Cinder Multi-Backend

- NFS使用情境：
  - 使用多種不同的儲存設備
  - 無可奈何的沒有Driver狀況

NFS Server

- Centos 7
  - IP:192.168.122.26

```
[root@NFS ~]# free -h
              total        used        free      shared  buff/cache   available
Mem:           3.7G        137M        3.2G        8.4M        380M        3.3G
Swap:          2.0G          0B        2.0G
[root@NFS ~]# df -h
Filesystem                  Size  Used Avail Use% Mounted on
/dev/mapper/centos_nfs-root  18G  1.2G   17G   7% /
devtmpfs                    1.9G     0  1.9G   0% /dev
tmpfs                       1.9G     0  1.9G   0% /dev/shm
tmpfs                       1.9G  8.4M  1.9G   1% /run
tmpfs                       1.9G     0  1.9G   0% /sys/fs/cgroup
/dev/vda1                   497M  129M  368M  26% /boot
tmpfs                       380M     0  380M   0% /run/user/0
[root@NFS ~]# cat /etc/exports
/data *(rw,no_root_squash,no_all_squash,sync)
[root@NFS ~]# ls /
bin   data  etc   lib    media  opt   root  sbin  sys  usr
boot  dev   home  lib64  mnt    proc  run   srv   tmp  var
```

Cinder Configure

```
[DEFAULT]
...
enabled_backends = lvm,nfs
...
[lvm]
iscsi_helper=lioadm
iscsi_ip_address=192.168.122.20
volume_driver=cinder.volume.drivers.lvm.LVMVolumeDriver
volumes_dir=/var/lib/cinder/volumes
volume_backend_name=lvm
[nfs]
volume_driver=cinder.volume.drivers.nfs.NfsDriver
volumes_dir=/var/lib/cinder/volumes
volume_backend_name=nfs
nfs_mount_attempts = 3
nfs_mount_options = None
nfs_mount_point_base = $state_path/mnt
nfs_shares_config = /etc/cinder/nfsshares
nfs_sparsed_volumes = True
```

vim /etc/cinder/nfsshares

```
[root@controller ~(keystone_admin)]# cat /etc/cinder/nfsshares
192.168.122.26:/data
```

Packages

- Controller
  - yum install –y nfs-utils
  - openstack-service restart cinder (RHEL series)
- Compute
  - yum install –y nfs-utils

ERROR!!!

- volume.log ERROR message (/etc/fstab)

```
ERROR cinder.volume.drivers.nfs [req-7d000325-8b98-476b-8714-951f1035a2d8 - - - - -]
  Mount failure for 192.168.122.26:/data after 3 attempts.
ERROR cinder.volume.drivers.remotefs [req-7d000325-8b98-476b-8714-951f1035a2d8 - - - - -]
  Exception during mounting NFS mount failed for share 192.168.122.26:/data.
  Error - {'pnfs': u"Unexpected error while running command.\nCommand:
  sudo cinder-rootwrap /etc/cinder/rootwrap.conf
  mount -t nfs -o None,vers=4,minorversion=1 192.168.122.26:/data
    /var/lib/cinder/mnt/27299f5a9a2ef232ec83ace6c415ffab\n
  Exit code: 32\nStdout: u''\n
  Stderr: u'mount.nfs: an incorrect mount option was specified\\n'
  ", 'nfs': u"Unexpected error while running command.\n
  Command:
    sudo cinder-rootwrap /etc/cinder/rootwrap.conf mount
      -t nfs -o None 192.168.122.26:/data
      /var/lib/cinder/mnt/27299f5a9a2ef232ec83ace6c415ffab\n
      Exit code: 32\n
      Stdout: u''\nStderr: u'mount.nfs: an incorrect mount option was specified\\n'"}
ERROR cinder.volume.manager [req-7d000325-8b98-476b-8714-951f1035a2d8 - - - - -] Failed to
ERROR cinder.volume.manager Traceback (most recent call last):
ERROR cinder.volume.manager   File "/usr/lib/python2.7/site-packages/cinder/volume/manager.
```

Add info to fstab

- vim /etc/fstab

```
/dev/mapper/centos-root /       xfs     defaults        0       0
UUID=c27a1ab3-82af-4537-96df-961186eb3ae0       /boot   xfs     defaults        0       0
/dev/mapper/centos-swap swap    swap    defaults        0       0
/srv/loopback-device/swiftloopback  /srv/node/swiftloopback ext4  noatime,nodiratime,
192.168.122.26:/data /var/lib/cinder/mnt/27299f5a9a2ef232ec83ace6c415ffab nfs defaults 0 0
```

- restart cinder service again!!

It seems ready to go

```
INFO os_brick.remotefs.remotefs  Already mounted: /var/lib/cinder/mnt/27299f5a9a2ef232ec83a
INFO os_brick.remotefs.remotefs  Already mounted: /var/lib/cinder/mnt/27299f5a9a2ef232ec83a
INFO os_brick.remotefs.remotefs  Already mounted: /var/lib/cinder/mnt/27299f5a9a2ef232ec83a
INFO os_brick.remotefs.remotefs  Already mounted: /var/lib/cinder/mnt/27299f5a9a2ef232ec83a
INFO os_brick.remotefs.remotefs  Already mounted: /var/lib/cinder/mnt/27299f5a9a2ef232ec83a
INFO os brick.remotefs.remotefs  Already mounted: /var/lib/cinder/mnt/27299f5a9a2ef232ec83a
```

Create new cinder storage type

```
[root@controller ~(keystone_admin)]# cinder help type-create
usage: cinder type-create [--description <description>]
                          [--is-public <is-public>]
                          <name>

Creates a volume type.

Positional arguments:
  <name>                  Name of new volume type.

Optional arguments:
  --description <description>
                          Description of new volume type.
  --is-public <is-public>
                          Make type accessible to the public (default true).
```

Setup key

```
[root@controller ~(keystone_admin)]# cinder help type-key
usage: cinder type-key <vtype> <action> <key=value> [<key=value> ...]

Sets or unsets extra_spec for a volume type.

Positional arguments:
  <vtype>       Name or ID of volume type.
  <action>      The action. Valid values are "set" or "unset."
  <key=value>   The extra specs key and value pair to set or unset. For unset,
                specify only the key.
```

Create cinder type and associate to backend

- cinder type-create nfs --description NFS --is-public true
- cinder type-key nfs set volume_backend_name=nfs

```
[nfs]
volume_driver=cinder.volume.drivers.nfs.NfsDriver
volumes_dir=/var/lib/cinder/volumes
volume_backend_name=nfs
nfs_mount_attempts = 3
nfs_mount_options = None
nfs_mount_point_base = $state_path/mnt
nfs_shares_config = /etc/cinder/nfsshares
nfs sparsed volumes = True
```

ID	Name	Description	Is_Public
6ae3558f-24ec-4914-8399-f68870c3ee5d	nfs	NFS	True

ERROR Again!!!

- Volume.log ERROR message (Permission)

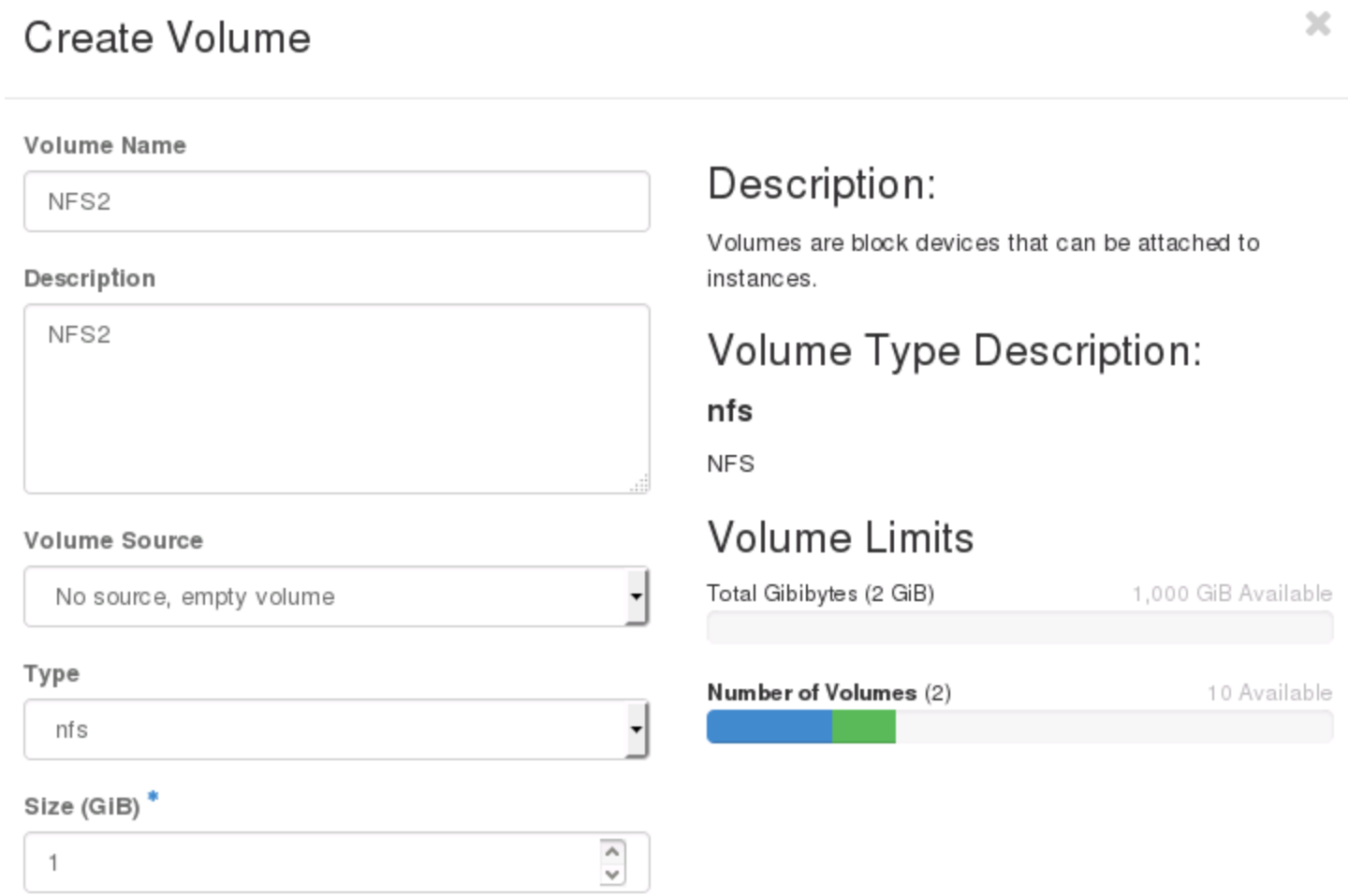
```
ERROR oslo_messaging.rpc.dispatcher Stderr: 'truncate:
  cannot open
    \xe2\x80\x98/var/lib/cinder/mnt/
      27299f5a9a2ef232ec83ace6c415ffab/
        volume-3bfd3c6a-3275-42d6-8411-2fbdffcecff3
          \xe2\x80\x99 for writing: Permission denied\n'
```

ERROR Again!!!

- chown –R cinder:cinder 27299f5a9a2ef232ec…

```
[root@controller mnt]# pwd
/var/lib/cinder/mnt
[root@controller mnt]# ll -alZ
drwxr-xr-x. cinder cinder system_u:object_r:cinder_var_lib_t:s0 .
drwx------. cinder cinder system_u:object_r:cinder_var_lib_t:s0 ..
drwxr-xr-x. cinder cinder system_u:object_r:nfs_t:s0       27299f5a9a2ef232ec83
```

Try it



Try it

Volumes

Volumes | Volume Snapshots | Volume Consistency Groups

Filter

	Name	Description	Size	Status	Type	Attached To
☐	NFS2	NFS2	1GiB	Available	nfs	
☐	iscsi	iscsi	1GiB	In-use	iscsi	Attached to NFSINST on /dev/vdc
☐	NFS	NFS	1GiB	In-use	nfs	Attached to NFSINST on /dev/vdb

Attach To Instance

Attach to Instance *

NFSINST (b01cde8a-e138-4aac-983f-ac28bf548039)

Cancel | Attach Volume

Try it

Volumes

Volumes | Volume Snapshots | Volume Consistency Groups

Filter

	Name	Description	Size	Status	Type	Attached To
☐	NFS2	NFS2	1GiB	In-use	nfs	Attached to NFSINST on /dev/vdd
☐	iscsi	iscsi	1GiB	In-use	iscsi	Attached to NFSINST on /dev/vdc
☐	NFS	NFS	1GiB	In-use	nfs	Attached to NFSINST on /dev/vdb

```
Disk /dev/vdc: 1073 MB, 1073741824 bytes
16 heads, 63 sectors/track, 2080 cylinders, total 2097152 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk identifier: 0x00000000

Disk /dev/vdc doesn't contain a valid partition table

Disk /dev/vdd: 1073 MB, 1073741824 bytes
16 heads, 63 sectors/track, 2080 cylinders, total 2097152 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk identifier: 0x00000000

Disk /dev/vdd doesn't contain a valid partition table
```

Mount Point

```
[root@controller ~]# df -h
Filesystem               Size  Used Avail Use% Mounted on
/dev/mapper/centos-root   36G  3.1G   33G   9% /
devtmpfs                 3.9G     0  3.9G   0% /dev
tmpfs                    3.9G   52K  3.9G   1% /dev/shm
tmpfs                    3.9G   49M  3.8G   2% /run
tmpfs                    3.9G     0  3.9G   0% /sys/fs/cgroup
/dev/loop0               1.9G  6.1M  1.7G   1% /srv/node/swiftloopback
/dev/vda1                497M  171M  326M  35% /boot
192.168.122.26:/data      18G  1.2G   17G   7% /var/lib/nova/mnt/27299f5a9a2ef232ec83ace6c415ffab
tmpfs                    783M     0  783M   0% /run/user/0
```

```
[root@compute 27299f5a9a2ef232ec83ace6c415ffab]# df -h
Filesystem                       Size  Used Avail Use% Mounted on
/dev/mapper/centos_compute-root   18G  1.7G   16G  10% /
devtmpfs                         1.9G     0  1.9G   0% /dev
tmpfs                            1.9G     0  1.9G   0% /dev/shm
tmpfs                            1.9G  8.5M  1.9G   1% /run
tmpfs                            1.9G     0  1.9G   0% /sys/fs/cgroup
/dev/vda1                        497M  171M  326M  35% /boot
tmpfs                            380M     0  380M   0% /run/user/0
192.168.122.26:/data              18G  1.2G   17G   7% /var/lib/nova/mnt/27299f5a9a2e
```

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兩年軟體開發經驗，四年以上OpenStack經驗，兩年以上OpenStack教學經驗，20場以上雲端運算課程實績，曾出任中研院、財政部、中華電信與企業單位的OpenStack雲端課程講師。

2010年於網頁公司工作，負責前後端程式開發與資料庫應用
2012年加入雲端新創公司迎棧科技inwinSTACK
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