

# Steps to Build an NFS Server

## 1. Install NFS Server on Linux (VM or Kubernetes Node)

If you're using a VM or any Linux-based system as the NFS server, you first need to install the NFS server package.

For Ubuntu/Debian:

```
sudo apt update  
sudo apt install -y nfs-kernel-server
```

## 2. Create a Directory to Share

Create a directory that will be shared over NFS. For example:

```
sudo mkdir -p /mnt/data  
sudo chmod 777 /mnt/data  
sudo chown nobody:nogroup /mnt/data
```

## 3. Configure NFS Exports

You'll need to configure the NFS exports to specify which directories you want to share and with which permissions.

Edit the NFS exports file:

```
sudo nano /etc/exports
```

Add the following line to the file, allowing any IP to access the directory (replace `*` with specific IP ranges for security):

```
/mnt/data *(rw,sync,no_subtree_check)
```

- `rw`: Allows read-write access.
- `sync`: Ensures data is written to disk before returning a response.
- `no_subtree_check`: Prevents checking the file system for each request (to improve performance).

## 4. Export the Shared Directory

After editing the `/etc/exports` file, export the shared directories with the following command:

```
sudo exportfs -a
```

To confirm that the export was successful, run:

```
sudo exportfs -v
```

## 5. Start NFS Server

Start and enable the NFS server to run on boot:

For Ubuntu/Debian:

```
sudo systemctl enable nfs-kernel-server  
sudo systemctl start nfs-kernel-server
```

## 6. Check if the NFS Server Service is Running

Log in to the NFS server and verify that the required services are active.

For most systems:

```
sudo systemctl status nfs-server
```

## Test Port Accessibility

Ensure that the required NFS ports are open on the NFS server and accessible from the client.

Check the NFS Ports:

```
sudo rpcinfo -p
```

Look for services like `nfs`, `mountd`, and `portmapper` in the output.

Example:

```
program vers proto  port  service
100000  4  tcp    111  portmapper
100005  1  udp   20048  mountd
100003  3  tcp   2049  nfs
```

## 7. Open Ports in Firewall (if applicable)

If you're using a firewall, open the necessary ports to allow NFS traffic. The typical ports used for NFS are `2049` (NFS) and `111` (RPC).

For UFW (Ubuntu firewall):

```
sudo ufw allow from any to any port nfs
```

## 8. Test the NFS Share

From another machine (which will act as the client), test the NFS share.

Mount the NFS share to a local directory (replace `nfs-server-ip` with the IP of the NFS server):

```
sudo mount -t nfs nfs-server-ip:/mnt/data /mnt
```

You should now be able to read and write files to the `/mnt/data` directory over NFS.

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