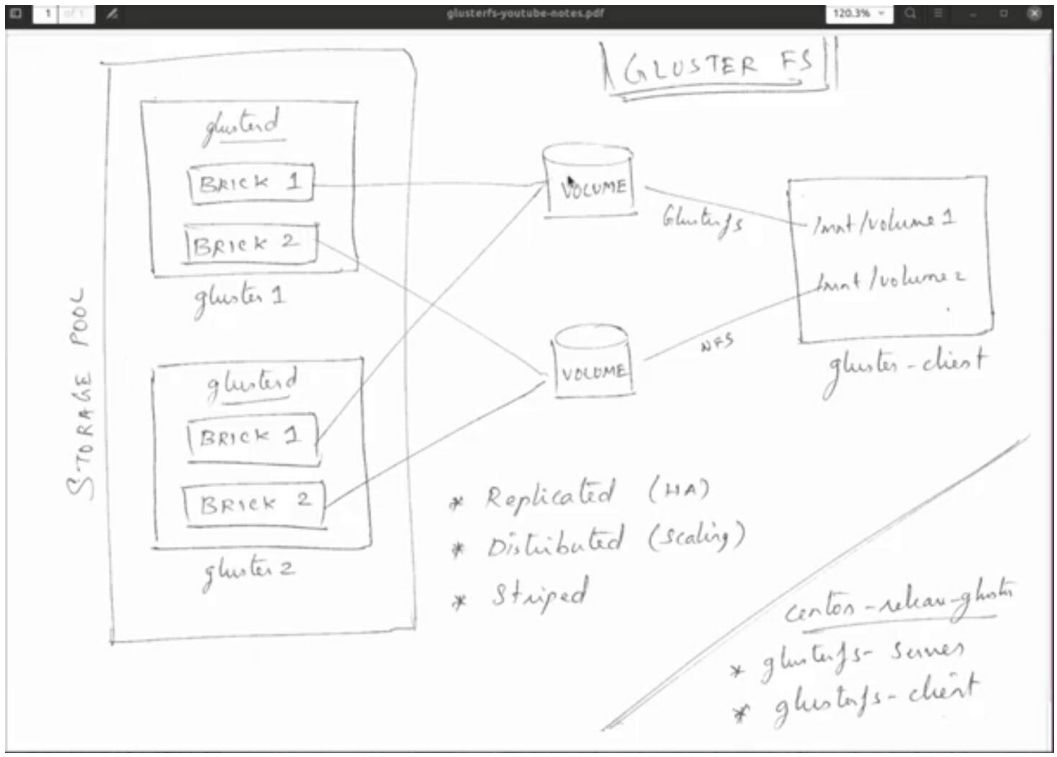
# 7 GlusterFS

Significance of 10 heads of RAVAN
Lust - Vasana
Anger- Krodth
Rear-Bhayy
Ego- Ahankar
Attachment-Mohh
Delusion- Bhraam
Insensitivity- Jaddhta
Pride- Ghamand
Selfishness- Swartha
Betrayd- Dhoka

## Network Storage Solutions




Replicated (HA): 1g +1g= 1G
Distributed(scaling): 1G+ 1G= 2G
Striped

[root@gluster1 ~]# cat /etc/os-release

[root@gluster1 ~]# yum install centos-release-gluster

[root@gluster2 ~]# yum install centos-release-gluster -y

[root@gluster1 ~]# yum repolist

Check yum for cluster
```
[root@gluster1 ~]# cat /etc/yum.repos.d/CentOS-Gluster-7.repo
[centos-gluster7]
name=CentOS-$releasever - Gluster 7
mirrorlist=http://mirrorlist.centos.org?
arch=$basearch&release=$releasever&repo=storage-gluster-7
#baseurl=http://mirror.centos.org/$contentdir/$releasever/storage/$basearch/
gluster-7/
gpgcheck=1
enabled=1
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-SIG-Storage

[centos-gluster7-test]
name=CentOS-$releasever - Gluster 7 Testing
baseurl=http://buildlogs.centos.org/centos/$releasever/storage/$basearch/
gluster-7/
gpgcheck=0
enabled=0
                    make disable
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-SIG-Storage
```

Search and install packages
```
[root@gluster1 ~]# yum search glusterfs

[root@gluster1 ~]# yum info glusterfs-server
```

```
[root@gluster1 ~]# yum install glusterfs-server

[root@gluster2 ~]# yum install glusterfs-server -y
```

System status
```
[root@gluster1 ~]# systemctl start glusterd

[root@gluster1 ~]# systemctl enable glusterd

[root@gluster1 ~]# systemctl status glusterd
● glusterd.service - GlusterFS, a clustered file-system server
   Loaded: loaded (/usr/lib/systemd/system/glusterd.service; enabled; vendor
preset: enabled)
   Active: active (running)
```

```
[root@gluster2 ~]# systemctl start glusterd

[root@gluster2 ~]# systemctl enable glusterd

[root@gluster2 ~]# systemctl status glusterd
● glusterd.service - GlusterFS, a clustered file-system server
   Loaded: loaded (/usr/lib/systemd/system/glusterd.service; enabled; vendor
preset: enabled)
   Active: active (running)
```

Recognizing the host and pinging each other
```
[root@gluster1 ~]# cat /etc/hosts
192.168.1.65     gluster1.example.com gluster1      g1
```

192.168.1.64 gluster2.example.com gluster2 g2

[root@gluster2 ~]# cat /etc/hosts
192.168.1.65 gluster1.example.com gluster1 g1

192.168.1.64 gluster2.example.com gluster2 g2

[root@gluster1 ~]# ping g1
PING gluster1.example.com (192.168.1.65) 56(84) bytes of data.
64 bytes from gluster1.example.com (192.168.1.65): icmp_seq=1 ttl=64 time=0.062 ms

[root@gluster1 ~]# ping g2
PING gluster2.example.com (192.168.1.64) 56(84) bytes of data.
64 bytes from gluster2.example.com (192.168.1.64): icmp_seq=1 ttl=64 time=1.20 ms

[root@gluster2 ~]# ping g1
PING gluster1.example.com (192.168.1.65) 56(84) bytes of data.
64 bytes from gluster1.example.com (192.168.1.65): icmp_seq=1 ttl=64 time=0.705 ms

[root@gluster2 ~]# ping g2
PING gluster2.example.com (192.168.1.64) 56(84) bytes of data.
64 bytes from gluster2.example.com (192.168.1.64): icmp_seq=1 ttl=64 time=0.070 ms

From cluster client  machine
```
[root@gluster-client ~]# cat /etc/hosts
192.168.1.65     gluster1.example.com gluster1      g1

192.168.1.64     gluster2.example.com gluster2      g2
```

```
[root@gluster-client ~]# yum install centos-release-gluster

[root@gluster-client ~]# yum install glusterfs-client -y
```

Add firewall
```
[root@gluster1 ~]# firewall-cmd --add-service=glusterfs --permanent
success
[root@gluster1 ~]# firewall-cmd --reload
success
```

```
[root@gluster2 ~]# firewall-cmd --add-service=glusterfs --permanent
success
[root@gluster2 ~]# firewall-cmd --reload
success
```

Identification of glusters or same pool storage
``````````````````````````

Group together in single storage

[root@gluster1 ~]# gluster peer status
Number of Peers: 0

[root@gluster2 ~]# gluster peer status
Number of Peers: 0

[root@gluster1 ~]# gluster peer probe gluster2.example.com //add opposite
peer probe: success.

[root@gluster1 ~]# gluster peer status
Number of Peers: 1

Hostname: gluster2.example.com
Uuid: 4c27fde1-2928-4bb0-8b51-874bbca9caf5
State: Peer in Cluster (Connected)

[root@gluster2 ~]# gluster peer status
Number of Peers: 1

Hostname: gluster1.example.com
Uuid: 34dbf8b2-c4c1-4c3f-9684-995d8ffdb969
State: Peer in Cluster (Connected)

List and create  gluster volume
``````````````````````````

``````````````````````

[root@gluster1 ~]# gluster volume list
No volumes present in cluster

[root@gluster2 ~]# gluster volume list
No volumes present in cluster

[root@gluster1 ~]# mkdir /gluster

[root@gluster2 ~]# mkdir /gluster

[root@gluster1 ~]# gluster volume create volume1 replica 2 gluster1.example.com:/gluster/brick1 gluster2.example.com:/gluster/brick1
Replica 2 volumes are prone to split-brain. Use Arbiter or Replica 3 to avoid this. See: http://docs.gluster.org/en/latest/Administrator%20Guide/Split%20brain%20and%20ways%20to%20deal%20with%20it/.
Do you still want to continue?
 (y/n) y
volume create: volume1: **failed**: The brick gluster1.example.com:/gluster/brick1 is being created in the root partition. It is recommended that you don't use the system's root partition for storage backend. Or use 'force' at the end of the command if you want to override this behavior.

**For above issue , give separate disk, format it , mount it, and make directory on it. Issue due to / on same disk**

[root@gluster1 ~]# gluster volume create volume1 replica 2 gluster1.example.com:/gluster/brick1 gluster2.example.com:/gluster/brick1 **force**
volume create: volume1: success: please start the volume to access data

[root@gluster1 ~]# gluster volume list
``````````````````````

volume1

[root@gluster1 ~]# gluster volume info

Volume Name: volume1
Type: Replicate
Volume ID: f9a0edd9-aeef-4399-9290-79ec2264837d
Status: Created
Snapshot Count: 0
Number of Bricks: 1 x 2 = 2
Transport-type: tcp
Bricks:
Brick1: gluster1.example.com:/gluster/brick1
Brick2: gluster2.example.com:/gluster/brick1
Options Reconfigured:
transport.address-family: inet
storage.fips-mode-rchecksum: on
nfs.disable: on
performance.client-io-threads: off

[root@gluster1 ~]# gluster volume start  volume1
volume start: volume1: success

[root@gluster1 ~]# gluster volume status
Status of volume: volume1
Gluster process                         TCP Port  RDMA Port  Online  Pid
------------------------------------------------------------------------------
Brick gluster1.example.com:/gluster/brick1  **49152**     0          Y       4673
Brick gluster2.example.com:/gluster/brick1  49152     0          Y       3545
Self-heal Daemon on localhost               N/A       N/A        Y       4694
Self-heal Daemon on gluster2.example.com    N/A       N/A        Y       3566

```
Task Status of Volume volume1
------------------------------------------------------------------------------
There are no active volume tasks
```

```
[root@gluster1 ~]# netstat -nltp
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State       PID/
Program name
tcp        0      0 0.0.0.0:3260            0.0.0.0:*               LISTEN      -
tcp        0      0 0.0.0.0:3389            0.0.0.0:*               LISTEN      1278/xrdp
tcp        0      0 0.0.0.0:49152           0.0.0.0:*               LISTEN      4673/
glusterfsd
tcp        0      0 0.0.0.0:24007           0.0.0.0:*               LISTEN      3795/glusterd
```

```
[root@gluster2 ~]# gluster volume list
volume1
```

```
[root@gluster2 ~]# gluster volume status
Status of volume: volume1
Gluster process                             TCP Port  RDMA Port  Online  Pid
------------------------------------------------------------------------------
Brick gluster1.example.com:/gluster/brick1  49152     0          Y       4673
Brick gluster2.example.com:/gluster/brick1  49152     0          Y       3545
Self-heal Daemon on localhost               N/A       N/A        Y       3566
Self-heal Daemon on gluster1.example.com    N/A       N/A        Y       4694

Task Status of Volume volume1
------------------------------------------------------------------------------
```

There are no active volume tasks

Client machine working with data
```

[root@gluster-client ~]# mkdir /mnt/volume1

[root@gluster-client ~]# mount -t glusterfs gluster1:volume1 /mnt/volume1/

[root@gluster-client ~]# mount | grep volume
gluster1:**volume**1 on /mnt/**volume**1 type
fuse.glusterfs(rw,relatime,user_id=0,group_id=0,default_permissions,allow_oth
er,max_read=131072)

[root@gluster-client ~]# df -h
gluster1:volume1 17G 4.9G 13G 29% /mnt/volume1

[root@gluster-client ~]# cd /mnt/volume1/

[root@gluster-client volume1]# touch file1

[root@gluster-client volume1]# ls
file1

## Replica created I.e high avivablity
```

[root@gluster1 ~]# ls /gluster/brick1/
file1

```
[root@gluster2 brick1]# ls /gluster/brick1/
file1
```

Make the one cluster down
``````````````````

```
[root@gluster-client ~]# umount /mnt/volume1/
[root@gluster-client ~]# rm -rf /mnt/volume1/
```

```
[root@gluster1 ~]# gluster volume list
volume1

[root@gluster1 ~]# gluster volume status
Status of volume: volume1
Gluster process                         TCP Port  RDMA Port  Online  Pid
------------------------------------------------------------------------------
Brick gluster1.example.com:/gluster/brick1  49152     0          Y       4673
Brick gluster2.example.com:/gluster/brick1  49152     0          Y       3545
Self-heal Daemon on localhost               N/A       N/A        Y       4694
Self-heal Daemon on gluster2.example.com    N/A       N/A        Y       3566

Task Status of Volume volume1
------------------------------------------------------------------------------
There are no active volume tasks

[root@gluster1 ~]# gluster volume stop volume1
Stopping volume will make its data inaccessible. Do you want to continue? (y/n)
y
volume stop: volume1: success
```

```
[root@gluster1 ~]# gluster volume status
Volume volume1 is not started

[root@gluster1 ~]# gluster volume delete volume1
```

```
[root@gluster1 ~]# rm -rf /gluster/brick1/file1
```
```

[root@gluster2 ~]# rm -rf /gluster/brick1/file1

**Now for distributed volume**
``````````````````````````

[root@gluster1 ~]# gluster volume create  volume2 gluster1:/gluster/brick2 gluster2:/gluster/brick2 **force**
volume create: volume2: success: please start the volume to access data

[root@gluster1 ~]# gluster volume status
Volume volume2 is not started

[root@gluster2 ~]# gluster volume status
Volume volume2 is not started

[root@gluster1 ~]# gluster volume start volume2
``````````````````````````

volume start: volume2: success

[root@gluster2 ~]# gluster volume status
Volume volume2 is not started

[root@gluster2 ~]# gluster volume status
Status of volume: volume2
Gluster process TCP Port RDMA Port Online Pid
---
Brick gluster1:/gluster/brick2 49152 0 Y 2317
Brick gluster2:/gluster/brick2 49152 0 Y 4110

Task Status of Volume volume2
---
There are no active volume tasks

[root@gluster1 ~]# gluster volume info

Volume Name: volume2
Type: **Distribute**
Volume ID: 00197e46-1654-4c1b-941a-23a1b16628d4
Status: Started
Snapshot Count: 0
Number of Bricks: 2
Transport-type: tcp
Bricks:
Brick1: gluster1:/gluster/brick2
Brick2: gluster2:/gluster/brick2
Options Reconfigured:
transport.address-family: inet
storage.fips-mode-rchecksum: on
nfs.disable: on

[root@gluster-client ~]# mkdir /mnt/volume2

[root@gluster-client ~]# mount -t glusterfs gluster1:volume2 /mnt/volume2/

[root@gluster-client ~]# mount | grep volume2
gluster1:**volume2** on /mnt/**volume2** type fuse.glusterfs
(rw,relatime,user_id=0,group_id=0,default_permissions,allow_other,max_read=
131072)

[root@gluster-client ~]# df -h /mnt/volume2/
Filesystem Size Used Avail Use% Mounted on
gluster1:volume2 34G 8.7G 26G 26% /mnt/volume2

Checking output
```

[root@gluster-client ~]# echo "this is distributed file " > /mnt/volume2/file.txt

[root@gluster-client ~]# cat /mnt/volume2/file.txt
this is distributed file

[root@gluster1 ~]# ls /gluster/brick2/ // no file found in
gluster1
[root@gluster1 ~]#

[root@gluster2 ~]# ls /gluster/brick2/ // file distributed in
gluster2
file.txt
[root@gluster2 ~]# cat /gluster/brick2/file.txt
this is distributed file

More output: files are purely distributed
```

```
[root@gluster-client ~]# cd /mnt/volume2/

[root@gluster-client volume2]# ls
file.txt

[root@gluster-client volume2]# touch f3 f4 f5 f6 f7 f8 f9 f10 f11

[root@gluster-client volume2]# ls
f10  f11  f3  f4  f5  f6  f7  f8  f9  file.txt
```

```
[root@gluster1 ~]# cd /gluster/brick2/

[root@gluster1 brick2]# ls
f4  f6  f7  f8  f9
```

```
[root@gluster2 ~]# cd /gluster/brick2/
[root@gluster2 brick2]# ls
f10  f11  f3  f5  file.txt
```

One more lil example

```
[root@gluster-client volume2]# mkdir distributed_directory

[root@gluster-client distributed_directory]# touch 1 2 3 4 5 6 7 8 9 1- 11 12 13
14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30


[root@gluster-client distributed_directory]# ls
1   11  13  15  17  19  20  22  24  26  28  3   4  6  8
1-  12  14  16  18  2   21  23  25  27  29  30  5  7  9
```

[root@gluster1 brick2]# ls distributed_directory/
1-  12  14  15  16  17  2  21  22  25  29  3  30  4  6

[root@gluster2 brick2]# ls distributed_directory/
1  11  13  18  19  20  23  24  26  27  28  5  7  8  9

Mount and deleting dir
```

[root@gluster-client ~]# umount /mnt/volume2/

[root@gluster-client ~]# rm -rf /mnt/volume2/

[root@gluster1 ~]# gluster volume stop volume2
Stopping volume will make its data inaccessible. Do you want to continue? (y/n)
y
volume stop: volume2: success

[root@gluster1 ~]# gluster volume delete volume2

[root@gluster1 ~]# rm -rf /gluster/brick2/

[root@gluster2 ~]# rm -rf /gluster/brick2
```

Explore glisters help
```

[root@gluster1 ~]# gluster --help

[root@gluster1 ~]# gluster peer help

[root@gluster1 ~]# gluster peer help

[root@gluster1 ~]# gluster peer list

[root@gluster1 ~]# gluster peer detach gluster2

[root@gluster1 ~]# gluster pool list

[root@gluster1 ~]# gluster volume help
```

# Quota in glusterfs volumes

[root@gluster1 ~]#  gluster peer probe gluster2.example.com
peer probe: success.

[root@gluster1 ~]# gluster volume create  volume1 gluster1:/gluster/brick2 gluster2:/gluster/brick2 force

[root@gluster1 ~]# gluster volume start  volume1 force

[root@gluster1 ~]# gluster volume status

[root@gluster1 ~]# gluster volume info

Volume Name: volume1
Type: **Replicate**
Volume ID: 679f56d8-5842-45f8-8b52-5a9e4c9d007d
Status: Started
Snapshot Count: 0
Number of Bricks: 1 x 2 = 2
Transport-type: tcp
Bricks:
**Brick1: gluster1:/gluster/brick1**
**Brick2: gluster2:/gluster/brick1**
Options Reconfigured:
transport.address-family: inet
storage.fips-mode-rchecksum: on
nfs.disable: on
performance.client-io-threads: off

[root@gluster-client ~]# mkdir /mnt/volume1

[root@gluster-client ~]# mkdir /mnt/volume1

[root@gluster-client ~]# mount -t glusterfs gluster1:volume1 /mnt/volume1/

[root@gluster-client ~]# df -h /mnt/volume1/
Filesystem Size Used Avail Use% Mounted on
gluster1:volume1 **17G 4.9G** 13G 29% /mnt/volume1

[root@gluster-client ~]# df -hP .

Enabling quota, can set on whole **volume** or only in **directory**
```

[root@gluster1 ~]# gluster volume quota volume1 list
quota command failed : Quota is disabled, please enable quota

[root@gluster1 ~]# gluster volume quota volume1 enable
volume quota : success

[root@gluster1 ~]# gluster volume quota volume1 list
quota: No quota configured on volume volume1

[root@gluster1 ~]# gluster volume quota volume1 limit-usage / 20MB
// assign 20m quota on /
volume quota : success
```

```
[root@gluster-client ~]# df -h /mnt/volume1/
Filesystem        Size  Used Avail Use% Mounted on
gluster1:volume1   20M     0   20M   0% /mnt/volume1
```

Now
```
[root@gluster-client ~]# cd /mnt/volume1/

[root@gluster-client volume1]# mkdir data1
[root@gluster-client volume1]# mkdir data2
```

```
[root@gluster1 brick1]# gluster volume quota volume1 limit-usage /data1 5MB
volume quota : success

[root@gluster1 brick1]#
[root@gluster1 brick1]# gluster volume quota volume1 limit-usage /data2 10MB
volume quota : success
```

```
[root@gluster-client ~]# df -hP /mnt/volume1/
Filesystem        Size  Used Avail Use% Mounted on
gluster1:volume1   20M     0   20M   0% /mnt/volume1
```

```
[root@gluster-client ~]# df -hP /mnt/volume1/data1
Filesystem        Size  Used Avail Use% Mounted on
gluster1:volume1  5.0M     0  5.0M   0% /mnt/volume1
```

```
[root@gluster-client ~]# df -hP /mnt/volume1/data2
Filesystem        Size  Used Avail Use% Mounted on
gluster1:volume1   10M     0   10M   0% /mnt/volume1
```

```
[root@gluster1 brick1]# gluster volume quota volume1 list
                  Path                   Hard-limit  Soft-limit      Used  Available  Soft-limit
exceeded? Hard-limit exceeded?
-------------------------------------------------------------------------------
-------------------------------------------------
/                                       20.0MB     80%(16.0MB)   0Bytes  20.0MB           No
No
/data1                                   5.0MB     80%(4.0MB)    0Bytes   5.0MB           No
No
/data2                                  10.0MB     80%(8.0MB)    0Bytes  10.0MB           No
No
```

Checking quota

```
```

**DATA 1**

```
[root@gluster-client ~]# cd /mnt/volume1/data1
```

```
[root@gluster-client data1]# df -h .
Filesystem        Size  Used Avail Use% Mounted on
gluster1:volume1  5.0M     0  5.0M   0% /mnt/volume1
```

```
[root@gluster-client data1]# dd if=/dev/urandom of=myfile1 bs=5MB count=1
```

```
[root@gluster-client data1]# ls -lh
total 4.8M
-rw-r--r--. 1 root root 4.8M Jul 31 19:56 myfile1

[root@gluster-client data1]# ls -l
total 4883
-rw-r--r--. 1 root root 5000000 Jul 31 19:56 myfile1

[root@gluster-client data1]# du -sh myfile1
4.8M    myfile1
```

[root@gluster-client data1]# df -hP .
Filesystem Size Used Avail Use% Mounted on
gluster1:volume1 5.0M 4.8M 240K **96**% /mnt/volume1

[root@gluster1 ~]# gluster volume quota volume1 list
Path Hard-limit Soft-limit Used Available Soft-limit exceeded? Hard-limit exceeded?
---
/ 20.0MB 80%(16.0MB) 4.8MB 15.2MB No No
**/data1 5.0MB 80%(4.0MB) 4.8MB 237.0KB Yes No**
/data2 10.0MB 80%(8.0MB) 0Bytes 10.0MB No No

[root@gluster-client data1]# ls -lh
total 4.8M
-rw-r--r--. 1 root root 4.8M Jul 31 20:03 myfile1

[root@gluster-client data1]# dd if=/dev/urandom of=myfile2 bs=2MB count=1
// again file of 2mb forcefully

[root@gluster-client data1]# ls -lh
total 6.7M
-rw-r--r--. 1 root root 4.8M Jul 31 20:03 myfile1
-rw-r--r--. 1 root root **2.0M** Jul 31 20:06 myfile2

[root@gluster-client data1]# df -h .
Filesystem Size Used Avail Use% Mounted on
gluster1:volume1 **5.0M 5.0M 0** 100% /mnt/volume1

[root@gluster1 ~]# gluster volume quota volume1 list
Path Hard-limit Soft-limit Used Available Soft-limit exceeded? Hard-limit exceeded?
---

/ 20.0MB 80%(16.0MB) 6.7MB 13.3MB No
No
**/data1 5.0MB 80%(4.0MB) 6.7MB 0Bytes Yes**
**Yes**
/data2 10.0MB 80%(8.0MB) 0Bytes 10.0MB No
No

[root@gluster-client data1]# dd if=/dev/urandom of=myfile3 bs=2MB count=1
dd: failed to open **'myfile3': Disk quota exceeded**
**//LOL**

[root@gluster1 ~]# gluster volume quota volume1 disable

## Extent or shrink glisters volume for distributed volume

```
[root@gluster-client volume1]# pwd
/mnt/volume1

[root@gluster-client volume1]# touch file{1..4}

[root@gluster-client volume1]# ls
file1  file2  file3  file4



[root@gluster1 gluster]# cd brick1

[root@gluster1 brick1]# ls
file1  file2  file3  file4
```