron/plugins/ml2/ml2\_conf.ini ml2\_type\_vxlan vni\_ranges 1:1000

启用 ipset 增加安全组的方便性

openstack-config --set /etc/neutron/plugins/ml2/ml2\_conf.ini securitygroup enable\_ipset true

### （3）linux bridge network provider的配置文件linuxbridge\_agent.ini

精简配置文件linuxbridge\_agent.ini：

[root@controller ~]# cp -a /etc/neutron/plugins/ml2/linuxbridge\_agent.ini{,.bak}

[root@controller ~]# grep -Ev '^$|#' /etc/neutron/plugins/ml2/linuxbridge\_agent.ini.bak > /etc/neutron/plugins/ml2/linuxbridge\_agent.ini

配置物理网卡的映射，provider表示该节点可用的物理网络名字(physical network, 名字可以随便定义)，physical\_interface\_mappings用来把名字和该网络使用的物理网卡对应起来。

后面的就是该名称对应的物理网卡。

openstack-config --set /etc/neutron/plugins/ml2/linuxbridge\_agent.ini linux\_bridge physical\_interface\_mappings provider:ens33

允许用户创建自定义网络(3层网络)

openstack-config --set /etc/neutron/plugins/ml2/linuxbridge\_agent.ini vxlan enable\_vxlan true

启用安全组并配置 Linux 桥接 iptables 防火墙驱动

openstack-config --set /etc/neutron/plugins/ml2/linuxbridge\_agent.ini securitygroup enable\_security\_group true

openstack-config --set /etc/neutron/plugins/ml2/linuxbridge\_agent.ini securitygroup firewall\_driver neutron.agent.linux.iptables\_firewall.IptablesFirewallDriver

控制节点IP地址

openstack-config --set /etc/neutron/plugins/ml2/linuxbridge\_agent.ini vxlan local\_ip 192.168.112.146

openstack-config --set /etc/neutron/plugins/ml2/linuxbridge\_agent.ini vxlan l2\_population true

## 8.修改内核参数

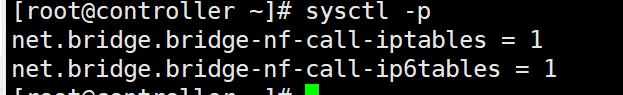
echo 'net.bridge.bridge-nf-call-iptables=1' >> /etc/sysctl.conf

echo 'net.bridge.bridge-nf-call-ip6tables=1' >> /etc/sysctl.conf

#表示向内核加入参数

modprobe br\_netfilter

sysctl -p



## 9.配置Linuxbridge接口驱动和外部网络网桥

精简l3\_agent.ini配置文件

cp -a /etc/neutron/l3\_agent.ini{,.bak}

grep -Ev '^$|#' /etc/neutron/l3\_agent.ini.bak > /etc/neutron/l3\_agent.ini

接口驱动为linuxbridge

openstack-config --set /etc/neutron/l3\_agent.ini DEFAULT interface\_driver linuxbridge

## 10.修改dhcp\_agent 配置文件

精简dhcp\_agent.ini配置文件：

cp -a /etc/neutron/dhcp\_agent.ini{,.bak}

grep -Ev '^$|#' /etc/neutron/dhcp\_agent.ini.bak > /etc/neutron/dhcp\_agent.ini

指定默认接口驱动为linux网桥

openstack-config --set /etc/neutron/dhcp\_agent.ini DEFAULT interface\_driver linuxbridge

指定DHCP驱动

openstack-config --set /etc/neutron/dhcp\_agent.ini DEFAULT dhcp\_driver neutron.agent.linux.dhcp.Dnsmasq

开启iso元数据

openstack-config --set /etc/neutron/dhcp\_agent.ini DEFAULT enable\_isolated\_metadata true

10. 配置元数据代理，以便和nova通讯

精简配置文件：

[root@controller ~]# cp -a /etc/neutron/metadata\_agent.ini{,.bak}

[root@controller ~]# grep -Ev '^$|#' /etc/neutron/metadata\_agent.ini.bak > /etc/neutron/metadata\_agent.ini

openstack-config --set /etc/neutron/metadata\_agent.ini DEFAULT nova\_metadata\_host controller

openstack-config --set /etc/neutron/metadata\_agent.ini DEFAULT metadata\_proxy\_shared\_secret METADATA\_SECRET

## 11.修改nova配置文件，用于neutron交互

修改nova.conf配置文件，添加neutron的信息，便于与neutron的交互：

openstack-config --set /etc/nova/nova.conf neutron url http://192.168.112.146:9696

openstack-config --set /etc/nova/nova.conf neutron auth\_url http://192.168.112.146:5000

openstack-config --set /etc/nova/nova.conf neutron auth\_type password

openstack-config --set /etc/nova/nova.conf neutron project\_domain\_name default

openstack-config --set /etc/nova/nova.conf neutron user\_domain\_name default

openstack-config --set /etc/nova/nova.conf neutron region\_name RegionOne

openstack-config --set /etc/nova/nova.conf neutron project\_name service

openstack-config --set /etc/nova/nova.conf neutron username neutron

openstack-config --set /etc/nova/nova.conf neutron password NEUTRON\_PASS

openstack-config --set /etc/nova/nova.conf neutron service\_metadata\_proxy true

openstack-config --set /etc/nova/nova.conf neutron metadata\_proxy\_shared\_secret METADATA\_SECRET

## 12.创建ML2插件文件符号连接

网络服务初始化脚本需要/etc/neutron/plugin.ini指向ML2插件配置文件的符号链接

ln -s /etc/neutron/plugins/ml2/ml2\_conf.ini /etc/neutron/plugin.ini

## 13.初始化数据库

su -s /bin/sh -c "neutron-db-manage --config-file /etc/neutron/neutron.conf

--config-file /etc/neutron/plugins/ml2/ml2\_conf.ini upgrade head" neutron

## 14.重启计算节点nova-api服务

systemctl restart openstack-nova-api.service

## 15.开启neutron服务、设置开机自启动

开机自启动下面的四个neutron子服务：

[root@ct ~]# systemctl enable neutron-server.service \

neutron-linuxbridge-agent.service neutron-dhcp-agent.service \

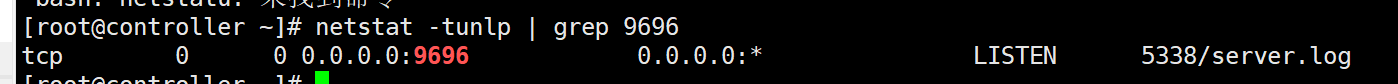
neutron-metadata-agent.service

[root@ct ~]# systemctl start neutron-server.service \

neutron-linuxbridge-agent.service neutron-dhcp-agent.service \

neutron-metadata-agent.service

检查neutron服务的启动情况，



因为配置了第三层L3网络服务、所以需要启动第三层服务

[root@ct ~]# systemctl enable neutron-l3-agent.service

[root@ct ~]# systemctl restart neutron-l3-agent.service

# （二）Compute节点安装neutron服务

## 1. 安装组件

#ipset：iptables的扩展，允许匹配规则的集合而不仅仅是一个IP

[root@compute01 ~]# yum install openstack-neutron-linuxbridge ebtables ipset conntrack-tools -y

## 2. 修改配置文件

### （1）修改neutron主配置文件

精简neutron.conf配置文件

[root@compute01 ~]# cp -a /etc/neutron/neutron.conf{,.bak}

[root@compute01 ~]# grep -Ev '^$|#' /etc/neutron/neutron.conf.bak > /etc/neutron/neutron.conf

openstack-config --set /etc/neutron/neutron.conf DEFAULT transport\_url rabbit://openstack:RABBIT\_PASS@192.168.112.146

openstack-config --set /etc/neutron/neutron.conf DEFAULT auth\_strategy keystone

openstack-config --set /etc/neutron/neutron.conf keystone\_authtoken www\_authenticate\_uri <http://192.168.112.146:5000>

openstack-config --set /etc/neutron/neutron.conf keystone\_authtoken auth\_url <http://192.168.112.146:5000>

openstack-config --set /etc/neutron/neutron.conf keystone\_authtoken memcached\_servers 192.168.112.146:11211

openstack-config --set /etc/neutron/neutron.conf keystone\_authtoken auth\_type password

openstack-config --set /etc/neutron/neutron.conf keystone\_authtoken project\_domain\_name default

openstack-config --set /etc/neutron/neutron.conf keystone\_authtoken user\_domain\_name default

openstack-config --set /etc/neutron/neutron.conf keystone\_authtoken project\_name service

openstack-config --set /etc/neutron/neutron.conf keystone\_authtoken username neutron

openstack-config --set /etc/neutron/neutron.conf keystone\_authtoken password NEUTRON\_PASS

openstack-config --set /etc/neutron/neutron.conf oslo\_concurrency lock\_path /var/lib/neutron/tmp

### （2）配置Linux网桥代理linuxbridge\_agent.ini

精简配置文件：

cp -a /etc/neutron/plugins/ml2/linuxbridge\_agent.ini{,.bak}

grep -Ev '^$|#' /etc/neutron/plugins/ml2/linuxbridge\_agent.ini.bak > /etc/neutron/plugins/ml2/linuxbridge\_agent.ini

openstack-config --set /etc/neutron/plugins/ml2/linuxbridge\_agent.ini linux\_bridge physical\_interface\_mappings provider:ens33

openstack-config --set /etc/neutron/plugins/ml2/linuxbridge\_agent.ini vxlan enable\_vxlan true

Compute节点的IP

openstack-config --set /etc/neutron/plugins/ml2/linuxbridge\_agent.ini vxlan local\_ip 192.168.112.145

openstack-config --set /etc/neutron/plugins/ml2/linuxbridge\_agent.ini vxlan l2\_population true

openstack-config --set /etc/neutron/plugins/ml2/linuxbridge\_agent.ini securitygroup enable\_security\_group true

openstack-config --set /etc/neutron/plugins/ml2/linuxbridge\_agent.ini securitygroup firewall\_driver neutron.agent.linux.iptables\_firewall.IptablesFirewallDriver

### （3）修改内核

echo 'net.bridge.bridge-nf-call-iptables=1' >> /etc/sysctl.conf #允许虚拟机的数据通过物理机出去

echo 'net.bridge.bridge-nf-call-ip6tables=1' >> /etc/sysctl.conf

modprobe br\_netfilter #modprobe：用于向内核中加载模块或者从内核中移除模块。modprobe -r 表示移除

sysctl -p

## 3. 修改nova.conf配置文件

openstack-config --set /etc/nova/nova.conf neutron auth\_url http://192.168.112.146:5000

openstack-config --set /etc/nova/nova.conf neutron auth\_type password

openstack-config --set /etc/nova/nova.conf neutron project\_domain\_name default

openstack-config --set /etc/nova/nova.conf neutron user\_domain\_name default

openstack-config --set /etc/nova/nova.conf neutron region\_name RegionOne

openstack-config --set /etc/nova/nova.conf neutron project\_name service

openstack-config --set /etc/nova/nova.conf neutron username neutron

openstack-config --set /etc/nova/nova.conf neutron password NEUTRON\_PASS

## 4. 重启nova计算服务

systemctl restart openstack-nova-compute.service

## 5. 启动neutron服务和设置开机自启动

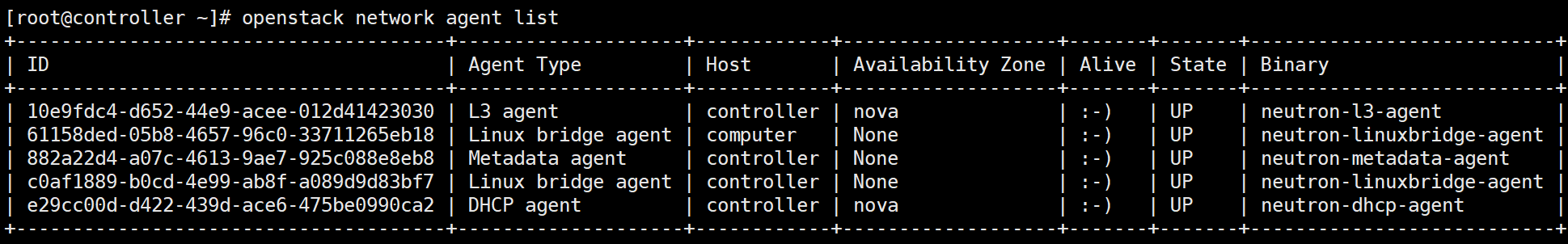
systemctl enable neutron-linuxbridge-agent.service

systemctl start neutron-linuxbridge-agent.service

# （三）Controller节点中验证Neutron服务的安装

[root@controller ~]# openstack extension list --network

[root@controller ~]# openstack network agent list



可以看到，Controller节点中有4个Neutron子服务，Compute节点中有一个Neutron子服务，State都是Up。

# （四）总结部署思路

配置neutron组件的用户、认证、endpoint

设置提供者provider网络（这里是桥接模式）

① 配置二层网络

② 配置网桥（插件）

③ 优化内核

④ 配置网桥接口与外部对接

⑤ 修改DHCP配置（修改配置文件、代理）

⑥ 配置网桥与内部组件的配置（修改配置文件、代理）

设置neutron与nova对接的配置