

# How to Mount NFS Storage for Docker Containers

## Purpose

Mount a remote NFS share on a Linux server for use by **Docker containers**, ensuring stable operation, correct permissions, and automatic remounting.

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## 1. Install NFS Client on the Server

```
sudo apt update
sudo apt install nfs-common -y
```

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## 2. Create a Local Mount Directory

Create a local directory where the NFS share will be mounted:

```
sudo mkdir -p /srv/nfs-mount
sudo chown $(whoami):$(whoami) /srv/nfs-mount
```

(You can replace `/srv/nfs-mount` with your preferred path.)

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## 3. Mount the NFS Share (Manual Test)

Example:

```
sudo mount -t nfs4 192.168.100.11:/mnt/hdd-storage/my-nfs-share /srv/nfs-mount
```

- `nfs4`: Use NFS version 4 for better performance and locking.
- `proto=tcp`: Reliable transport.
- `hard`: Wait for server recovery instead of failing immediately.
- `timeo=600`: Timeout setting for NFS.
- `retrans=2`: Retry failed operations twice.
- `sec=sys`: Default authentication security.
- `_netdev`: Only mount after network is ready.

## 4. Verify That the Mount Worked

```
mount | grep nfs
```

You should see:

```
192.168.100.11:/mnt/hdd-storage/my-nfs-share on /srv/nfs-mount type nfs4 (...)
```

## 5. Make the Mount Persistent (Auto-Mount on Boot)

Edit your `/etc/fstab` file:

```
sudo nano /etc/fstab
```

Add the following line:

```
192.168.100.11:/mnt/hdd-storage/my-nfs-share /srv/nfs-mount nfs4  
rw,relatime,hard,proto=tcp,timeo=600,retrans=2,sec=sys,_netdev 0 0
```

Save and exit ( `Ctrl+O`, `Enter`, `Ctrl+X` ).

## 6. Test the fstab Entry Without Rebooting

```
sudo mount -a
```

No errors = success ☐

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## 7. Using the NFS Mount with Docker

When running your containers, **bind-mount** your NFS storage into the container:

```
docker run -d \  
  --name my-container \  
  -v /srv/nfs-mount:/app/data \  
  my-docker-image
```

This will allow your Docker containers to directly access the NFS storage.

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## ☐ Summary

- **Use NFSv4** ( `nfs4` ) whenever possible.
  - **Always** include `_netdev` in `/etc/fstab`.
  - **Use `hard` mounts** to protect container file operations during NFS server issues.
  - **Bind-mount** the NFS path inside containers carefully.
  - **Avoid** using NFS for databases unless network latency is very low.
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## ☐☐ Useful Commands

- Mount NFS manually: `sudo mount -t nfs4 server:/path /mountpoint`

- Check current NFS mounts: `mount | grep nfs`
  - Reload fstab: `sudo mount -a`
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## ☐☐ Additional Notes

- If the NFS server reboots, containers may pause if heavily dependent on storage.
  - When using Compose (`docker-compose.yml`), define volumes mapped to NFS mount points.
  - For production, consider using **systemd mount units** for even better recovery handling.
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