How To Set Up an NFS Mount on Ubuntu 12.04

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About NFS (Network File System) Mounts

NFS mounts work to share a directory between several virtual servers. This has the advantage of saving disk space, as the home directory is only kept on one virtual private server, and others can connect to it over the network. When setting up mounts, NFS is most effective for permanent fixtures that should always be accessible.

Setup

An NFS mount is set up between at least two virtual servers. The machine hosting the shared network is called the server, while the ones that connect to it are called "clients".

This tutorial requires 2 servers: one acting as the server and one as the client. We will set up the server machine first, followed by the client. The following IP addresses will refer to each one:

Master: 12.34.56.789
Client: 12.33.44.555

The system should be set up as root. You can access the root user by typing

```
sudo su-
```

Setting Up the NFS Server

Download the Required Software

Start off by using apt-get to install the nfs programs.

```
apt-get install nfs-kernel-server portmap
```

Export the Shared Directory

The next step is to decide which directory we want to share with the client server. The chosen directory should then be added to the /etc/exports file, which specifies both the directory to be shared and the details of how it is shared.

Suppose we wanted to share two directories: /home and /var/nfs.

Because the /var/nfs/ does not exist, we need to do two things before we can export it.

First, we need to create the directory itself:

```
mkdir /var/nfs/
```

Second, we should change the ownership of the directory to the user, nobody and the group, no group. These represent the default user through which clients can access a directory shared through NFS.

Go ahead and chown the directory:

```
chown nobody:nogroup /var/nfs
```

After completing those steps, it"s time to export the directories to the other server:

```
nano /etc/exports
```

Add the following lines to the bottom of the file, sharing both directories with the client:

```
/home            12.33.44.555(rw,sync,no_root_squash,no_subtree_check)
/var/nfs         12.33.44.555(rw,sync,no_subtree_check)
```

These settings accomplish several tasks:

rw: This option allows the client server to both read and write within the shared directory
sync: Sync confirms requests to the shared directory only once the changes have been committed.
no_subtree_check: This option prevents the subtree checking. When a shared directory is the subdirectory of a larger filesystem, nfs performs scans of every directory above it, in order to verify its permissions and details. Disabling the subtree check may increase the reliability of NFS, but reduce security.
no_root_squash: This phrase allows root to connect to the designated directory
Once you have entered in the settings for each directory, run the following command to export them:

```
exportfs -a
```

Setting Up the NFS Client

Download the Required Software

Start off by using apt-get to install the nfs programs.

```
apt-get install nfs-common portmap
```

Step Two—Mount the Directories

Once the programs have been downloaded to the the client server, create the directories that will contain the NFS shared files

```
mkdir -p /mnt/nfs/home
mkdir -p /mnt/nfs/var/nfs
```

Then go ahead and mount them

```
mount 12.34.56.789:/home /mnt/nfs/home
mount 12.34.56.789:/var/nfs /mnt/nfs/var/nfs
```

You can use the df -h command to check that the directories have been mounted. You will see them last on the list.

```
df -h
```

```
Filesystem             Size  Used Avail Use% Mounted on
/dev/sda                20G  948M   19G   5% /
udev                   119M  4.0K  119M   1% /dev
tmpfs                   49M  208K   49M   1% /run
none                   5.0M     0  5.0M   0% /run/lock
none                   122M     0  122M   0% /run/shm
12.34.56.789:/home      20G  948M   19G   5% /mnt/nfs/home
12.34.56.789:/var/nfs   20G  948M   19G   5% /mnt/nfs/var/nfs
```

Additionally, use the mount command to see the entire list of mounted file systems.

```
mount
```

Your list should look something like this:

```
/dev/sda on / type ext4 (rw,errors=remount-ro,barrier=0) [DOROOT]
proc on /proc type proc (rw,noexec,nosuid,nodev)
sysfs on /sys type sysfs (rw,noexec,nosuid,nodev)
none on /sys/fs/fuse/connections type fusectl (rw)
none on /sys/kernel/debug type debugfs (rw)
none on /sys/kernel/security type securityfs (rw)
udev on /dev type devtmpfs (rw,mode=0755)
devpts on /dev/pts type devpts (rw,noexec,nosuid,gid=5,mode=0620)
tmpfs on /run type tmpfs (rw,noexec,nosuid,size=10%,mode=0755)
none on /run/lock type tmpfs (rw,noexec,nosuid,nodev,size=5242880)
none on /run/shm type tmpfs (rw,nosuid,nodev)
rpc_pipefs on /run/rpc_pipefs type rpc_pipefs (rw)
12.34.56.789:/home on /mnt/nfs/home type nfs (rw,vers=4,addr=
12.34.56.789,clientaddr=12.33.44.555)
12.34.56.789:/var/nfs on /mnt/nfs/var/nfs type nfs
(rw,vers=4,addr=12.34.56.78,clientaddr=12.33.44.555)
```

Testing the NFS Mount

Once you have successfully mounted your NFS directories, you can test that they work by creating files on the Client and checking their availability on the Server.

Create a file in each directory to try it out:

```
touch /mnt/nfs/home/example /mnt/nfs/var/nfs/example
```

You should then be able to find the files on the Server in the /home and /var/nfs directories.

```
ls /home
```


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```
ls /var/nfs/
```

You can ensure that the mount is always active by adding the directories to the fstab file on the client. This will ensure that the mounts start up after the server reboots.

```
nano /etc/fstab
```

```
12.34.56.789:/home  /mnt/nfs/home   nfs
auto,noatime,nolock,bg,nfsvers=3,intr,tcp,actimeo=1800 0 0
12.34.56.789:/var/nfs  /mnt/nfs/var/nfs   nfs
auto,noatime,nolock,bg,nfsvers=3,intr,tcp,actimeo=1800 0 0
```

You can learn more about the fstab options by typing in:

```
man nfs
```

Any subsequent restarts will include the NFS mount—although the mount may take a minute to load after the reboot You can check the mounted directories with the two earlier commands:

```
df -h
```

```
mount
```

Removing the NFS Mount

Should you decide to remove a directory, you can unmount it using the umount command:

```
cd
sudo umount / directory name
```

You can see that the mounts were removed by then looking at the filesystem again.

```
df -h
```

You should find your selected mounted directory gone.

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