
Create a Redundant Storage Pool Using GlusterFS on Ubuntu Servers

Redundancy and high availability are necessary for a very wide variety of server activities. Having a single point of failure in terms of data storage is a very dangerous configuration for any critical data.

While many databases and other software allows you to spread data out in the context of a single application, other systems can operate on the filesystem level to ensure that data is copied to another location whenever it is written to disk. A clustered storage solution like **GlusterFS** provides this exact functionality.

A clustered environment allows you to pool resources (generally either computing or storage) in order to allow you to treat various computers as a single, more powerful unit. With GlusterFS, we are able to pool the storage of various VPS instances and access them as if it were a single server.

GlusterFS allows you to create different kinds of storage configurations, many of which are functionally similar to RAID levels. For instance, you can stripe data across different nodes in the cluster, or you can implement redundancy for better data availability.

- 1) Replicate*
- 2) Distribute*

server configuration

note ::

if it is docker container, then run with `--privileged` , `-v volume` (for mount to container)

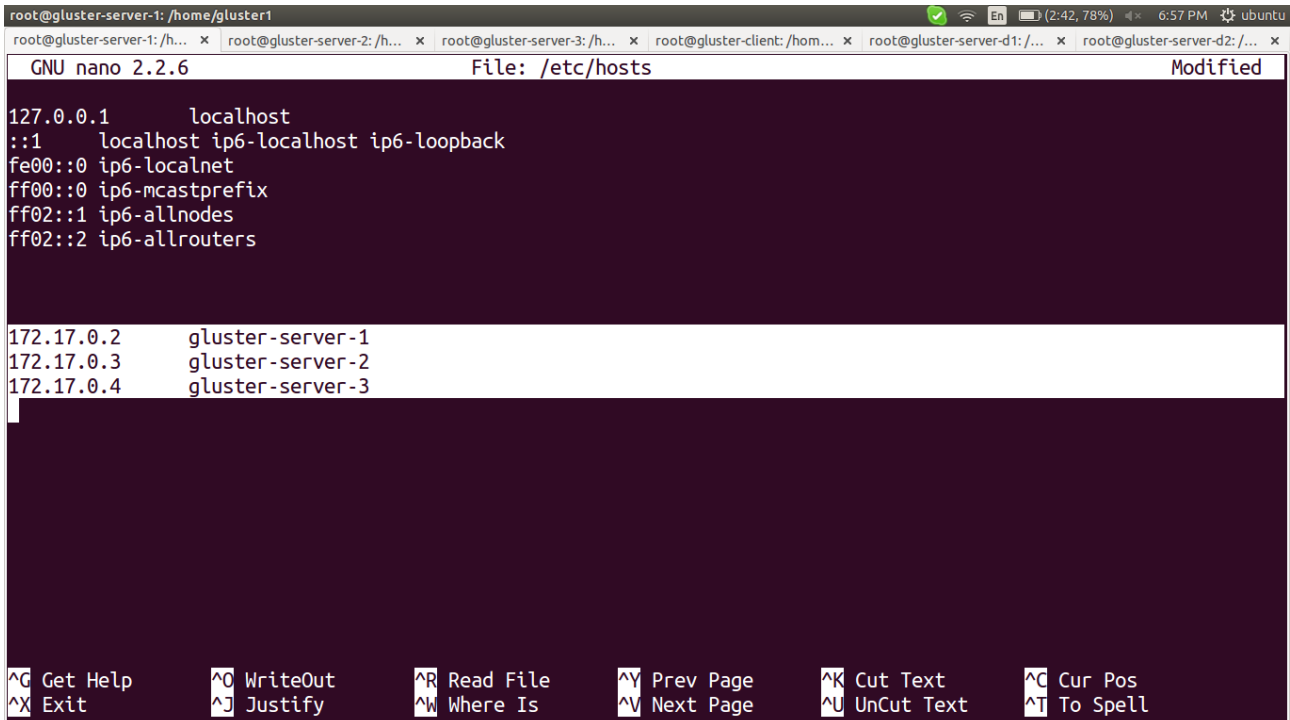
eg :: `docker run -it --privileged -v /home/gluster1 --name gluster-server-1 --hostname gluster-server-1 ubuntu:14.04 /bin/bash`

give hostname and FQDN

nano /etc/hostname
nano /etc/hosts

edit /etc/hosts for given all node name

nano /etc/hosts



```
root@gluster-server-1: /home/gluster1
root@gluster-server-1: /h... x root@gluster-server-2: /h... x root@gluster-server-3: /h... x root@gluster-client: /hom... x root@gluster-server-d1: /... x root@gluster-server-d2: /... x
GNU nano 2.2.6 File: /etc/hosts Modified
127.0.0.1 localhost
::1 localhost ip6-localhost ip6-loopback
fe00::0 ip6-localnet
ff00::0 ip6-mcastprefix
ff02::1 ip6-allnodes
ff02::2 ip6-allrouters

172.17.0.2 gluster-server-1
172.17.0.3 gluster-server-2
172.17.0.4 gluster-server-3

^G Get Help ^O WriteOut ^R Read File ^V Prev Page ^K Cut Text ^C Cur Pos
^X Exit ^J Justify ^W Where Is ^N Next Page ^U UnCut Text ^T To Spell
```

in my case, i created 3 server-nodes,
like this edit /etc/hosts on all remaining nodes

apt-get update

apt-get install glusterfs-server

/etc/init.d/glusterfs-server start

glusterfs --version

Once this is installed on both nodes, we can begin to set up our storage volume.

On one of the hosts, we need to peer with the second host. It doesn't matter which server you use, but we will be performing these commands from our gluster-server-1 server for simplicity:

gluster peer probe gluster-server-2

gluster peer probe gluster-server-3

gluster peer status

do this on each node, need not probe the gluster-server-21 in gluster-server-1 node, similarly in other nodes.

If it is success, it shows some result like follows,

peer probe: success

```
root@gluster-server-1: /home/gluster1
root@gluster-server-1:/home/gluster1# gluster peer status
Number of Peers: 2

Hostname: gluster-server-3
Uuid: 27e7eb22-0219-40b2-ae7c-dba319dd7bfb
State: Peer in Cluster (Connected)

Hostname: gluster-server-2
Uuid: 091e7640-eef3-422e-b9f3-594e0965da55
State: Peer in Cluster (Connected)
root@gluster-server-1:/home/gluster1#
```

Create a Storage Volume

Two types::

- 1) Replicate*
- 2) Distribute*

create the directories first for creating volume

1) Replicate >>

```
# gluster volume create volume_name replica num_of_servers transport tcp
domain1.com:/path/to/data/directory domain2.com:/path/to/data/directory ... force
```

eg ::

```
# gluster volume create gluster-volume replica 3 transport tcp gluster-server-1:/home/gluster1
gluster-server-2:/home/gluster2 gluster-server-3:/home/gluster3 force
```

here “gluster-volume” is my volume's name

2) Distribute >>

for testing i created another 2 server-nodes for demonstrate distribute, but i didnt mentioned here, it is easy to create, all steps are same except the below command.

just remove the replica portion from the above command,

```
# gluster volume create gluster-volum ed transport tcp gluster-server-d1:/home/glusterd1 gluster-server-d2:/home/glusterd2 force
```

here “gluster-volumed” is my volume's name

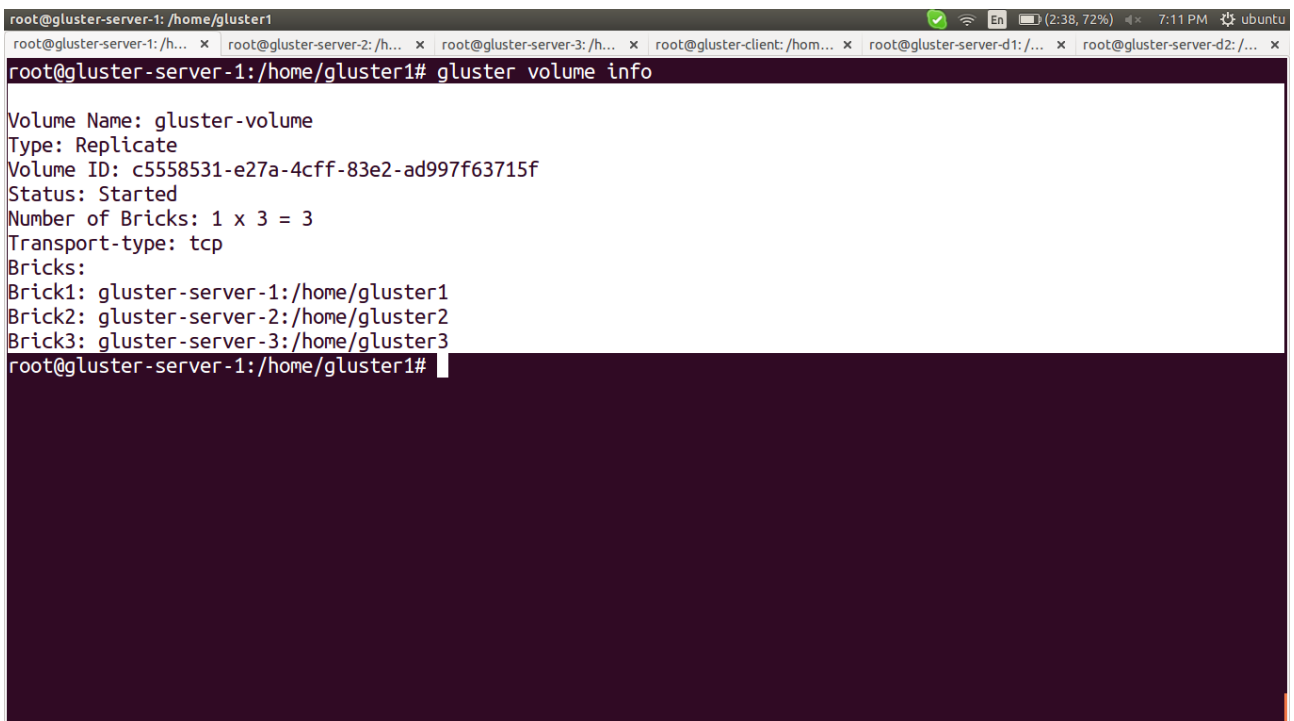
if it is success, then output become

volume create: gluster-volume: success: please start the volume to access data

```
# gluster volume start gluster-volume
```

to see the volume info,

```
# gluster volume info
```

A terminal window screenshot showing the output of the 'gluster volume info' command. The terminal has a dark purple background. The command prompt is 'root@gluster-server-1:/home/gluster1#'. The output text is as follows:

```
Volume Name: gluster-volume
Type: Replicate
Volume ID: c5558531-e27a-4cff-83e2-ad997f63715f
Status: Started
Number of Bricks: 1 x 3 = 3
Transport-type: tcp
Bricks:
Brick1: gluster-server-1:/home/gluster1
Brick2: gluster-server-2:/home/gluster2
Brick3: gluster-server-3:/home/gluster3
root@gluster-server-1:/home/gluster1#
```

The terminal window also shows several open tabs at the top, including 'root@gluster-server-1:/home/gluster1', 'root@gluster-server-2:/home/gluster2', 'root@gluster-server-3:/home/gluster3', 'root@gluster-client:/home/gluster-client', 'root@gluster-server-d1:/home/glusterd1', and 'root@gluster-server-d2:/home/glusterd2'. The system status bar at the top right shows '2:38, 72%' battery, '7:11 PM', and 'ubuntu'.

Install and Configure the Client Components

Now that we have our volume configured, it is available for use by our client machine.

apt-get install glusterfs-client

This will install the client application, and also install the necessary fuse filesystem tools necessary to provide filesystem functionality outside of the kernel.

We are going to mount our remote storage volume on our client computer. In order to do that, we need to create a mount point. Traditionally, this is in the /mnt directory, but anywhere convenient can be used.

mkdir /home/gluster -client *# for Replicate, , no need if you do with distribute only*

mkdir /home/gluster-clientd *# for Distribute, no need if you do with replicate only*

then, mount

sudo mount -t glusterfs "domain1.com:volume_name" "path_to_mount_point"

Notice that we are using the volume name in the mount command. GlusterFS abstracts the actual storage directories on each host. We are not looking to mount the /gluster1 directory, but the gluster-volume volume.

mount -t glusterfs gluster-server-1:gluster-volume /home/gluster-client *# for replicate*

mount -t glusterfs gluster-server-d1:/gluster-volumed /home/gluster-clientd *# for distribute*

ensure that mounted by,

df -h

```
root@gluster-client: /home/gluster-clientd
root@gluster-server-1:/h... x root@gluster-server-2:/h... x root@gluster-server-3:/h... x root@gluster-client:/hom... x root@gluster-server-d1:/... x root@gluster-server-d2:/... x
root@gluster-client:/home/gluster-clientd# df -h
Filesystem                Size      Used Avail Use% Mounted on
none                      127G      53G   68G  44% /
tmpfs                     1.9G         0  1.9G   0% /dev
tmpfs                     1.9G         0  1.9G   0% /sys/fs/cgroup
gluster-server-1:/gluster-volume 127G      53G   68G  44% /home/gluster-client
/dev/sda7                 127G      53G   68G  44% /etc/hosts
shm                       64M         0   64M   0% /dev/shm
gluster-server-d1:/gluster-volumed 253G     105G   136G  44% /home/gluster-clientd
root@gluster-client:/home/gluster-clientd#
```

Testing

1) Replicate ::

cd /home/gluster-client

touch new{1..20}

ls

```
root@gluster-client: /home/gluster-client
root@gluster-server-1:/h... x root@gluster-server-2:/h... x root@gluster-server-3:/h... x root@gluster-client:/hom... x root@gluster-server-d1:/... x root@gluster-server-d2:/... x
root@gluster-client:/home/gluster-client# touch new{1..20}
root@gluster-client:/home/gluster-client# ls
new1 new10 new11 new12 new13 new14 new15 new16 new17 new18 new19 new2 new20 new3 new4 new5 new6
root@gluster-client:/home/gluster-client#
```

check in all server-node, it will reflect

for gluster-server-1 >>

```
root@gluster-server-1: /home/gluster1
root@gluster-server-1: /home/gluster1# ls
new1 new10 new11 new12 new13 new14 new15 new16 new17 new18 new19 new2 new20 new3 new4 new5 new6 new7 new8 new9
root@gluster-server-1: /home/gluster1#
```

for gluster-server-2 >>

```
root@gluster-server-2: /home/gluster2
root@gluster-server-2: /home/gluster2# ls
new1 new10 new11 new12 new13 new14 new15 new16 new17 new18 new19 new2 new20 new3 new4 new5 new6 new7 new8 new9
root@gluster-server-2: /home/gluster2#
```

for gluster-server-3 >>

```
root@gluster-server-3: /home/gluster3
root@gluster-server-1:/h... x root@gluster-server-2:/h... x root@gluster-server-3:/h... x root@gluster-client:/hom... x root@gluster-server-d1:/... x root@gluster-server-d2:/... x
root@gluster-server-3:/home/gluster3# ls
new1 new10 new11 new12 new13 new14 new15 new16 new17 new18 new19 new2 new20 new3 new4 new5 new6 new7 new8 new9
root@gluster-server-3:/home/gluster3#
```

2) for Distribute ::

cd /home/gluster-clientd

touch test{1..15}

ls


```
root@gluster-client: /home/gluster-clientd
root@gluster-server-1:/h... x root@gluster-server-2:/h... x root@gluster-server-3:/h... x root@gluster-client:/hom... x root@gluster-server-d1:/... x root@gluster-server-d2:/... x
root@gluster-client:/home/gluster-clientd# touch test{1..15}
root@gluster-client:/home/gluster-clientd# ls
test1 test10 test11 test12 test13 test14 test15 test2 test3 test4 test5 test6 test7 test8 test9
root@gluster-client:/home/gluster-clientd#
```

for gluster-server-d1 >>

```
root@gluster-server-d1: /home/glusterd1
root@gluster-server-1:/h... x root@gluster-server-2:/h... x root@gluster-server-3:/h... x root@gluster-client:/hom... x root@gluster-server-d1:/... x root@gluster-server-d2:/... x
root@gluster-server-d1:/home/glusterd1# ls
test1 test13 test2 test4 test5 test8 test9
root@gluster-server-d1:/home/glusterd1#
```

for gluster-server-d2 >>

```
root@gluster-server-d2: /home/glusterd2
root@gluster-server-1:/h... x root@gluster-server-2:/h... x root@gluster-server-3:/h... x root@gluster-client:/hom... x root@gluster-server-d1:/... x root@gluster-server-d2:/... x
root@gluster-server-d2:/home/glusterd2# ls
test10 test11 test12 test14 test15 test3 test6 test7
root@gluster-server-d2:/home/glusterd2#
```

for more options ::

<https://www.digitalocean.com/community/tutorials/how-to-create-a-redundant-storage-pool-using-glusterfs-on-ubuntu-servers>

links::

<https://www.digitalocean.com/community/tutorials/how-to-create-a-redundant-storage-pool-using-glusterfs-on-ubuntu-servers>

https://www.server-world.info/en/note?os=Ubuntu_14.04&p=glusterfs

<https://www.youtube.com/watch?v=D76miE2HaK4>

for docker:: error solution

<http://neependra.net/?p=1048>