06.GlusterFS

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1 Introduction

This report outlines 3 tasks:

- Set up GlusterFS

- Create a distributed replicated volume

- Perform benchmarks (small and large files)

2 Setup Commands

2.1 GlusterFS Installation

Install GlusterFS on 2 Virtual Machines:

```
sudo apt update
sudo apt install -y glusterfs-server
sudo systemctl enable --now glusterd
```

IP addresses for the VMs:

- VM 1: 192.168.88.241

- VM 2: 192.168.88.236

2.2 Creating a Trusted Pool

Add nodes to the GlusterFS trusted pool:

```
sudo gluster peer probe 192.168.88.236
sudo gluster peer status
```

Output:

```
Number of Peers: 1
State: Peer in Cluster (Connected)
```

2.3 Volume Creation and Start

Create a replicated GlusterFS volume:

```
sudo gluster volume create volname replica 2 transport tcp \
192.168.88.241:/data/glusterfs/brick1 \
192.168.88.236:/data/glusterfs/brick1 force
```

Output:

```
volume create: volname: success: please start the volume to
    access data
```

Start the replicated GlusterFS volume:

```
sudo gluster volume start volname
```

3 Perform Benchmarks

3.1 Small Files

```
fio --name=smallfile --directory=/mnt/glusterfs --rw=
    randwrite --bs=4k \
--size=10M --numjobs=4 --time_based --runtime=30 --
    group_reporting
```

Results:

```
WRITE: bw=14.4MiB/s (15.1MB/s), io=432MiB (453MB), run=30002
    msec
```

$$\text{IOPS} = \frac{\text{Bandwidth (in KB/s)}}{\text{Block Size (in KB)}} = \frac{14,745.6}{4} = 3686 \text{ IOPS} \tag{1}$$

So, the system achieved 3686 random write accesses per second with 2 servers.

3.2 Large Files

```
dd if=/dev/zero of=/mnt/glusterfs/largefile bs=1M count=1000
    oflag=direct
```

Results:

```
1048576000 bytes (1.0 GB, 1000 MiB) copied, 8.78928 s, 119 MB
    /s
```

The benchmark for large files showed a read speed of 119 MB/s with 2 servers.

4 Conclusion

GlusterFS was successfully set up and tested for basic benchmarks.