**1. 创建cinder数据库并授权**

**进入mysql中创建cinder数据库以及赋予该数据库的权限给用户cinder，并设置密码为CINDER\_DBPASS。**

[root@controller ~]# mysql

MariaDB [(none)]> CREATE DATABASE cinder;

Query OK, 1 row affected (0.012 sec)

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

Query OK, 0 rows affected (0.001 sec)

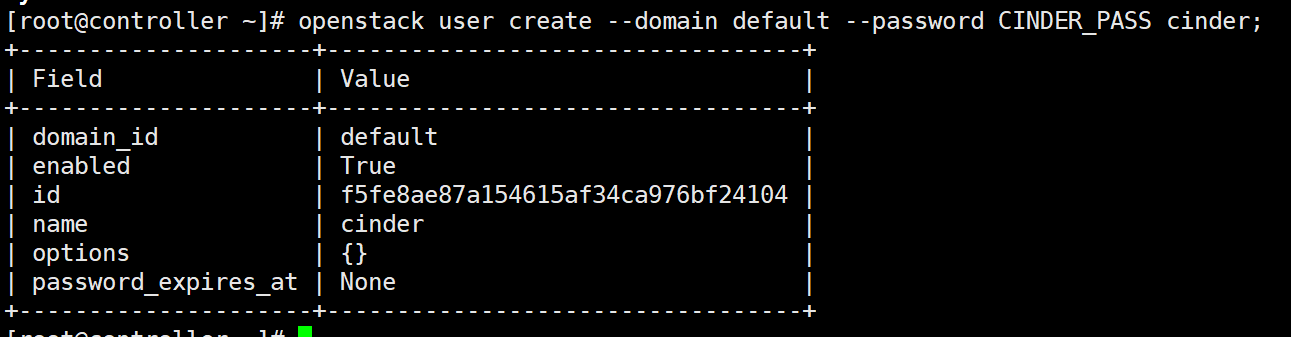
MariaDB [(none)]> GRANT ALL PRIVILEGES ON cinder.\* TO 'cinder'@'%' IDENTIFIED BY 'CINDER\_DBPASS';

Query OK, 0 rows affected (0.000 sec)

## 2.创建cinder用户

在openStack中创建cinder用户：

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



## 3.向cinder用户添加admin角色

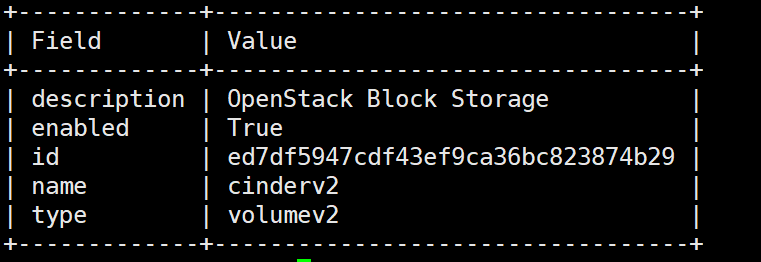
[root@controller ~]# openstack role add --project service --user cinder admin

## 4.创建cinderv2和cinderv3服务实体

**cinder有v2和v3两个并存版本的API，所以需要创建两个版本的service实例**

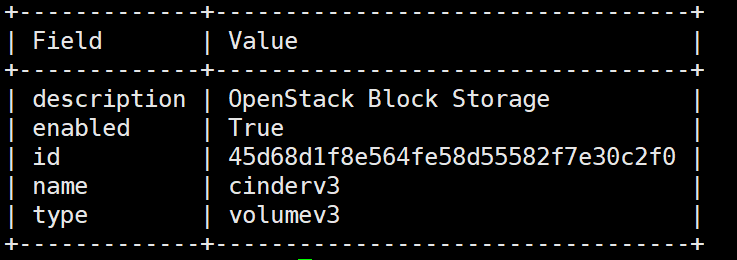
[root@controller ~]# openstack service create --name cinderv2

--description "OpenStack Block Storage" volumev2



[root@controller ~]# openstack service create --name cinderv3

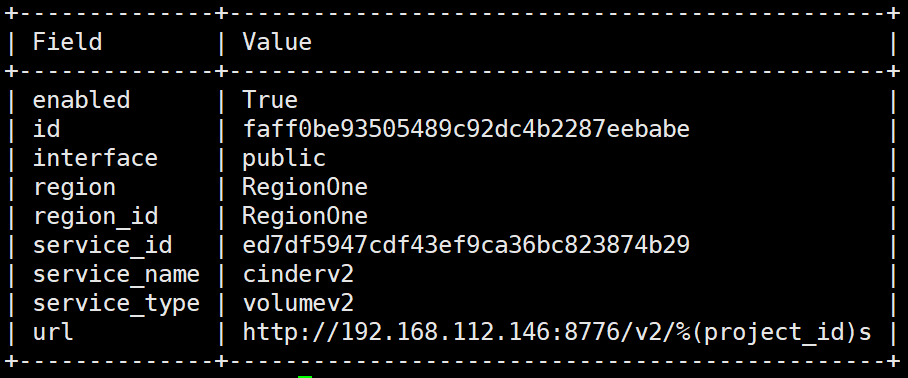
--description "OpenStack Block Storage" volumev3



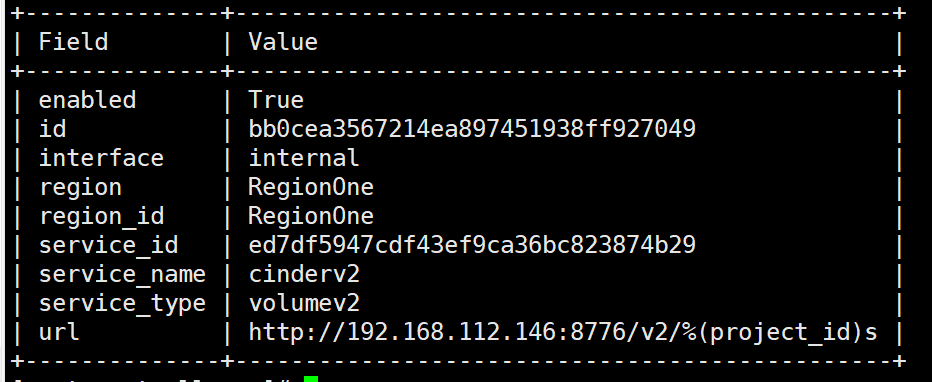
## 5.创建块存储服务API端点

**给v2和v3版本的api创建endpoint**

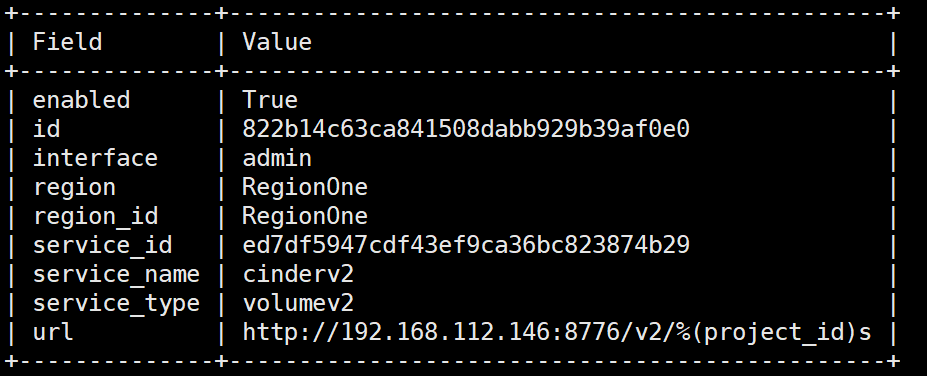
[root@controller ~]# openstack endpoint create --region RegionOne volumev2 public http://192.168.112.146:8776/v2/%\(project\_id\)s



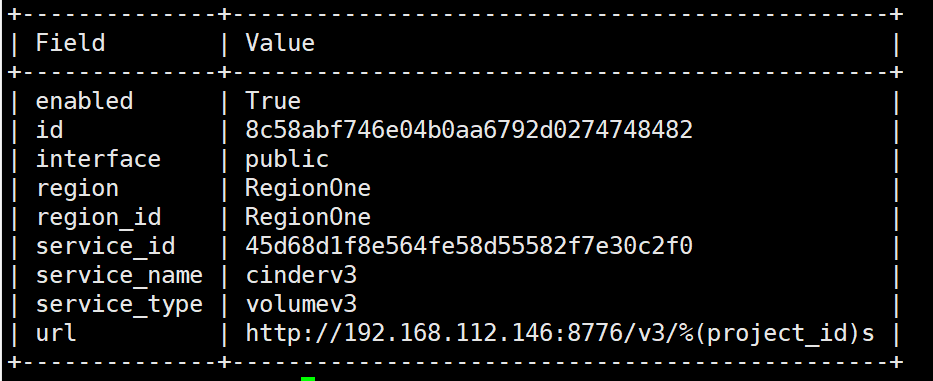
[root@controller ~]# openstack endpoint create --region RegionOne volumev2 internal http://192.168.112.146:8776/v2/%\(project\_id\)s



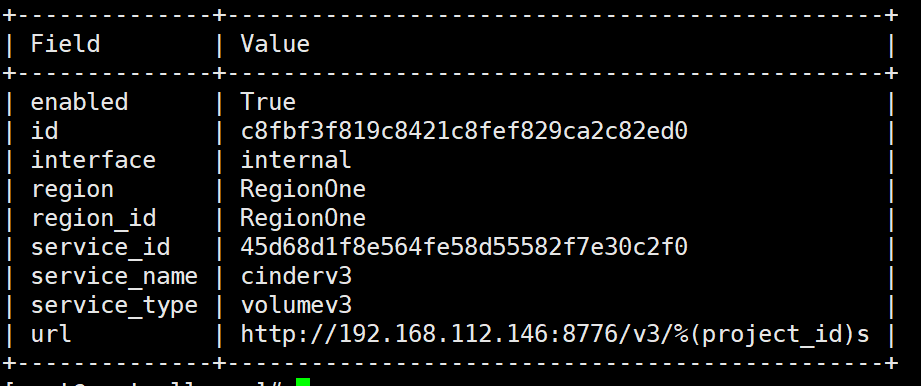
[root@controller ~]# openstack endpoint create --region RegionOne volumev2 admin http://192.168.112.146:8776/v2/%\(project\_id\)s



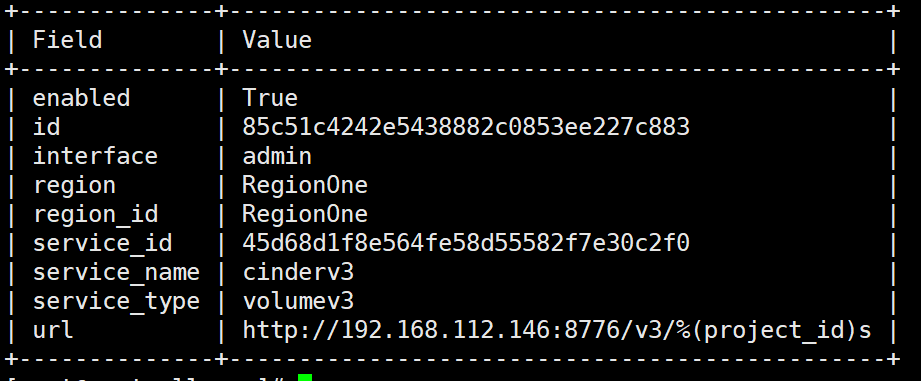
[root@controller ~]# openstack endpoint create --region RegionOne volumev3 public http://192.168.112.146:8776/v3/%\(project\_id\)s



[root@controller ~]# openstack endpoint create --region RegionOne volumev3 internal http://192.168.112.146:8776/v3/%\(project\_id\)s



[root@controller ~]# openstack endpoint create --region RegionOne volumev3 admin http://192.168.112.146:8776/v3/%\(project\_id\)s



## 6.Controller节点安装cinder软件包并修改配置文件

**安装openstack-cinder软件：**

yum install openstack-cinder

**精简cinder.conf的配置文件：**

cp /etc/cinder/cinder.conf /etc/cinder/cinder.conf.bak

grep -Ev '#|^$' /etc/cinder/cinder.conf.bak>/etc/cinder/cinder.conf

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

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

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

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

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

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

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

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

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

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

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

openstack-config --set /etc/cinder/cinder.conf keystone\_authtoken password CINDER\_PASS

openstack-config --set /etc/cinder/cinder.conf DEFAULT my\_ip 192.168.112.146

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

## 7.填充块存储数据库

**同步cinder数据库(填充块存储数据库)**

[root@controller ~]# su -s /bin/sh -c "cinder-manage db sync" cinder

## 8.配置计算节点的nova.conf来使用块存储

**在Compute节点中配置nova.conf文件，修改cinder选项为RegionOne：**

[root@compute01 ~]# vim /etc/nova/nova.conf

....

[cinder]

os\_region\_name = RegionOne

## 9.重新启动Compute API服务

[root@controller ~]# systemctl restart openstack-nova-api.service

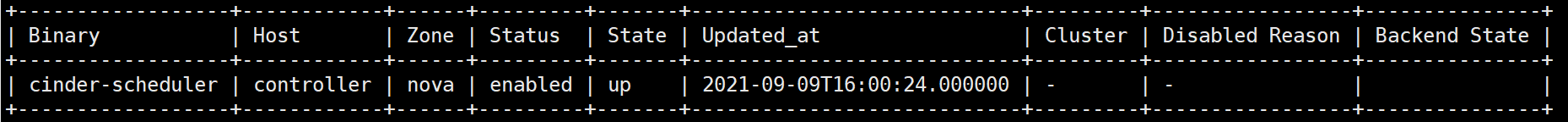
## 10.启动块存储服务，并设置开机自启

[root@controller ~]# systemctl enable openstack-cinder-api.service openstack-cinder-scheduler.service

[root@controller ~]# systemctl start openstack-cinder-api.service openstack-cinder-scheduler.service

## 11.控制节点验证

[root@controller ~]# cinder service-list



## 12.安装和配置存储节点【compute】

#### （1）安装LVM软件包

[root@compute01 ~]# yum install lvm2 device-mapper-persistent-data

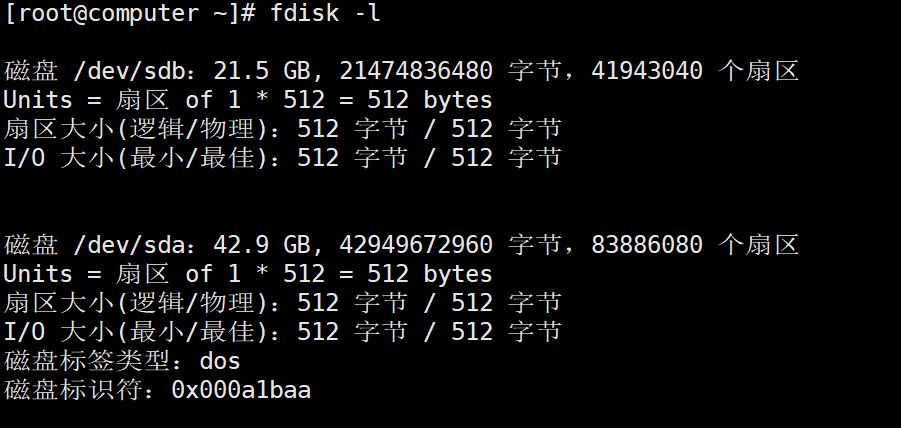
#### （2）启动LVM元数据服务，并设置开机自启

[root@compute01 ~]# systemctl enable lvm2-lvmetad.service

[root@compute01 ~]# systemctl start lvm2-lvmetad.service

#### （3）新增一个硬盘

在vmware中新建一个20g的硬盘/dev/sdb，在compute节点中查看当前的硬盘情况：



#### （4）创建LVM物理卷/dev/sdb；在这之前新增20G硬盘

[root@compute01 ~]# pvcreate /dev/sdb

Physical volume "/dev/sdb" successfully created.

#### （5）创建LVM卷组cinder-volumes

[root@compute01 ~]# vgcreate cinder-volumes /dev/sdb

Volume group "cinder-volumes" successfully created

#### （6）修改lvm配置文件(指定使用sdb磁盘）

[root@computer ~]# vim /etc/lvm/lvm.conf

141行，取消，

# a表示允许，r表示拒绝

# 只允许lvm服务访问sdb中的数据，不允许lvm服务访问其他磁盘，这也间接实现了openstack创建的虚拟机只能访问sdb中的数据，不能访问其他磁盘

# 设置只允许实例访问sdb逻辑卷中的数据；如果不配置的话，本机的其他服务也有可能会访问sdb逻辑卷中的数据

filter = [ "a/sdb/", "r/.\*/"]

#### （7）Compute节点安装软件包

yum install openstack-cinder targetcli python-keystone -y

yum install python-openstackclient -y

#### （8）修改cinder配置文件

[root@compute01 ~]# cp /etc/cinder/cinder.conf /etc/cinder/cinder.conf.bak

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

[root@c2 ~]# openstack-config --set /etc/cinder/cinder.conf database connection mysql+pymysql://cinder:CINDER\_DBPASS@192.168.112.146/cinder

[root@c2 ~]# openstack-config --set /etc/cinder/cinder.conf DEFAULT transport\_url rabbit://openstack:RABBIT\_PASS@192.168.112.146

[root@c2 ~]# openstack-config --set /etc/cinder/cinder.conf DEFAULT auth\_strategy keystone

[root@c2 ~]# openstack-config --set /etc/cinder/cinder.conf DEFAULT my\_ip 192.168.112.145

[root@c2 ~]# openstack-config --set /etc/cinder/cinder.conf DEFAULT enabled\_backends lvm

[root@c2 ~]# openstack-config --set /etc/cinder/cinder.conf DEFAULT glance\_api\_servers http://192.168.112.146:9292

[root@c2 ~]# openstack-config --set /etc/cinder/cinder.conf keystone\_authtoken www\_authenticate\_uri http://192.168.112.146:5000

[root@c2 ~]# openstack-config --set /etc/cinder/cinder.conf keystone\_authtoken auth\_url http://192.168.112.146:5000

[root@c2 ~]# openstack-config --set /etc/cinder/cinder.conf keystone\_authtoken memcached\_servers 192.168.112.146:11211

[root@c2 ~]# openstack-config --set /etc/cinder/cinder.conf keystone\_authtoken auth\_type password

[root@c2 ~]# openstack-config --set /etc/cinder/cinder.conf keystone\_authtoken project\_domain\_name default

[root@c2 ~]# openstack-config --set /etc/cinder/cinder.conf keystone\_authtoken user\_domain\_name default

[root@c2 ~]# openstack-config --set /etc/cinder/cinder.conf keystone\_authtoken project\_name service

[root@c2 ~]# openstack-config --set /etc/cinder/cinder.conf keystone\_authtoken username cinder

[root@c2 ~]# openstack-config --set /etc/cinder/cinder.conf keystone\_authtoken password CINDER\_PASS

#指定LVM驱动程序；即通过指定的驱动创建LVM

[root@c2 ~]# openstack-config --set /etc/cinder/cinder.conf lvm volume\_driver cinder.volume.drivers.lvm.LVMVolumeDriver

#指定卷组(vg)

[root@c2 ~]# openstack-config --set /etc/cinder/cinder.conf lvm volume\_group cinder-volumes

#pv使用的是iscsi协议，可以提供块存储服务

[root@c2 ~]# openstack-config --set /etc/cinder/cinder.conf lvm target\_protocol iscsi

#iscsi管理工具

[root@c2 ~]# openstack-config --set /etc/cinder/cinder.conf lvm target\_helper lioadm

[root@c2 ~]# openstack-config --set /etc/cinder/cinder.conf oslo\_concurrency lock\_path /var/lib/cinder/tmp

#### （9）启动块存储卷服务及其相关，并设置开机自启

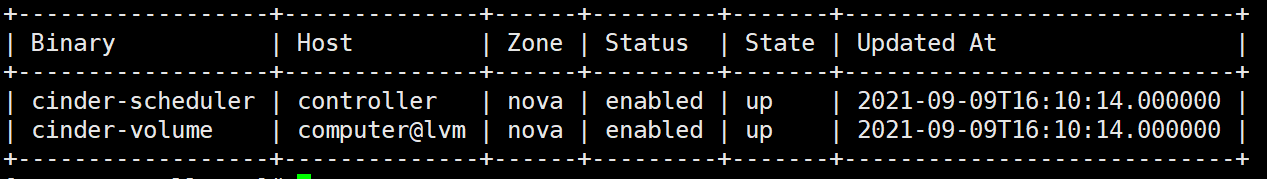
[root@compute01 ~]# systemctl enable openstack-cinder-volume.service target.service

[root@compute01 ~]# systemctl start openstack-cinder-volume.service target.service

#### （10）验证cinder块存储服务【controller节点】

**查看卷的列表：**

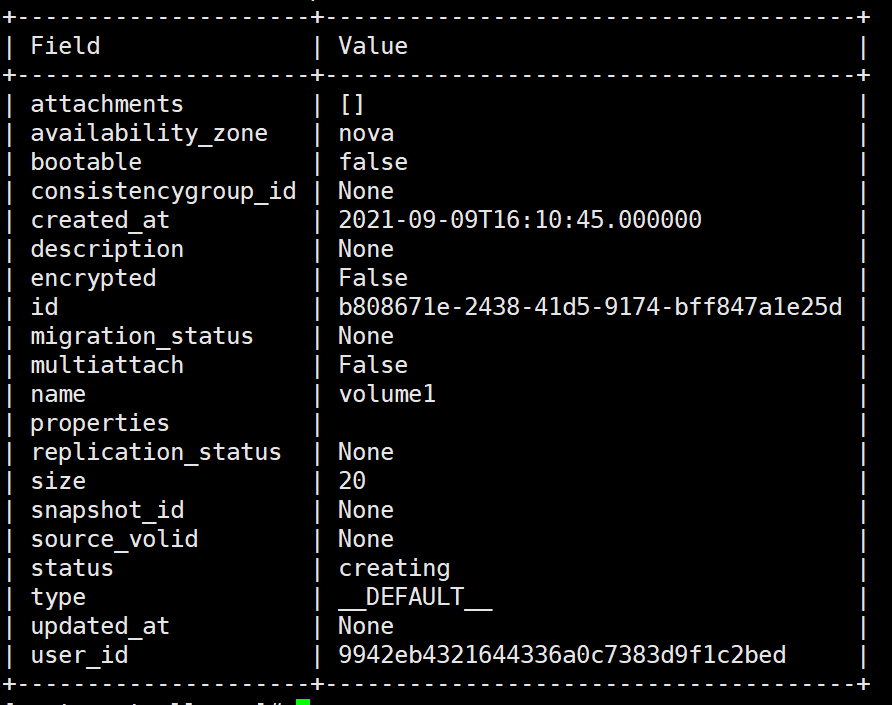
[root@controller ~]# openstack volume service list



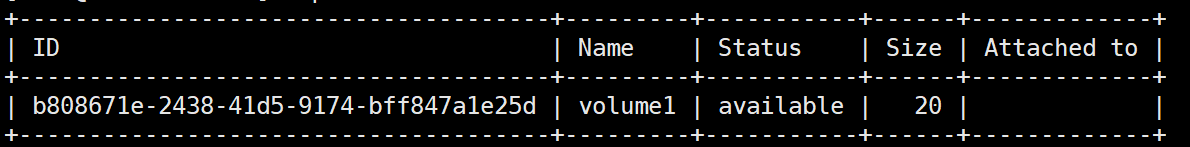
#### （11）使用块存储服务向实例提供数据盘

创建一个20 GB的卷：

[root@controller ~]# openstack volume create --size 20 volume1



[root@controller ~]# openstack volume list



#### （12）将卷附加到实例

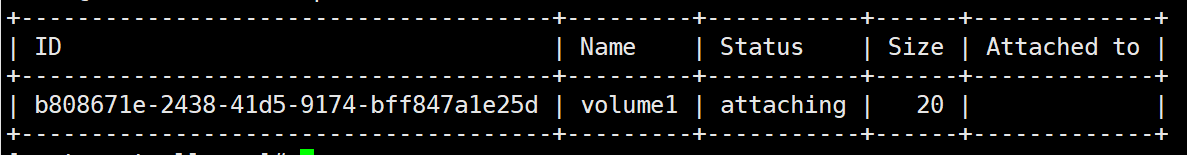
openstack server add volume INSTANCE\_NAME VOLUME\_NAME

将volume1卷附加到firstVM实例：

[root@controller ~]# openstack server add volume firstVM volume1

再次查看openstack中的volume状态可以看到volume1已经attach到了实例上

[root@controller ~]# openstack volume list



通过Dashboard查看volume1的状态是可用，再通过界面的操作可以直接将volume1连接到实例firstVM中。想要验证该实例是否挂载了volume1，直接进入firstVM的控制台中，通过命令sudo fdisk -l命令可以查看到该实例挂载的卷。

