一、概述

存储类型：DAS、NAS、SAN

常见的网络存储：NFS、Samba、iSCSI 等

常见的分布式存储：GlusterFS、Ceph、FastDFS

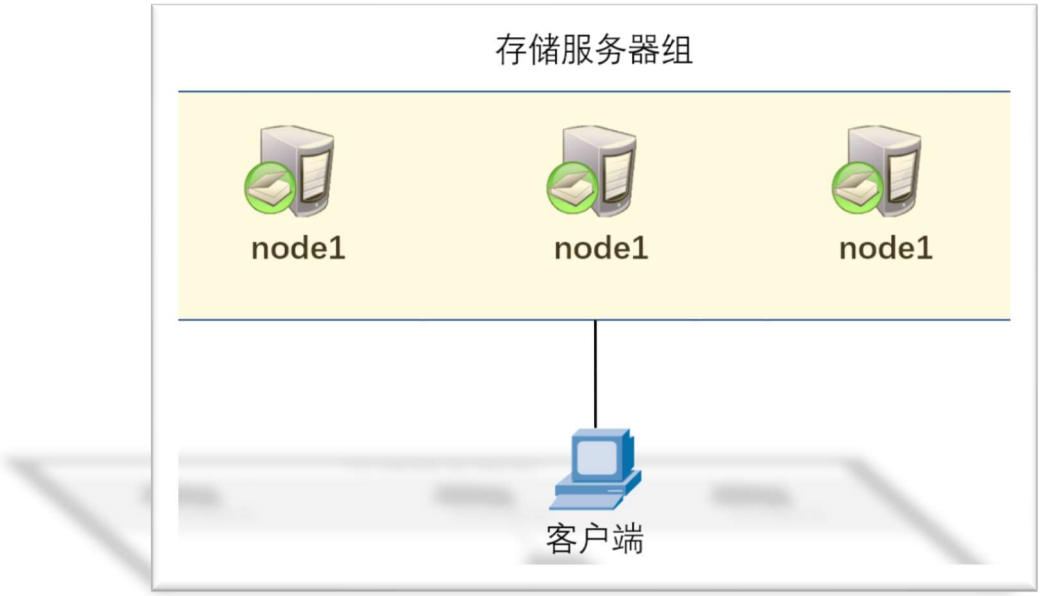
GlusterFS 特性：

无中心节点、可扩展性强、硬件兼容性强、高可用。

GlusterFS 概念：

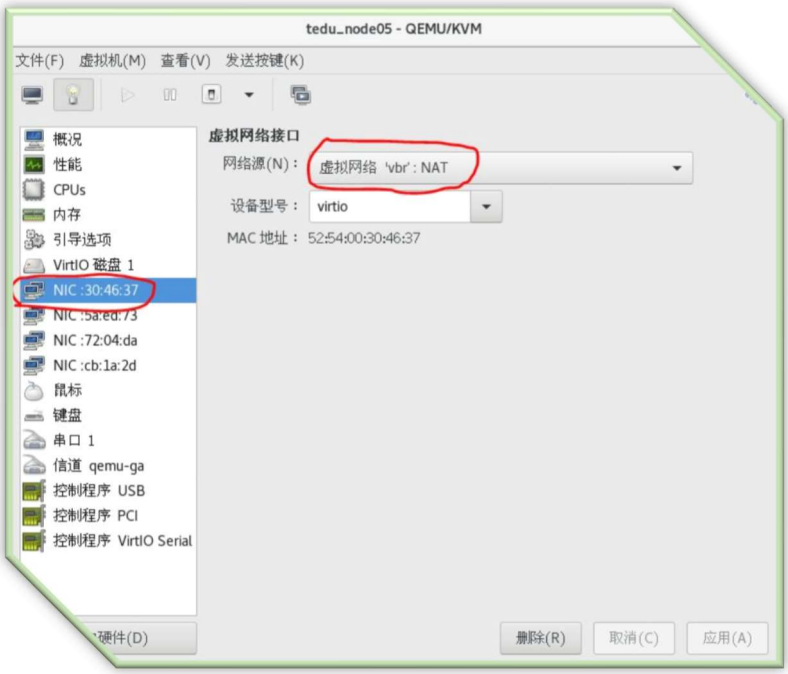
Node（节点）、Trusted Storage Pool（信任池）、Brick（块）、Volume（卷）

二、实验拓扑



三、网络环境

打开 virt-manager，双击虚拟机，将第一块网卡的虚拟网络接口选择为【NAT】模式。



四、YUM 源

CentOS7 的 yum 源：

```
http://buildlogs.centos.org/centos/7/storage/x86_64/gluster-6/
```

CentOS6 的 yum 源：

```
http://buildlogs.centos.org/centos/6/storage/x86_64/gluster-6/
```

##所有存储服务器主机均需要操作##

1） 修改 yum 源主机配置文件:

```
# vim    /etc/yum.conf
achedir=/var/cache/yum/$basearch/$releasever
keepcache=0
```

2） 创建 yum 配置文件

```
# vim /etc/yum.repos.d/glusterfs.repo
[glusterfs]
name=glusterfs
baseurl=http://buildlogs.centos.org/centos/7/storage/x86_64/gluster-6/
gpgcheck=0
```

3）安装软件包

```
# yum -y install glusterfs-server.x86_64
# systemctl start glusterd
# systemctl enable glusterd.service
```

五、创建信任池

1）修改域名解析

```
# vim /etc/hosts                          #所有节点都操作
# ::1       localhost localhost.localdomain localhost6 localhost6.localdomain6
127.0.0.1 localhost localhost.localdomain localhost4 localhost4.localdomain4
92.168.1.192 node1
192.168.1.194 node2
192.168.1.191 node3
192.168.1.197 client
```

2）创建信任池（仅需要任意一台存储服务器操作即可）

```
[root@node1 ~]# gluster peer probe node2
peer probe: success.
[root@node1 ~]# gluster peer probe node3
peer probe: success.
[root@node1 ~]# gluster peer status
Number of Peers: 2
Hostname: node2
Uuid: 28ca0c13-1d37-4b1b-951d-aad45f9b6e16
State: Peer in Cluster (Connected)
Hostname: node3
Uuid: 541b4a51-6661-4424-9046-c058388144e7
State: Peer in Cluster (Connected)
```

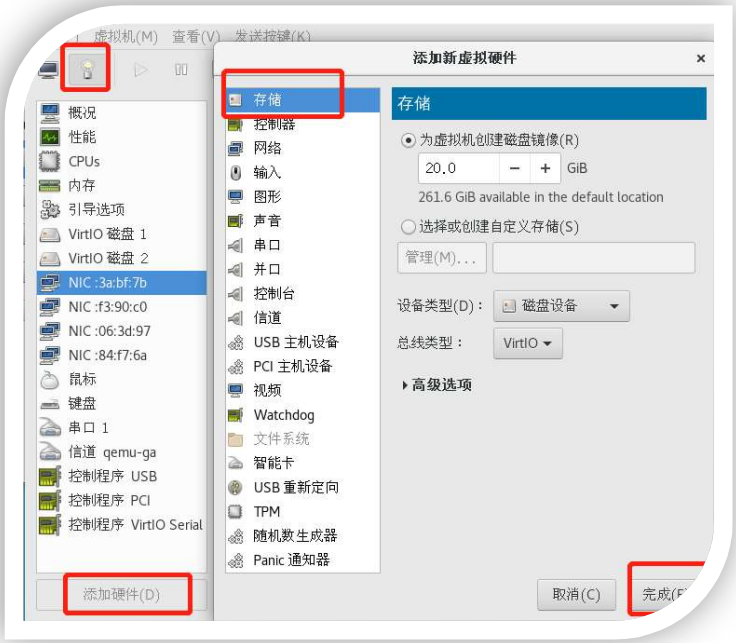
#备用操作（将主机从信任池中删除）

```
# gluster peer detach node2
```

六、准备存储设备并创建 brick

1）添加磁盘设备

打开 virt-manager，给 node1、node2、node3 每台主机添加一块 20G 磁盘。



提示：可以直接使用磁盘块设备或者 LV 逻辑卷做 Brick，推荐使用 LV 逻辑卷。

2）创建 LV 逻辑卷（所有存储服务器都需要操作）,格式化并挂载

node1 操作:

```
[root@node1 ~]# vgcreate myvg /dev/vdb
[root@node1 ~]# lvcreate -n node1-brick1 -L 2G myvg
[root@node1 ~]# lvcreate -n node1-brick2 -L 2G myvg
```

```
[root@node1 ~]# mkfs.xfs -i size=512 /dev/myvg/node1-brick1
[root@node1 ~]# mkfs.xfs -i size=512 /dev/myvg/node2-brick1
```

```
[root@node1 ~]# mkdir -p /bricks/{brick-1,brick-2}
[root@node1 ~]# vim /etc/fstab
/dev/myvg/node1-brick1 /bricks/brick-1 xfs defaults 0 0
/dev/myvg/node1-brick2 /bricks/brick-2 xfs defaults 0 0
[root@node1 ~]# mount -a
[root@node1 ~]# mkdir /bricks/{brick-1,brick-2}/brick
```

node2 操作:

```
[root@node2 ~]# vgcreate myvg /dev/vdb
```

```
[root@node2 ~]# lvcreate -n node2-brick1 -L 2G myvg
[root@node2 ~]# lvcreate -n node2-brick2 -L 2G myvg

[root@node2 ~]# mkfs.xfs -i size=512 /dev/myvg/node2-brick1
[root@node2 ~]# mkfs.xfs -i size=512 /dev/myvg/node2-brick1

[root@node2 ~]# mkdir -p /bricks/{brick-1,brick-2}
[root@node2 ~]# vim /etc/fstab
/dev/myvg/node2-brick1 /bricks/brick-1 xfs defaults 0 0
/dev/myvg/node2-brick2 /bricks/brick-2 xfs defaults 0 0
[root@node2 ~]# mount -a
[root@node2 ~]# mkdir /bricks/{brick-1,brick-2}/brick
```

node3 操作:

```
[root@node3 ~]# vgcreate myvg /dev/vdb
[root@node3 ~]# lvcreate -n node3-brick1 -L 2G myvg
[root@node3 ~]# lvcreate -n node3-brick2 -L 2G myvg

[root@node3 ~]# mkfs.xfs -i size=512 /dev/myvg/node3-brick1
[root@node3 ~]# mkfs.xfs -i size=512 /dev/myvg/node3-brick2

[root@node3 ~]# mkdir -p /bricks/{brick-1,brick-2}
[root@node3 ~]# vim /etc/fstab
/dev/myvg/node3-brick1 /bricks/brick-1 xfs defaults 0 0
/dev/myvg/node3-brick2 /bricks/brick-2 xfs defaults 0 0
[root@node3 ~]# mount -a
[root@node3 ~]# mkdir /bricks/{brick-1,brick-2}/brick
```

七、创建共享卷（任意存储集群节点操作即可）

1)创建卷

```
[root@node1 ~]# gluster volume create distributevolume \
node1:/bricks/brick-1/brick \
node2:/bricks/brick-1/brick \
node3:/bricks/brick-1/brick
```

2）查看卷信息

```
[root@node1 ~]# gluster volume info distributevolume
```

3）启动卷

```
[root@node1 ~]# gluster volume start distributevolume
```

八、客户端访问

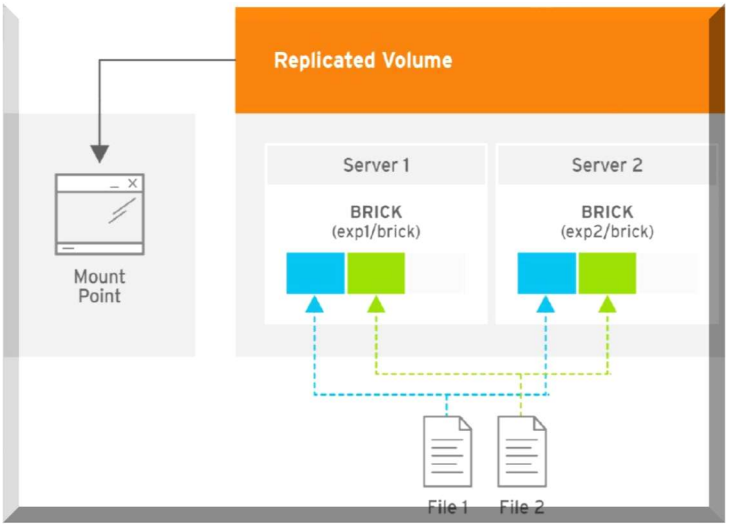
1）客户端需要安装软件

```
[root@client ~]# yum -y install  glusterfs-fuse
[root@client ~]# mkdir /mnt/distribute
[root@client ~]# vim /etc/fstab
```

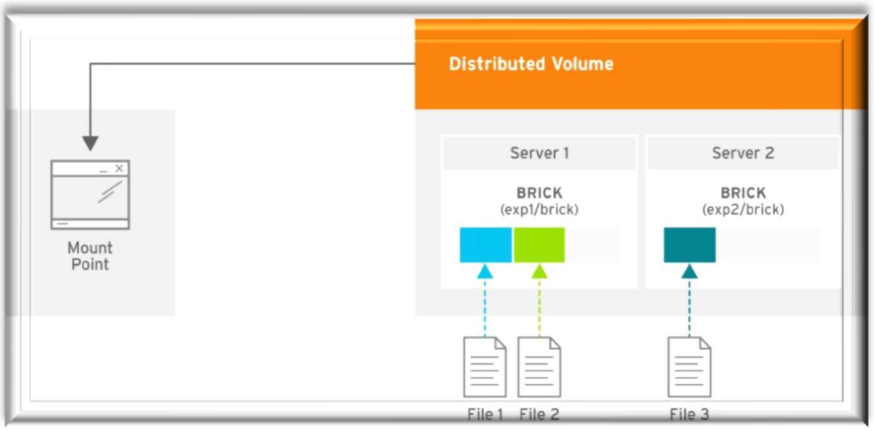
node1:/distributevolume /mnt/distribute glusterfs defaults,_netdev 0 0

九、GlusterFS 卷的类型

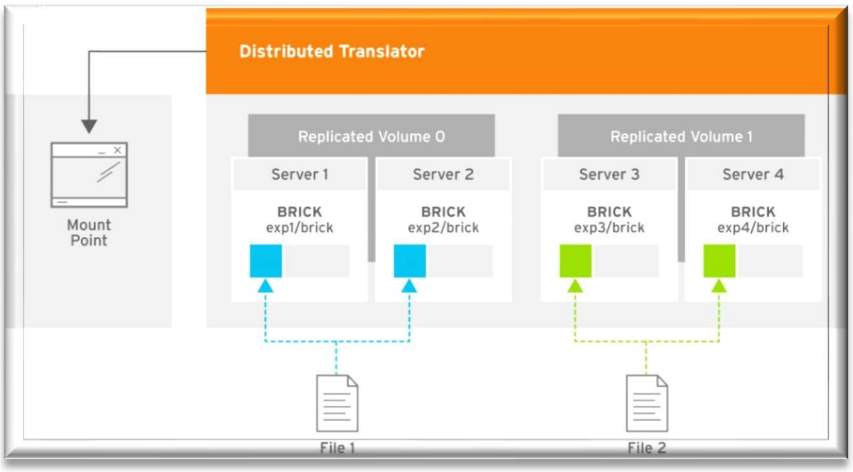
复制卷



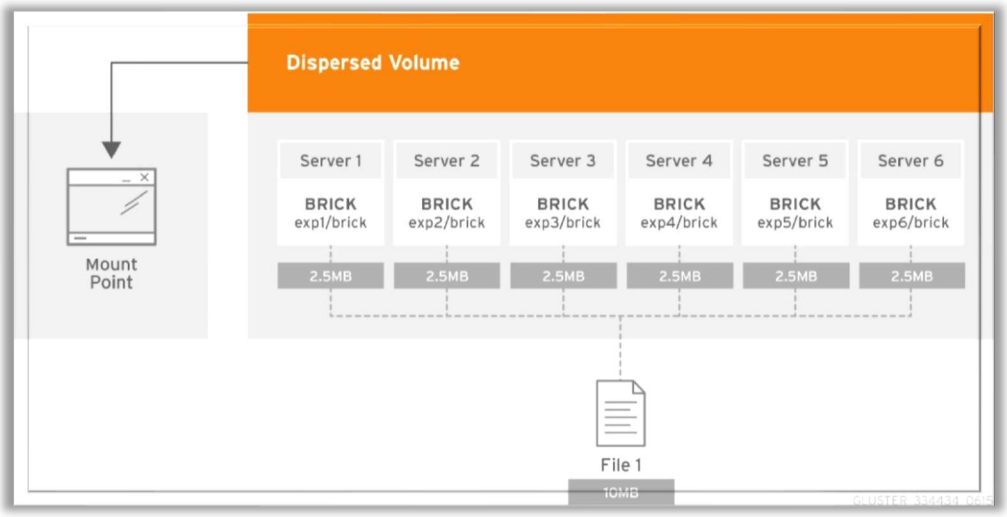
分布式卷



分布式复制卷



Disperse 卷（N=K+M）



附加命令:

创建复制卷

```
# gluster volume create  名称  replica 2 \
server1:/brick1 \
server2:/brick2
```

创建分布式卷

```
# gluster volume create  名称  \
server1:/brick1 \
server2:/brick2
```

创建分布式复制卷

```
# gluster volume create  名称  replica 2 \
server1:/brick1 \
server2:/brick2 \
server3:/brick3 \
server4:/brick4
```

创建 disperse 卷

```
# gluster volume create  名称  disperse-data 4 redundancy 2 \
server1:/brick1 \
server2:/brick2 \
server3:/brick3 \
server4:/brick4 \
server5:/brick5 \
server6:/brick6
```