

HOW TO INSTALL AND CONFIGURE NFS IN CENTOS7

Network File Services facilitates the ability to share data across the network. It makes possible for users to share resources in one location on the network instead of duplicating assets across the environment

1. Install NFS package using yum

```
[root@c7duser2 ~]# yum -y install nfs-utils
Loaded plugins: fastestmirror, langpacks
base | 3.6 kB 00:00:00
epel/x86_64/metalink | 10 kB 00:00:00
epel | 4.3 kB 00:00:00
extras | 3.4 kB 00:00:00
updates | 3.4 kB 00:00:00
```

2. Turn SELinux Boolean on

```
[root@c7duser2 ~]# setsebool -P nfs_export_all_ro=1 nfs_export_all_rw=1
[root@c7duser2 ~]# getsebool -a | grep nfs_exports
[root@c7duser2 ~]# getsebool -a | grep nfs_export
nfs_export_all_ro --> on
nfs_export_all_rw --> on
[root@c7duser2 ~]#
```

This will allow nfsshare to be read and written to.

3. Now we will punch a hole in the firewall for nfs. The system knows what port (111 and 2049) to allow passage. We start by verifying that firewall is active on the system

```
[root@c7duser2 ~]# firewall-cmd --state && systemctl status firewalld
running
● firewalld.service - firewalld - dynamic firewall daemon
   Loaded: loaded (/usr/lib/systemd/system/firewalld.service; enabled; vendor preset: enabled)
   Active: active (running) since Sat 2017-03-11 09:01:12 EST; 6 days ago
   Main PID: 627 (firewalld)
   CGroup: /system.slice/firewalld.service
           └─627 /usr/bin/python -Es /usr/sbin/firewalld --nofork --nopid

Warning: Journal has been rotated since unit was started. Log output is incomplete or unavailable.
[root@c7duser2 ~]#
```

```
[root@c7duser2 ~]#
[root@c7duser2 ~]# firewall-cmd --permanent --add-service nfs
success
[root@c7duser2 ~]#
```

Please make sure this change can survive reboot by reloading firewalld

```
[root@c7duser2 ~]# firewall-cmd --reload
success
[root@c7duser2 ~]#
```

4. We then start and enable other services.

```
[root@c7duser2 ~]# systemctl enable rpcbind
[root@c7duser2 ~]# systemctl enable nfs-server
[root@c7duser2 ~]# systemctl start nfs-server.service
[root@c7duser2 ~]# systemctl start rpcbind
[root@c7duser2 ~]#
[root@c7duser2 ~]#
```

5. I think it is time to create the shares

```
mkdir /ninesol
```

```
mkdir /largo
```

6. We have the shares, now we need to define them in the appropriate configuration file

```
/etc/exports
```

```
Vim /etc/exports
```

```
/ninesol 192.168.1.18(ro,root_squash)
/largo   192.168.1.18(rw,no_root_squash)
```

In this case we are sharing these resources to a specific ip on the network. Next we need to export the shares

```
[root@c7dninesol ~]# exportfs -avr
exporting 192.168.1.18:/largo
exporting 192.168.1.18:/ninesol
[root@c7dninesol ~]#
```

Let's look at /var/lib/nfs/etab which shows us what has been exported

```
[root@c7dninesol ~]# cat /var/lib/nfs/etab
/largo 192.168.1.18(rw,sync,wdelay,hide,nocrossmnt,secure,no_root_squash,no_all_squash,no_subtree_check,secure_locks,acl,no_pnfs,anonuid=65534,anongid=65534,sec=sys,rw,secure,no_root_squash,no_all_squash)
/ninesol 192.168.1.18(ro,sync,wdelay,hide,nocrossmnt,secure,root_squash,no_all_squash,no_subtree_check,secure_locks,acl,no_pnfs,anonuid=65534,anongid=65534,sec=sys,ro,secure,root_squash,no_all_squash)
[root@c7dninesol ~]#
```

That is about it for the server piece. Now let's verify from the client side

7. This is the client server

```
[root@c7dobinn ~]# df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/mapper/centos-root 11G  4.0G  6.3G  39% /
devtmpfs        482M   0  482M   0% /dev
tmpfs           497M  176K  497M   1% /dev/shm
tmpfs           497M  7.1M  490M   2% /run
tmpfs           497M   0  497M   0% /sys/fs/cgroup
/dev/mapper/vg_cls-lv_cls1 190M  1.6M  175M   1% /clsfs1
/dev/sdal        497M  323M  175M  65% /boot
tmpfs           100M   24K  100M   1% /run/user/1000
tmpfs           100M   0  100M   0% /run/user/0
```

8. We shall go ahead and install nfs-utils

```
[root@c7dobinn ~]# yum -y install nfs-utils
Loaded plugins: fastestmirror, langpacks
Loading mirror speeds from cached hostfile
* base: mirror.math.princeton.edu
* extras: mirror.net.cen.ct.gov
```

9. Create two directories that will be mountpoints for the remote shares

```
mkdir /ns
mkdir /lg
```

10. Enable rpcbind and start it

```
[root@csrtarbn ~]# systemctl enable rpcbind
[root@csrtarbn ~]#
[root@csrtarbn ~]#
[root@csrtarbn ~]# systemctl start rpcbind
[root@csrtarbn ~]#
[root@csrtarbn ~]#
```

11. Test the mount of nfsshare by manually mounting the resource 192.168.1.15:/ninesol and 192.168.1.15:/largo

```
[root@csdobinn ~]#
[root@csdobinn ~]#
[root@csdobinn ~]#
[root@csdobinn ~]# mount -t nfs -o ro 192.168.1.15:/ninesol /ns
[root@csdobinn ~]# mount -t nfs -o rw 192.168.1.15:/largo /lg
[root@csdobinn ~]#
```

```
[root@csdobinn ~]#
[root@csdobinn ~]# df -hT

```

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/mapper/centos-root	xfs	11G	4.0G	6.3G	39%	/
devtmpfs	devtmpfs	482M	0	482M	0%	/dev
tmpfs	tmpfs	497M	176K	497M	1%	/dev/shm
tmpfs	tmpfs	497M	7.1M	490M	2%	/run
tmpfs	tmpfs	497M	0	497M	0%	/sys/fs/cgroup
/dev/mapper/vg_cls-lv_cls1	ext4	190M	1.6M	175M	1%	/clsfs1
/dev/sda1	xfs	497M	323M	175M	65%	/boot
tmpfs	tmpfs	100M	24K	100M	1%	/run/user/1000
tmpfs	tmpfs	100M	0	100M	0%	/run/user/0
192.168.1.15:/ninesol	nfs4	9.4G	3.8G	5.6G	41%	/ns ✓
192.168.1.15:/largo	nfs4	9.4G	3.8G	5.6G	41%	/lg ✓

```
[root@csdobinn ~]#
```

12. Let's cd into the mounted resource and play around

```
[root@csdninesol ~]# cd /ninesol
[root@csdninesol ninesol]# ls -l
total 36
-rw-r--r--. 1 root root 36005 Mar 18 14:15 nfctest.txt
drwxr-xr-x. 2 root root   21 Mar 18 14:17 nsdir
[root@csdninesol ninesol]#
```

Now try and manipulate these files from the client

```

[root@c7dobinn ~]# cd /ns
[root@c7dobinn ns]# ls -l
total 36
-rw-r--r--. 1 root root 36005 Mar 18 14:15 nfctest.txt
drwxr-xr-x. 2 root root 21 Mar 18 14:17 nsdir
[root@c7dobinn ns]# tail nfctest
tail: cannot open 'nfctest' for reading: No such file or directory
[root@c7dobinn ns]# tail nfctest.txt

    30th October 1996 - 30th March 2001: Fabrizio Polacco <fpolacco@debian.org> maintained
    and enhanced this package for the Debian project, with the help of all the community.

    31st March 2001 - present day: Colin Watson <cjwatson@debian.org> is now developing
    and maintaining man-db.

2.6.3                                2012-09-17                                MAN(1)
[root@c7dobinn ns]# echo "this is a read only file" >> nfctest.txt
-bash: nfctest.txt: Read-only file system
[root@c7dobinn ns]# cd nsdir
[root@c7dobinn nsdir]# ls -lart
total 108
drwxr-xr-x. 3 root root 35 Mar 18 14:16 ..
drwxr-xr-x. 2 root root 21 Mar 18 14:17 .
-rw-r--r--. 1 root root 106523 Mar 18 14:17 obum.txt
[root@c7dobinn nsdir]# rm obum.txt
rm: remove regular file 'obum.txt'? y
rm: cannot remove 'obum.txt': Read-only file system
[root@c7dobinn nsdir]# cd ..
[root@c7dobinn ns]# rm -rf nsdir/
rm: cannot remove 'nsdir/obum.txt': Read-only file system
[root@c7dobinn ns]#

```

```

[root@c7dobinn ns]# cd /lg
[root@c7dobinn lg]# ls -l
total 12
drwxr-xr-x. 2 root root 6 Mar 18 14:22 success
-rw-r--r--. 1 root root 9769 Mar 18 14:25 vegan

```

```

[root@c7dobinn lg]# tail vegan
The full documentation for pwd is maintained as a Texinfo manual. If the info and pwd
programs are properly installed at your site, the command

    info coreutils 'pwd invocation'

should give you access to the complete manual.

GNU coreutils 8.22                                November 2016                                PWD(1)
[root@c7dobinn lg]# echo "I can write to vegan" > vegan
[root@c7dobinn lg]# cat vegan
I can write to vegan

```

```

[root@c7dobinn lg]# rm -rf success
[root@c7dobinn lg]# ls -lart
total 8
dr-xr-xr-x. 24 root root 4096 Mar 18 14:21 ..
-rw-r--r--. 1 root root 21 Mar 19 00:45 vegan
drwxr-xr-x. 2 root root 18 Mar 19 00:46 .

```

Lets look at /largo on the nfs server c7dninesol

```

[root@c7dninesol largo]# ls -lart
total 8
dr-xr-xr-x. 20 root root 4096 Mar 18 13:57 ..
-rw-r--r--. 1 root root 21 Mar 19 00:45 vegan
drwxr-xr-x. 2 root root 18 Mar 19 00:46 .
[root@c7dninesol largo]#

```

192.168.1.15:/largo/success directory which was removed from the mountpoint /lg is gone

We will add it back from the client server c7dobinn:/lg

```
[root@c7dobinn lg]#  
[root@c7dobinn lg]# mkdir success  
[root@c7dobinn lg]#
```

And verify from the server c7dninesol

```
[root@c7dninesol largo]# ls -lart  
total 8  
dr-xr-xr-x. 20 root root 4096 Mar 18 13:57 ..  
-rw-r--r--. 1 root root 21 Mar 19 00:45 vegan  
drwxr-xr-x. 2 root root 6 Mar 19 00:47 success  
drwxr-xr-x. 3 root root 32 Mar 19 00:47 .
```

13. Unmount the share with umount and remount with mount -a

```
[root@c7dobinn lg]# df -hT  
Filesystem Type Size Used Avail Use% Mounted on  
/dev/mapper/centos-root xfs 11G 4.0G 6.3G 39% /  
devtmpfs devtmpfs 482M 0 482M 0% /dev  
tmpfs tmpfs 497M 176K 497M 1% /dev/shm  
tmpfs tmpfs 497M 7.1M 490M 2% /run  
tmpfs tmpfs 497M 0 497M 0% /sys/fs/cgroup  
/dev/mapper/vg_cls-lv_cls1 ext4 190M 1.6M 175M 1% /clsfs1  
/dev/sda1 xfs 497M 323M 175M 65% /boot  
tmpfs tmpfs 100M 24K 100M 1% /run/user/1000  
tmpfs tmpfs 100M 0 100M 0% /run/user/0  
192.168.1.15:/ninesol nfs4 9.4G 3.8G 5.6G 41% /ns  
192.168.1.15:/largo nfs4 9.4G 3.8G 5.6G 41% /lg  
[root@c7dobinn lg]# umount /ns  
[root@c7dobinn lg]# umount /lg  
umount.nfs4: /lg: device is busy  
[root@c7dobinn lg]# cd  
[root@c7dobinn ~]# umount /lg  
[root@c7dobinn ~]# df -hT  
Filesystem Type Size Used Avail Use% Mounted on  
/dev/mapper/centos-root xfs 11G 4.0G 6.3G 39% /  
devtmpfs devtmpfs 482M 0 482M 0% /dev  
tmpfs tmpfs 497M 176K 497M 1% /dev/shm  
tmpfs tmpfs 497M 7.1M 490M 2% /run  
tmpfs tmpfs 497M 0 497M 0% /sys/fs/cgroup  
/dev/mapper/vg_cls-lv_cls1 ext4 190M 1.6M 175M 1% /clsfs1  
/dev/sda1 xfs 497M 323M 175M 65% /boot  
tmpfs tmpfs 100M 24K 100M 1% /run/user/1000  
tmpfs tmpfs 100M 0 100M 0% /run/user/0  
[root@c7dobinn ~]#  
[root@c7dobinn ~]# mount -a && df -hT  
Filesystem Type Size Used Avail Use% Mounted on  
/dev/mapper/centos-root xfs 11G 4.0G 6.3G 39% /  
devtmpfs devtmpfs 482M 0 482M 0% /dev  
tmpfs tmpfs 497M 176K 497M 1% /dev/shm  
tmpfs tmpfs 497M 7.1M 490M 2% /run  
tmpfs tmpfs 497M 0 497M 0% /sys/fs/cgroup  
/dev/mapper/vg_cls-lv_cls1 ext4 190M 1.6M 175M 1% /clsfs1  
/dev/sda1 xfs 497M 323M 175M 65% /boot  
tmpfs tmpfs 100M 24K 100M 1% /run/user/1000  
tmpfs tmpfs 100M 0 100M 0% /run/user/0  
192.168.1.15:/ninesol nfs4 9.4G 3.8G 5.6G 41% /ns  
192.168.1.15:/largo nfs4 9.4G 3.8G 5.6G 41% /lg  
[root@c7dobinn ~]#
```

14. Now let's make the mount persistent across reboot by entering it in /etc/fstab on the client

```
[root@7dobinn ~]# shutdown -r +0 "to test persistence of network resource after reboot"
Shutdown scheduled for Sun 2017-03-19 11:12:22 EDT, use 'shutdown -c' to cancel.
[root@7dobinn ~]# Connection to 192.168.1.18 closed by remote host.
Connection to 192.168.1.18 closed.
```

```
[user1.Dell-XPS-435MT] > ssh root@192.168.1.18
Last login: Sun Mar 19 09:34:09 2017 from dell-xps-435mt.bdc.local
[root@7dobinn ~]#
```

And voila!

```
[root@7dobinn ~]# df -hT
Filesystem                Type      Size  Used Avail Use% Mounted on
/dev/mapper/centos-root    xfs       11G   4.0G   6.3G  39% /
devtmpfs                  devtmpfs  482M    0   482M   0% /dev
tmpfs                     tmpfs     497M  172K   497M   1% /dev/shm
tmpfs                     tmpfs     497M   7.1M   490M   2% /run
tmpfs                     tmpfs     497M    0   497M   0% /sys/fs/cgroup
/dev/mapper/vg_cls-lv_cls1 ext4      190M   1.6M   175M   1% /clsfs1
/dev/sda1                  xfs       497M  323M   175M  65% /boot
tmpfs                     tmpfs     100M   16K   100M   1% /run/user/1000
192.168.1.15:/ninesol      nfs4      9.4G   3.8G   5.6G  41% /ns ✓
192.168.1.15:/largo        nfs4      9.4G   3.8G   5.6G  41% /lg ✓
tmpfs                     tmpfs     100M   12K   100M   1% /run/user/42
tmpfs                     tmpfs     100M    0   100M   0% /run/user/0
[root@7dobinn ~]#
```

15. Verify and we are done

```
[root@7dobinn ~]# ls -lart /ns /lg
/ns:
total 40
-rw-r--r--. 1 root root 36005 Mar 18 14:15 nftest.txt
drwxr-xr-x. 3 root root  35 Mar 18 14:16 .
drwxr-xr-x. 2 root root  21 Mar 18 14:17 nsdir
dr-xr-xr-x. 24 root root 4096 Mar 18 14:21 ..

/lg:
total 8
dr-xr-xr-x. 24 root root 4096 Mar 18 14:21 ..
-rw-r--r--. 1 root root  21 Mar 19 00:45 vegan
drwxr-xr-x. 2 root root   6 Mar 19 00:47 success
drwxr-xr-x. 3 root root  32 Mar 19 00:47 .
[root@7dobinn ~]#
```