**云平台与存储集成**

1. 部署Ceph存储平台

1. 安装环境

本次是在前面OpenStack平台上继续部署，OpenStack的4个节点也同时作为ceph存储节点，controller作为ceph的部署节点，mon节点与osd节点，其他节点都作为mon节点与osd节点。对应关系如下：

controller (admin Node,ceph-deploy ,mon.node1,osd.0)

compute1 (mon.node2,osd.1)

compute2 (mon.node3,osd.2)

compute3 (mon.node4,osd.3)

2. 配置Ceph源，每个Ceph节点上都要配置：

cat> /etc/yum.repos.d/ceph.repo <<eof

[Ceph-noarch]

name=Ceph noarch packages

baseurl=http://download.ceph.com/rpm-hammer/el7/noarch

priority=1

enabled=1

gpgcheck=1

type=rpm-md

gpgkey=https://download.ceph.com/keys/release.asc

[Ceph]

name=Ceph packages

baseurl=http://download.ceph.com/rpm-hammer/el7/x86\_64/

priority=1

enabled=1

gpgcheck=1

type=rpm-md

gpgkey=https://download.ceph.com/keys/release.asc

[ceph-source]

name=Ceph source packages

baseurl=http://download.ceph.com/rpm-hammer/el7/SRPMS/

enabled=1

gpgcheck=1

type=rpm-md

gpgkey=https://download.ceph.com/keys/release.asc

eof

yum update -y && yum install -y ceph-deploy

3. 做免密码认证，在controller节点上操作

su - root

ssh-keygen

一路回车

做免密码认证

ssh-copy-id root@controller

ssh-copy-id root@compute1

ssh-copy-id root@compute2

ssh-copy-id root@compute3

cat > ~/.ssh/config <<eof

Host controller

Hostname controller

User root

Host compute1

Hostname compute1

User root

Host compute2

Hostname compute2

User root

Host compute3

Hostname compute3

User root

eof

4. 在每个Ceph节点上

su - root

sudo visudo

将 Defaults requiretty 修改为：

Defaults:root !requiretty

脚本

sed -i '/Defaults requiretty/a\

Defaults:root !requiretty' /etc/sudoers

sed -i 's/Defaults requiretty/\

#Defaults requiretty/' /etc/sudoers

5. 在 controller 节点上

mkdir /root/my-cluster

cd /root/my-cluster

创建集群

ceph-deploy new controller compute1 compute2 compute3

修改配置文件

vi /root/my-cluster/ceph.conf 在[global]下添加如下:

osd pool default size = 2

public network = 10.0.33.0/24

cluster network = 172.168.33.0/24

安装软件包

ceph-deploy install controller compute1 compute2

初始化mon服务

ceph-deploy mon create-initial

6. 准备 OSD 存储挂在目录

ssh controller

sudo mkdir -p /ceph-vol/osd0

exit

ssh compute1

sudo mkdir -p /ceph-vol/osd1

exit

ssh compute2

sudo mkdir -p /ceph-vol/osd2

exit

ssh compute3

sudo mkdir -p /ceph-vol/osd4

exit

7. 准备OSD并激活

ceph-deploy osd prepare controller:/ceph-vol/osd0 compute1:/ceph-vol/osd1 compute2:/ceph-vol/osd2 compute3:/ceph-vol/osd3

ceph-deploy osd activate controller:/ceph-vol/osd0 compute1:/ceph-vol/osd1 compute2:/ceph-vol/osd2 compute3:/ceph-vol/osd3

8. 分发配置文件与key到每个节点

ceph-deploy admin controller compute1 compute2 compute3

在每个Ceph节点上修改权限

sudo chmod +r /etc/ceph/ceph.client.admin.keyring

1. 在任意一台ceph节点上

查看ceph节点的运行状态

ceph health

ceph -s

查看osd状态

ceph osd tree

至此，Ceph存储平台已经搭建好了。

二、 与云平台集成

1. 在 controller 节点上创建osd池

ceph osd pool create volumes 128

ceph osd pool create images 128

ceph osd pool create vms 128

2. 将 ceph.conf 文件添加到各个节点：

ssh controller sudo tee /etc/ceph/ceph.conf </etc/ceph/ceph.conf

ssh compute1 sudo tee /etc/ceph/ceph.conf </etc/ceph/ceph.conf

ssh compute2 sudo tee /etc/ceph/ceph.conf </etc/ceph/ceph.conf

1. 在 glance-api 节点上

sudo yum install python-rbd -y

在 nova-compute, cinder-backup 及 cinder-volume 节点上

yum install ceph -y

4. 在controller 节点上，为Nova Cinder and Glance创建用户

ceph auth get-or-create client.cinder mon 'allow r' osd 'allow class-read object\_prefix rbd\_children, allow rwx pool=volumes, allow rwx pool=vms, allow rx pool=images'

ceph auth get-or-create client.glance mon 'allow r' osd 'allow class-read object\_prefix rbd\_children, allow rwx pool=images'

ceph auth get-or-create client.cinder-backup mon 'allow r' osd 'allow class-read object\_prefix rbd\_children, allow rwx pool=backups'

将keyrings添加到对应节点，并修改所有权

ceph auth get-or-create client.glance | ssh controller sudo tee /etc/ceph/ceph.client.glance.keyring

ssh controller sudo chown glance:glance /etc/ceph/ceph.client.glance.keyring

ceph auth get-or-create client.cinder | ssh controller sudo tee /etc/ceph/ceph.client.cinder.keyring

ssh controller sudo chown cinder:cinder /etc/ceph/ceph.client.cinder.keyring

1. 向每个计算节点添加：

ceph auth get-or-create client.cinder | \

ssh compute1 sudo tee /etc/ceph/ceph.client.cinder.keyring

ceph auth get-or-create client.cinder | \

ssh compute2 sudo tee /etc/ceph/ceph.client.cinder.keyring

6. 在每一个运行nova-compute的节点上创建一个secret key的临时拷贝

#ceph auth get-key client.cinder | ssh controller tee client.cinder.key

ceph auth get-key client.cinder | ssh compute1 tee client.cinder.key

ceph auth get-key client.cinder | ssh compute2 tee client.cinder.key

在所有nova-compute节点，添加secret key到libvirt，并删除key的临时拷贝

compute1（在某台节点上生成一个uuid，下面好几处都要用到该uuid，请用新生成的查找替换本文档里所有旧的uuid）

uuidgen

16b3575b-c561-48bb-889f-9c9f7cc1c61b

在 compute1 compute2等节点上分别作如下操作（controller，不做）

切换到 client.cinder.key 所在的目录

cd /root

cat > secret.xml <<EOF

<secret ephemeral='no' private='no'>

<uuid>16b3575b-c561-48bb-889f-9c9f7cc1c61b</uuid>

<usage type='ceph'>

<name>client.cinder secret</name>

</usage>

</secret>

EOF

sudo virsh secret-define --file secret.xml

sudo virsh secret-set-value --secret 16b3575b-c561-48bb-889f-9c9f7cc1c61b \

--base64 $(cat client.cinder.key) && rm -f client.cinder.key secret.xml

7. 与Glance集成

vim /etc/glance/glance-api.conf and add under the [glance\_store] section:

[DEFAULT]

...

default\_store = rbd

...

[glance\_store]

stores = rbd

rbd\_store\_pool = images

rbd\_store\_user = glance

rbd\_store\_ceph\_conf = /etc/ceph/ceph.conf

rbd\_store\_chunk\_size = 8

show\_image\_direct\_url = True

1. 与Cinder集成

在 cinder-volume节点上

vi /etc/cinder/cinder.conf

[DEFAULT]

...

glance\_api\_version=2

enabled\_backends=ibm-v5000,cephvolumes

...

[cephvolumes]

volume\_driver=cinder.volume.drivers.rbd.RBDDriver

rbd\_pool=volumes

rbd\_ceph\_conf=/etc/ceph/ceph.conf

rbd\_flatten\_volume\_from\_snapshot=false

rbd\_max\_clone\_depth=5

rbd\_store\_chunk\_size=4

rados\_connect\_timeout=-1

volume\_backend\_name=cephvolumes

[ibm-v5000]

volume\_group=cinder-volumes

volume\_driver=cinder.volume.drivers.lvm.LVMISCSIDriver

volume\_backend\_name=LVM\_iSCSI

rbd\_user=cinder

rbd\_secret\_uuid=16b3575b-c561-48bb-889f-9c9f7cc1c61b

创建相应的卷类型：

cinder type-create ibm-v5000

cinder type-key ibm-v5000 set volume\_backend\_name=LVM\_iSCSI

cinder type-create cephvolumes

cinder type-key cephvolumes set volume\_backend\_name=cephvolumes

9. 与nova集成

vi /etc/ceph/ceph.conf

[client]

rbd cache = true

rbd cache writethrough until flush = true

admin socket = /var/run/ceph/guests/$cluster-$type.$id.$pid.$cctid.asok

log file = /var/log/qemu/qemu-guest-$pid.log

rbd concurrent management ops = 20

mkdir -p /var/run/ceph/guests/ /var/log/qemu/

chown qemu:qemu /var/run/ceph/guests /var/log/qemu/

vim /etc/nova/nova.conf under the [libvirt] section and add:

[libvirt]

images\_type = rbd

images\_rbd\_pool = vms

images\_rbd\_ceph\_conf = /etc/ceph/ceph.conf

rbd\_user = cinder

rbd\_secret\_uuid = 16b3575b-c561-48bb-889f-9c9f7cc1c61b

disk\_cachemodes="network=writeback"

inject\_password = false

inject\_key = false

inject\_partition = -2

live\_migration\_flag="VIR\_MIGRATE\_UNDEFINE\_SOURCE,VIR\_MIGRATE\_PEER2PEER,VIR\_MIGRATE\_LIVE,VIR\_MIGRATE\_PERSIST\_DEST,VIR\_MIGRATE\_TUNNELLED"

service openstack-glance-api restart

service openstack-cinder-volume restart

service openstack-nova-compute restart

至此，云平台与Ceph存储的集成已经完成。