

NFS

To set up NFS (Network File System) on a Linux server and client, follow these steps:

Steps to Configure NFS on Linux

Step 1: Install NFS Packages

sudo yum install nfs-utils

```
[root@server ~]# yum install nfs-utils
CentOS Stream 9 - BaseOS                               799 B/s | 2.1 kB  00:02
CentOS Stream 9 - BaseOS                               121 kB/s | 8.3 MB 01:10
CentOS Stream 9 - AppStream                             2.2 kB/s | 2.1 kB  00:00
CentOS Stream 9 - AppStream                             251 kB/s | 21 MB  01:24
CentOS Stream 9 - Extras packages                       2.0 kB/s | 8.6 kB  00:04
Dependencies resolved.
=====
Package Architecture Version Repository Size
-----
Installing:
nfs-utils x86_64 1:2.5.4-27.el9 baseos 459 k
Installing dependencies:
gssproxy x86_64 0.8.4-7.el9 baseos 110 k
libev x86_64 4.33-6.el9 baseos 52 k
libnfsidmap x86_64 1:2.5.4-27.el9 baseos 61 k
libverto-libev x86_64 0.3.2-3.el9 baseos 14 k
rpcbind x86_64 1.2.6-7.el9 baseos 58 k
sssd-nfs-idmap x86_64 2.9.5-4.el9 baseos 42 k
Transaction Summary
-----
Install 7 Packages
Total download size: 797 k
Installed size: 1.9 M
Is this ok [y/N]: y
Downloading Packages:
(1/7): libev-4.33-6.el9.x86_64.rpm 112 kB/s | 52 kB 00:00
(2/7): gssproxy-0.8.4-7.el9.x86_64.rpm 213 kB/s | 110 kB 00:00
(3/7): libnfsidmap-2.5.4-27.el9.x86_64.rpm 118 kB/s | 61 kB 00:00
(4/7): libverto-libev-0.3.2-3.el9.x86_64.rpm 191 kB/s | 14 kB 00:00
(5/7): rpcbind-1.2.6-7.el9.x86_64.rpm 890 kB/s | 58 kB 00:00
(6/7): sssd-nfs-idmap-2.9.5-4.el9.x86_64.rpm 752 kB/s | 42 kB 00:00
(7/7): nfs-utils-2.5.4-27.el9.x86_64.rpm 3.7 MB/s | 459 kB 00:00
-----
Total 229 kB/s | 797 kB 00:03
CentOS Stream 9 - BaseOS 1.6 MB/s | 1.6 kB 00:00
Importing GPG key 0x8483C65D:
Userid : "CentOS (CentOS Official Signing Key) <security@centos.org>"
Fingerprint: 99DB 70FA E1D7 CE22 7FB6 4882 05B5 55B3 8483 C65D
From : /etc/pki/rpm-gpg/RPM-GPG-KEY-centosofficial
Is this ok [y/N]: y
```

Step 2: Configure the NFS Export Directory on the Server

Create the Directory to Share

For example, create a directory called /nfs_share:

mkdir -p /nfs_share

```
[root@server ~]# mkdir /nfs_share
```

```
[root@server ~]# cp -r Newfolder /nfs_share
```

Set Permissions for the Directory

chmod 755 /nfs_share *

Edit the /etc/exports File to Configure the Share

Open /etc/exports in a text editor:

vi /etc/exports

Add the following line to specify the shared directory, IP range, and permissions:

/nfs_share 192.168.1.0/24(rw,sync,no_root_squash)

(or)

/nfs_share 192.168.1.0/24(rw, sync)

```
[root@server ~]# ifconfig
ens33: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.88.128 netmask 255.255.255.0 broadcast 192.168.88.255
    inet6 fe80::20c:29ff:fecc:ff84 prefixlen 64 scopeid 0x20<link>
    ether 00:0c:29:cc:ff:84 txqueuelen 1000 (Ethernet)
    RX packets 45654 bytes 64890963 (61.8 MiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 4249 bytes 340939 (332.9 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

```
/nfs_share 192.168.88.131(rw, sync)
```

Apply the Export Configurations

exportfs -ra

Step 3: Start and Enable the NFS Server

systemctl start nfs-server

systemctl enable nfs-server

```
[root@server ~]# systemctl status nfs-server.service
○ nfs-server.service - NFS server and services
   Loaded: loaded (/usr/lib/systemd/system/nfs-server.service; disabled; preset: disabled)
   Active: inactive (dead)
     Docs: man:rpc.nfsd(8)
           man:exportfs(8)
[root@server ~]# systemctl start nfs-server.service
[root@server ~]# systemctl enable nfs-server.service
Created symlink /etc/systemd/system/multi-user.target.wants/nfs-server.service → /usr/lib/systemd/system/nfs-server.service.
```

Step 4: Configure Firewall Rules on the Server

Allow NFS traffic through the firewall:

sudo firewall-cmd --zone=public --add-service=nfs --permanent

sudo firewall-cmd --reload

```
[root@server ~]# sudo firewall-cmd --zone=public --add-service=nfs --permanent
success
[root@server ~]# sudo firewall-cmd --reload
success
```

Step 5: Mount the NFS Share on the Client

Create a Mount Point on the Client

mkdir -p /nfs_client

```
[root@client ~]# mkdir /nfs_client
```

Mount the NFS Share

Replace server_ip with the IP address of your NFS server:

```
# sudo mount server_ip:/nfs_share /nfs_client
```

```
[root@client nfs_client]# mount 192.168.88.128:/nfs_share /nfs_client/
```

Verify the Mount

```
# df -h /nfs_client
```

```
[root@client nfs_client]# df -h
```

Step 6: Optional - Configure Permanent Mounting on Client

Edit the /etc/fstab file on the client to mount the NFS share at boot:

```
# vi /etc/fstab
```

Add this line to the file:

```
server_ip:/nfs_share /mnt/nfs_share nfs defaults 0 0
```

```
192.168.88.128:/nfs_share /nfs_client nfs defaults 0 0
```

The NFS share should now be accessible from the client!

AUTOFS

Basic Automount of an NFS Share in client

Objective: Automatically mount an NFS share when accessed.

Ensure NFS server is set up and a share is available. (Assuming a share at <NFS_SERVER_IP>:/srv/nfs)

Step-1: Install the autofs package:

```
# yum install autofs
```

```
[root@client myauto]# yum install autofs
Last metadata expiration check: 0:05:43 ago on Thursday 14 November 2024 08:31:14 PM.
Package autofs-1:5.1.7-58.el9.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
```

Step-2: Create a dir

```
# mkdir autofs
```

Step-3: Edit /etc/auto.master and add:

vi /etc/auto.master

/autofs /etc/auto.misc

```
[root@client myauto]# vi /etc/auto.master
```

```
#  
/misc /etc/auto.misc  
/autofs /etc/auto.misc  
#  
# NOTE: mounts done from a host
```

Step-4: Edit /etc/auto.misc and add

vi /etc/auto.misc

myauto -fstype=nfs 192.168.88.128:/NFS_Server

```
myauto -fstype=nfs 192.168.88.128:/NFS_Server
```

Step-5: Restart autofs:

systemctl restart autofs

Access the directory to see if it auto mounts:

cd /autofs

ls myauto

```
[root@client /]# cd /autofs/  
[root@client autofs]# ls  
[root@client autofs]# cd myauto  
[root@client myauto]# ls  
file1 squash
```

#df -h

```
tmpfs 175M 96K 175M 1% /run/user/1000  
/dev/sr1 8.2G 8.2G 0 100% /run/media/siddharth  
192.168.88.128:/NFS_Server 17G 5.4G 12G 32% /autofs/myauto  
[root@client myauto]#
```

Expected Outcome: The directory should automatically mount and show the contents of the NFS share.

Set an Automount Timeout

Objective: Customize the automount timeout.

Step -1: Edit `/etc/auto.master` and add:

set a timeout of 60 seconds:

```
# vi /etc/auto.master
```

```
# /autofs /etc/auto.misc --timeout=60
```

```
/misc    /etc/auto.misc
/autofs  /etc/auto.misc --timeout=60
```

Step-2: Restart autofs:

```
# systemctl restart autofs
```

```
[root@client /]# systemctl restart autofs
```

Step-3: Access the directory to ensure it mounts:

```
# cd /autofs
```

```
# ls myauto
```

```
[root@client /]# cd autofs
[root@client autofs]# ls myauto
1  file1  squash
[root@client autofs]#
```

```
# df -h
```

```
[root@client autofs]# df -h
Filesystem                Size      Used Avail Use% Mounted on
devtmpfs                   4.0M        0   4.0M   0% /dev
tmpfs                      871M        0   871M   0% /dev/shm
tmpfs                      349M    9.0M   340M   3% /run
/dev/mapper/cs-root        17G     11G    6.1G  65% /
/dev/sda1                  1014M    503M    512M  50% /boot
192.168.88.128:/nfs_share   17G     5.4G    12G  32% /nfs_client
tmpfs                      175M     96K   175M   1% /run/user/1000
/dev/sr1                   8.2G     8.2G        0 100% /run/media/siddharrth/CentOS-Stream-9-BaseOS-x86_64
192.168.88.128:/NFS_Server 17G     5.4G    12G  32% /autofs/myauto
[root@client autofs]# cd ..
[root@client /]# df -h
Filesystem                Size      Used Avail Use% Mounted on
devtmpfs                   4.0M        0   4.0M   0% /dev
tmpfs                      871M        0   871M   0% /dev/shm
tmpfs                      349M    9.0M   340M   3% /run
/dev/mapper/cs-root        17G     11G    6.1G  65% /
/dev/sda1                  1014M    503M    512M  50% /boot
192.168.88.128:/nfs_share   17G     5.4G    12G  32% /nfs_client
tmpfs                      175M     96K   175M   1% /run/user/1000
/dev/sr1                   8.2G     8.2G        0 100% /run/media/siddharrth/CentOS-Stream-9-BaseOS-x86_64
[root@client /]#
```