Installing GlusterFS on the Personal Compute Cluster

September 14, 2019 (https://diybigdata.net/2019/09/installing-glusterfs-on-compute-cluster/)
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When I set up the personal computer cluster (https://diybigdata.net/personal-compute-cluster-2019-edition/)'s individual nodes, the SSD was set up to have three partitions. The partition mounted at `/mnt/brick` will be used to set up a GlusterFS volume (https://www.gluster.org). This GlusterFS volume will be used to persist data for services we run on the Docker Swarm that was previously set up on the cluster (https://diybigdata.net/2019/09/setting-up-a-docker-swarm/).

The GlusterFS software needs to be installed on all of the nodes in the cluster. Here is here `pssh` makes it easy to set up all nodes at the same time.

Shell

```
1 parallel-ssh -i -h ~/cluster/all.txt -l root "apt-get update"
2 parallel-ssh -i -h ~/cluster/all.txt -l root "apt-get install -y softw
3 parallel-ssh -i -h ~/cluster/all.txt -l root "add-apt-repository ppa:g
4 parallel-ssh -i -h ~/cluster/all.txt -l root "apt-get update"
5 parallel-ssh -i -h ~/cluster/all.txt -l root "apt-get install -y xfspr
6 parallel-ssh -i -h ~/cluster/all.txt -l root "systemctl start glusterd
7 parallel-ssh -i -h ~/cluster/all.txt -l root "systemctl enable gluster
```

Now set up the GlusterFS volume from the master node and set the the master node's firewall to enable all traffic from within the cluster's LAN:

Shell

```
sudo ufw allow from 10.1.1.0/24
sudo ufw reload
sudo gluster peer probe node1
sudo gluster peer probe node2
sudo gluster peer probe node3
sudo gluster peer probe node4
sudo gluster pool list
```

With the last command, you should see the list of nodes all connected. `node1` will be listed as localhost since you are currently on it. The next step is to create a GlusterFS volume. First a folder on the `/mnt/brick` partition is created on every node, then the volume is created:

Shell

```
parallel-ssh -i -h ~/cluster/all.txt -l root "mkdir /mnt/brick/1/"
sudo gluster volume create gfs01 \
  node1:/mnt/brick/1/ \
  node2:/mnt/brick/1/ \
  node3:/mnt/brick/1/ \
  node4:/mnt/brick/1/
sudo gluster volume list
```

Note that the GlusterFS volume is created to be a distributed volume. You could create it as a replicated volume in order to have data reliability, though this would create higher latency on writes. The last command will show if the volume `gfs01` is available. If it was created with no problem, start the volume and grant access to it with:

Shell

```
sudo gluster volume start gfs01
sudo gluster volume set gfs01 auth.allow 10.1.1.1,10.1.1.2,10.1.1.3,10
```

Finally, mount the GlusterFS volume to the `/mnt/gfs` mount point and set it up to remount on reboots:

Shell

```
parallel-ssh -i -h ~/cluster/all.txt -l root "mkdir -p /mnt/gfs"
parallel-ssh -i -h ~/cluster/all.txt -l root "mount.glusterfs localhos
parallel-ssh -i -h ~/cluster/all.txt -l root "echo 'localhost:/gfs01 /
parallel-ssh -i -h ~/cluster/all.txt -l root "chown -R root:docker /mn
parallel-ssh -i -h ~/cluster/all.txt -l root "chmod g+w /mnt/gfs"
```

Check that everything mounted OK:

```
Shell
1 parallel-ssh -i -h ~/cluster/all.txt -l michael "df -h"
```

You should see on every node that `/mnt/gfs` is mounted to the GlusterFS volume `gfs01`. That's it. The mount `/mnt/gfs` can be used like any other directory on each node except that the contents of this mount will be identical on all nodes in the cluster.

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