Network File System

Network File System (NFS) is a networking protocol that allows **file sharing** over the network.

Install nfs application server side

```
[root@vivek ~]# yum install nfs* -y
Updating Subscription Management repositories.
Unable to read consumer identity
This system is not registered to Red Hat Subscription Management. You can use subscription-manager to register.
Last metadata expiration check: 1 day, 1:31:51 ago on Wed 23 Feb 2022 01:16:51 AM EST.
Package nfs-utils-1:2.3.3-31.el8.x86_64 is already installed.
Dependencies resolved.
================================================================================
 Package                    Architecture                Version
================================================================================
Installing:
 nfs4-acl-tools             x86_64                      0.3.5-3.el8

Transaction Summary
================================================================================
Install  1 Package

Total size: 55 k
Installed size: 199 k
Downloading Packages:
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing        :
  Installing       : nfs4-acl-tools-0.3.5-3.el8.x86_64
  Running scriptlet: nfs4-acl-tools-0.3.5-3.el8.x86_64
  Verifying        : nfs4-acl-tools-0.3.5-3.el8.x86_64
Installed products updated.

Installed:
  nfs4-acl-tools-0.3.5-3.el8.x86_64

Complete!
```

Start service and check status server side

```
[root@vivek ~]# systemctl start nfs-server.service
[root@vivek ~]#
[root@vivek ~]# systemctl enable nfs-server.service
Created symlink /etc/systemd/system/multi-user.target.wants/nfs-server.service → /u
[root@vivek ~]#
[root@vivek ~]# systemctl status nfs-server.service
● nfs-server.service - NFS server and services
   Loaded: loaded (/usr/lib/systemd/system/nfs-server.service; enabled; vendor pres
   Active: active (exited) since Thu 2022-02-24 02:51:05 EST; 27s ago
 Main PID: 8519 (code=exited, status=0/SUCCESS)
    Tasks: 0 (limit: 11160)
   Memory: 0B
   CGroup: /system.slice/nfs-server.service

Feb 24 02:51:05 vivek.gandhi.com systemd[1]: Starting NFS server and services...
Feb 24 02:51:05 vivek.gandhi.com systemd[1]: Started NFS server and services.
```

Change firewall side changes configuration in server side

```
[root@vivek ~]# firewall-cmd --permanent --add-service=nfs
Warning: ALREADY_ENABLED: nfs
success
[root@vivek ~]# firewall-cmd --permanent --add-service=mountd
Warning: ALREADY_ENABLED: mountd
success
[root@vivek ~]# firewall-cmd --reload
success
[root@vivek ~]# firewall-cmd --list-services
cockpit dhcpv6-client ftp mountd nfs ssh
[root@vivek ~]#

[root@vivek ~]# firewall-cmd --permanent --add-service=rpc-bind
success
[root@vivek ~]# firewall-cmd --reload
success
[root@vivek ~]# firewall-cmd --list-services
cockpit dhcpv6-client ftp mountd nfs rpc-bind ssh
[root@vivek ~]#
```


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Network File System

Create directory and change permission 777 server side

```
[root@vivek ~]# mkdir -v nfs1 nfs2 nfs3 nfs4 nfs5
mkdir: created directory 'nfs1'
mkdir: created directory 'nfs2'
mkdir: created directory 'nfs3'
mkdir: created directory 'nfs4'
mkdir: created directory 'nfs5'
[root@vivek ~]#
[root@vivek ~]# chmod 777  nfs1 nfs2 nfs3 nfs4 nfs5
[root@vivek ~]#
[root@vivek ~]# ll
total 20
-rw-------. 1 root root 12442 Feb 21 04:23 anaconda-ks.cfg
-rw-r--r--. 1 root root  1542 Jan 20 06:48 initial-setup-ks.cfg
drwxrwxrwx. 2 root root     6 Feb 24 03:04 nfs1
drwxrwxrwx. 2 root root     6 Feb 24 03:04 nfs2
drwxrwxrwx. 2 root root     6 Feb 24 03:04 nfs3
drwxrwxrwx. 2 root root     6 Feb 24 03:04 nfs4
drwxrwxrwx. 2 root root     6 Feb 24 03:04 nfs5
[root@vivek ~]#
```

Assign fs for remote host

```
[root@vivek ~]# cat /etc/exports
[root@vivek ~]#
[root@vivek ~]# vim /etc/exports
[root@vivek ~]#
[root@vivek ~]# cat /etc/exports
/nfs1 192.168.254.139/24(rw,sync)
/nfs2 192.168.254.139/24(ro,sync)
/nfs3 192.168.254.139/24(rw,root_squash)
/nfs4 192.168.254.0/24(rw,sync,root_squash)
/nfs5 *(rw,sync)
[root@vivek ~]#
```

Export FS

```
[root@vivek ~]# exportfs
/nfs1           192.168.254.139/24
/nfs2           192.168.254.139/24
/nfs3           192.168.254.139/24
/nfs4           192.168.254.0/24
/root/nfs5      <world>
[root@vivek ~]# exportfs -arv
exporting 192.168.254.0/24:/root/nfs4
exporting 192.168.254.139/24:/root/nfs3
exporting 192.168.254.139/24:/root/nfs2
exporting 192.168.254.139/24:/root/nfs1
exporting *:/root/nfs5
[root@vivek ~]#
```

```
[root@vivek ~]# systemctl reload nfs-server.service
```

Create directory in client side

```
[root@pooja ~]# mkdir -v fs1 fs2 fs3 fs4 fs5
mkdir: created directory 'fs1'
mkdir: created directory 'fs2'
mkdir: created directory 'fs3'
mkdir: created directory 'fs4'
mkdir: created directory 'fs5'
[root@pooja ~]#
```


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Permanent mounting using fstab in client side

```
[root@pooja ~]# cat /etc/fstab

#
# /etc/fstab
# Created by anaconda on Tue Feb 22 07:41:46 2022
#
# Accessible filesystems, by reference, are maintained under '/dev/disk/'.
# See man pages fstab(5), findfs(8), mount(8) and/or blkid(8) for more info.
#
# After editing this file, run 'systemctl daemon-reload' to update systemd
# units generated from this file.
#
/dev/mapper/rhel-root   /                       xfs     defaults        0 0
UUID=fe7555da-5d2c-4835-b8e1-072b637ff0ca /boot                   xfs     defaults        0 0
/dev/mapper/rhel-swap   swap                    swap    defaults        0 0
192.168.254.133:/root/nfs1 /root/fs1 nfs defaults 0 0
192.168.254.133:/root/nfs2 /root/fs2 nfs defaults 0 0
192.168.254.133:/root/nfs3 /root/fs3 nfs defaults 0 0
192.168.254.133:/root/nfs4 /root/fs4 nfs defaults 0 0
192.168.254.133:/root/nfs5 /root/fs5 nfs defaults 0 0

[root@pooja ~]# mount -a
[root@pooja ~]#
```

```
[root@pooja ~]# showmount -e 192.168.254.133
Export list for 192.168.254.133:
/root/nfs5 *
/root/nfs4 192.168.254.0/24
/root/nfs3 192.168.254.139/24
/root/nfs2 192.168.254.139/24
/root/nfs1 192.168.254.139/24
[root@pooja ~]#
```

Change permission on client side

```
[root@pooja ~]# ll
total 14640
-rw-------. 1 root root     1404 Feb 22 07:54 anaconda-ks.cfg
-rw-r--r--  1 root root    23000 Feb 22 22:18 epel-release-latest-8.noarch.rpm
drwxr-xr-x  5 1002 1002       41 Feb 11 11:56 FileZilla3
-rw-r--r--  1 root root 14955708 Feb 22 22:42 FileZilla_3.58.0_x86_64-linux-gnu.tar.bz2
drwxrwxrwx  2 root root        6 Feb 24 03:04 fs1
drwxrwxrwx  2 root root        6 Feb 24 03:04 fs2
drwxrwxrwx  2 root root        6 Feb 24 03:04 fs3
drwxrwxrwx  2 root root        6 Feb 24 03:04 fs4
drwxrwxrwx  2 root root        6 Feb 24 03:04 fs5
-rw-r--r--. 1 root root     1559 Feb 22 07:55 initial-setup-ks.cfg
[root@pooja ~]#
```


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Access and Create client side and output show Server side (rw,sync)

```
[root@pooja ~]# cd fs1
[root@pooja fs1]# echo my test for vivek user >fs1.txt
[root@pooja fs1]# ll
total 4
-rw-r--r-- 1 nobody nobody 23 Feb 24 04:13 fs1.txt
```

Check server side

```
[root@vivek ~]# cd nfs1
[root@vivek nfs1]# ll
total 4
-rw-r--r--. 1 nobody nobody 23 Feb 24 04:13 fs1.txt
[root@vivek nfs1]#
```

Access and Create client side and output show Server side (ro,sync)

```
[root@pooja ~]# cd fs2
[root@pooja fs2]# touch 1
touch: cannot touch '1': Read-only file system
```

Access and Create client side and output show Server side (rw,root_squash)

```
[root@pooja ~]# cd fs3
[root@pooja fs3]# touch testfile
[root@pooja fs3]# ll
total 0
-rw-r--r-- 1 nobody nobody 0 Feb 24 04:26 testfile
```

Access and Create client side and output Server side (rw,sysnc,root_squash

```
[root@pooja ~]# cd fs4
[root@pooja fs4]# touch vivek 4 file
[root@pooja fs4]# ll
total 0
-rw-r--r-- 1 nobody nobody 0 Feb 24 04:39 4
-rw-r--r-- 1 nobody nobody 0 Feb 24 04:39 file
-rw-r--r-- 1 nobody nobody 0 Feb 24 04:39 vivek
[root@pooja fs4]#
```

```
[root@pooja ~]# cd fs5
[root@pooja fs5]# ll
total 0
[root@pooja fs5]# touch 1
[root@pooja fs5]# ll
total 0
-rw-r--r-- 1 nobody nobody 0 Feb 24 04:41 1
[root@pooja fs5]#
```