**(CODING)**

**1. SERVER-SIDE SETUP (SERVER1 & SERVER2)**

**Install GlusterFS Server**

sudo apt update

sudo apt install glusterfs-server -y

sudo systemctl start glusterd

sudo systemctl enable glusterd

**Configure Static IP on Server1 (IP: 192.168.1.105)**

sudo nano /etc/netplan/01-netcfg.yaml

**Add the following:**

network:

version: 2

renderer: networkd

ethernets:

enp0s3:

dhcp4: no

addresses:

- 192.168.1.105/24

gateway4: 192.168.1.1

nameservers:

addresses:

- 8.8.8.8

- 8.8.4.4

sudo netplan apply

**Configure Static IP on Server2 (IP: 192.168.1.106)**

sudo nano /etc/netplan/01-netcfg.yaml

Add the following:

network:

version: 2

renderer: networkd

ethernets:

enp0s3:

dhcp4: no

addresses:

- 192.168.1.106/24

gateway4: 192.168.1.1

nameservers:

addresses:

- 8.8.8.8

- 8.8.4.4

sudo netplan apply

**Prepare Brick Directory**

sudo mkdir -p /data/brick

**Probe Servers and Create Volume**

sudo gluster peer probe 192.168.1.106

sudo gluster peer probe 192.168.1.105

**Create GlusterFS Replicated Volume**

sudo gluster volume create storage2 replica 2 transport tcp 192.168.1.105:/data/brick 192.168.1.106:/data/brick force

**Start GlusterFS Volume**

sudo gluster volume start storage2

**Verify GlusterFS Volume**

sudo gluster volume info storage2

**2. INSTALL MYSQL SERVER AND CREATE DATABASE FOR METADATA**

Install MySQL

sudo apt update

sudo apt install mysql-server -y

sudo systemctl start mysql

sudo systemctl enable mysql

**Create Database and Table for Metadata**

sudo mysql -u root -p

CREATE DATABASE glusterfs\_metadata;

USE glusterfs\_metadata;

CREATE TABLE file\_metadata (

id INT AUTO\_INCREMENT PRIMARY KEY,

filename VARCHAR(255) NOT NULL,

filepath VARCHAR(255) NOT NULL,

size BIGINT NOT NULL,

created\_at TIMESTAMP DEFAULT CURRENT\_TIMESTAMP

);

GRANT ALL PRIVILEGES ON glusterfs\_metadata.\* TO 'gluster\_user'@'%' IDENTIFIED BY 'your\_password';

FLUSH PRIVILEGES;

EXIT;

**3. INSTALL SAMBA FOR FILE SHARING**

Install Samba

sudo apt install samba -y

**Configure Samba**

sudo nano /etc/samba/smb.conf

Add the following:

[glusterfs]

path = /mnt/gluster

browseable = yes

read only = no

guest ok = yes

**Set Permissions**

sudo chmod -R 0777 /mnt/gluster

**Restart Samba Service**

sudo systemctl restart smbd

**Verify Samba Share**

From Windows or another server:

\\192.168.1.105\glusterfs

**4. INSTALL PHP AND MYSQL EXTENSION**

**Install PHP and MySQL Extension**

sudo apt install php php-mysqli -y

**Create PHP Script for Metadata Insertion**

sudo nano /var/www/html/file\_metadata.php

Paste the following PHP code into the file:

<?php

// Database credentials

$servername = "localhost";

$username = "gluster\_user";

$password = "your\_password";

$dbname = "glusterfs\_metadata";

// Create connection

$conn = new mysqli($servername, $username, $password, $dbname);

// Check connection

if ($conn->connect\_error) {

die("Connection failed: " . $conn->connect\_error);

}

// Check if a file has been uploaded

if (isset($\_FILES['file'])) {

// File metadata

$filename = $\_FILES["file"]["name"];

$filepath = "/mnt/gluster/" . $filename; // Modify according to your mount point

$size = $\_FILES["file"]["size"];

// Move the uploaded file to the GlusterFS mount point

if (move\_uploaded\_file($\_FILES["file"]["tmp\_name"], $filepath)) {

// Prepare and bind

$stmt = $conn->prepare("INSERT INTO file\_metadata (filename, filepath, size) VALUES (?, ?, ?)");

$stmt->bind\_param("ssi", $filename, $filepath, $size);

// Execute the statement

if ($stmt->execute()) {

echo "New record created successfully.";

} else {

echo "Error: " . $stmt->error;

}

// Close statement

$stmt->close();

} else {

echo "File upload failed.";

}

} else {

echo "No file uploaded.";

}

// Close the connection

$conn->close();

?>

**Set Correct Permissions for Web Server**

sudo chown -R www-data:www-data /var/www/html/

**5. CLIENT-SIDE SETUP (CLIENT1 & CLIENT2)**

**Install GlusterFS Client**

Install GlusterFS Client

sudo apt update

sudo apt install glusterfs-client -y

**Configure Static IP on Client1 (IP: 192.168.1.101)**

sudo nano /etc/netplan/01-netcfg.yaml

**Add the following:**

network:

version: 2

renderer: networkd

ethernets:

enp0s3:

dhcp4: no

addresses:

- 192.168.1.101/24

gateway4: 192.168.1.1

nameservers:

addresses:

- 8.8.8.8

- 8.8.4.4

sudo netplan apply

**Configure Static IP on Client2 (IP: 192.168.1.102)**

sudo nano /etc/netplan/01-netcfg.yaml

Add the following:

network:

version: 2

renderer: networkd

ethernets:

enp0s3:

dhcp4: no

addresses:

- 192.168.1.102/24

gateway4: 192.168.1.1

nameservers:

addresses:

- 8.8.8.8

- 8.8.4.4

sudo netplan apply

**Mount GlusterFS Volume on Client1**

sudo mkdir -p /mnt/gluster

sudo mount -t glusterfs 192.168.1.105:/storage2 /mnt/gluster

**Mount GlusterFS Volume on Client2**

sudo mkdir -p /mnt/glusterfs

sudo mount -t glusterfs 192.168.1.105:/storage2 /mnt/glusterfs

**Upload Files via cURL**

curl -F "file=@/path/to/your/file.txt" http://192.168.1.105/file\_metadata.php

**Verify File Upload**

Ensure that the file is uploaded and available in the GlusterFS mount point on the server (/mnt/gluster).

**Verify Database Insertion**

sudo mysql -u root -p

SELECT \* FROM file\_metadata;

**Auto-Mount GlusterFS Volume on Client Boot**

sudo nano /etc/fstab

Add the following line:

192.168.1.105:/storage2 /mnt/gluster glusterfs defaults 0 0