AUTO Network File System (NFS)

- Autofs is a service which automatically mounts the NFS file (on-demand) where shared files is accessed.
- It will automatically inmount NFS shares when they are no longer being used.
- The package autofs provides this feature.
- Autofs consults the master map configuration file **/etc/auto.master** to determine which mount points are defined.

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 ~]#
```

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```
[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 ~]#
```

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.
```

Create & allow FS dor remote host in server

```
[root@vivek /]# mkdir -v /public /private ; chmod 777 /public /private
mkdir: created directory '/public'
mkdir: created directory '/private'
```

NFS entry files in export file

```
[root@vivek /]# vim /etc/exports
[root@vivek /]#
[root@vivek /]# cat /etc/exports
/public         192.168.254.139/24(ro,sync)
/private        192.168.254.139/24(rw,sync)
[root@vivek /]#
```

Export file excute

```
[root@vivek /]# exportfs -rva
exporting 192.168.254.139/24:/private
exporting 192.168.254.139/24:/public
[root@vivek /]# exportfs fs
exportfs: Invalid export syntax: fs
[root@vivek /]# exportfs
/public           192.168.254.139/24
/private          192.168.254.139/24
[root@vivek /]#
```

AUTO Network File System (NFS)

Create file in dir

```
[root@vivek /]# cd /public/
[root@vivek public]# echo this is test for read only dir > read.txt
[root@vivek public]#
[root@vivek public]# cd /private/
[root@vivek private]# echo this is test for write opr  dir > write.txt
[root@vivek private]#
```

Install AUTOFS package in client side

```
[root@pooja ~]# yum install autofs.x86_64
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
Repository rhel8 is listed more than once in the configuration
Repository baseos is listed more than once in the configuration
Last metadata expiration check: 1:34:09 ago on Thursday 24 February 2022 03:25:30 AM EST.
Dependencies resolved.
================================================================================================
 Package                                Architecture                              Version
================================================================================================
Installing:
 autofs                                 x86_64                                    1:5.1.4-40.el8

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

Check install application install or not

```
[root@pooja ~]# rpm -qa autofs
autofs-5.1.4-40.el8.x86_64
[root@pooja ~]#
```

Enable & start AutoFS services

```
[root@pooja /]# systemctl restart autofs.service
[root@pooja /]# ll
total 28
drwxr-xr-x    2 root root    0 Feb 24 06:31 access
lrwxrwxrwx.   1 root root    7 Aug 12  2018 bin -> usr/bin
dr-xr-xr-x.   5 root root 4096 Feb 22 07:55 boot
drwxr-xr-x   20 root root 3260 Feb 23 23:38 dev
```

Create file for AutoFS

```
[root@pooja /]# vim /etc/auto.txt
[root@pooja /]# cat /etc/auto.txt
personal        -rw,sync        192.168.254.133:/private
all             -ro,sync        192.168.254.133:/public
```

CONFIGURATION AUTOFS

```
[root@pooja /]# vim /etc/auto.master
[root@pooja /]# cat /etc/auto.master
#
# Sample auto.master file
# This is a 'master' automounter map and it has the following format:
# mount-point [map-type[,format]:]map [options]
# For details of the format look at auto.master(5).
#
/misc   /etc/auto.misc

/access  /etc/auto.txt  --timeout=60
#
```


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AUTO Network File System (NFS)

Auto create access dir

```
[root@pooja /]# systemctl restart autofs.service
[root@pooja /]# ll
total 28
drwxr-xr-x    2 root root    0 Feb 24 06:31 access
lrwxrwxrwx.   1 root root    7 Aug 12  2018 bin -> usr/bin
dr-xr-xr-x.   5 root root 4096 Feb 22 07:55 boot
drwxr-xr-x   20 root root 3260 Feb 23 23:38 dev
```

Then check access directory no any list file

```
[root@pooja /]# cd access/
[root@pooja access]# ll
total 0
```

But then I enter cd personal command I enter successfully enter

```
[root@pooja access]# systemctl restart autofs.service
[root@pooja access]# cd personal
[root@pooja personal]# ll
total 4
-rw-r--r-- 1 root root 31 Feb 24 06:17 write.txt
[root@pooja personal]# mkdir vivek -v
mkdir: created directory 'vivek'
[root@pooja personal]# ll
total 4
drwxr-xr-x 2 nobody nobody  6 Feb 24 06:44 vivek
-rw-r--r-- 1 root   root   31 Feb 24 06:17 write.txt
```

Check NFS Stat command to check mount or not

```
[root@pooja personal]# nfsstat --mounts
```

Auto mount files

```
/access/personal from 192.168.254.133:/private
 Flags: rw,sync,relatime,vers=4.2,rsize=262144,wsize=262144,namlen=255,hard,proto=tcp,timeo=600,retrans=2,sec=sys,clientaddr=192.168.254.139,local_lock=none,addr=192.168.254.133
```

Auto mount files

```
[root@pooja personal]# df -hT
df: /root/fs1: Stale file handle
df: /root/fs2: Stale file handle
df: /root/fs3: Stale file handle
df: /root/fs4: Stale file handle
df: /root/fs5: Stale file handle
Filesystem              Type      Size  Used Avail Use% Mounted on
devtmpfs                devtmpfs  872M     0  872M   0% /dev
tmpfs                   tmpfs     901M     0  901M   0% /dev/shm
tmpfs                   tmpfs     901M  9.7M  891M   2% /run
tmpfs                   tmpfs     901M     0  901M   0% /sys/fs/cgroup
/dev/mapper/rhel-root   xfs        17G   13G  4.8G  73% /
/dev/nvme0n1p1          xfs      1014M  229M  786M  23% /boot
tmpfs                   tmpfs     181M  1.2M  179M   1% /run/user/42
tmpfs                   tmpfs     181M  4.6M  176M   3% /run/user/1000
/dev/sr0                iso9660   7.9G  7.9G     0 100% /run/media/pooja/RHEL-8-2-0-BaseOS-x86_64
tmpfs                   tmpfs     181M     0  181M   0% /run/user/0
192.168.254.133:/private nfs4      17G   13G  4.8G  73% /access/personal
[root@pooja personal]#
```


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AUTO Network File System (NFS)

Same steps to upper steps

```
[root@pooja personal]# cd ..
[root@pooja access]# cd all
[root@pooja all]# ll
total 4
-rw-r--r-- 1 root root 31 Feb 24 06:17 read.txt
[root@pooja all]# mkdir -v data
mkdir: cannot create directory ‘data’: Read-only file system
[root@pooja all]#
```

Auto mount files

```
[root@pooja all]# nfsstat --mounts
```

output

```
/access/all from 192.168.254.133:/public
 Flags: ro,sync,relatime,vers=4.2,rsize=262144,wsize=262144,namlen=255,hard,
```

Auto mount files

```
[root@pooja all]# cd ..
[root@pooja access]# ll
total 0
drwxrwxrwx 2 root root 22 Feb 24 06:17 all
[root@pooja access]# cd personal
[root@pooja personal]# cd ..
[root@pooja access]#
[root@pooja access]# ll
total 0
drwxrwxrwx 2 root root 22 Feb 24 06:17 all
drwxrwxrwx 3 root root 36 Feb 24 06:44 personal
[root@pooja access]#
[root@pooja access]# df -hT
df: /root/fs1: Stale file handle
df: /root/fs2: Stale file handle
df: /root/fs3: Stale file handle
df: /root/fs4: Stale file handle
df: /root/fs5: Stale file handle
Filesystem              Type      Size  Used Avail Use% Mounted on
devtmpfs                devtmpfs  872M     0  872M   0% /dev
tmpfs                   tmpfs     901M     0  901M   0% /dev/shm
tmpfs                   tmpfs     901M  9.7M  891M   2% /run
tmpfs                   tmpfs     901M     0  901M   0% /sys/fs/cgroup
/dev/mapper/rhel-root   xfs        17G   13G  4.8G  73% /
/dev/nvme0n1p1          xfs      1014M  229M  786M  23% /boot
tmpfs                   tmpfs     181M  1.2M  179M   1% /run/user/42
tmpfs                   tmpfs     181M  4.6M  176M   3% /run/user/1000
/dev/sr0                iso9660   7.9G  7.9G     0 100% /run/media/pooja/RHEL-8-2-0-BaseOS-x86_64
tmpfs                   tmpfs     181M     0  181M   0% /run/user/0
192.168.254.133:/public  nfs4      17G   13G  4.8G  73% /access/all
192.168.254.133:/private nfs4      17G   13G  4.8G  73% /access/personal
[root@pooja access]#
```


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TASK → AFTER 60 SEC to automatic unmount directory

```
[root@pooja access]# sleep 60
```

Sleep 60 client system then unmount all directory automatic

```
[root@pooja access]# sleep 60
[root@pooja access]#
[root@pooja access]# df -hT
df: /root/fs1: Stale file handle
df: /root/fs2: Stale file handle
df: /root/fs3: Stale file handle
df: /root/fs4: Stale file handle
df: /root/fs5: Stale file handle
Filesystem             Type      Size  Used Avail Use% Mounted on
devtmpfs               devtmpfs  872M     0  872M   0% /dev
tmpfs                  tmpfs     901M     0  901M   0% /dev/shm
tmpfs                  tmpfs     901M  9.7M  891M   2% /run
tmpfs                  tmpfs     901M     0  901M   0% /sys/fs/cgroup
/dev/mapper/rhel-root  xfs        17G   13G  4.8G  73% /
/dev/nvme0n1p1         xfs      1014M  229M  786M  23% /boot
tmpfs                  tmpfs     181M  1.2M  179M   1% /run/user/42
tmpfs                  tmpfs     181M  4.6M  176M   3% /run/user/1000
/dev/sr0               iso9660   7.9G  7.9G     0 100% /run/media/pooja/RHEL-8-2-0-BaseOS-x86_64
tmpfs                  tmpfs     181M     0  181M   0% /run/user/0
[root@pooja access]#
```

Then after I access mount file automatic mount server directory

```
[root@pooja access]# cd personal
[root@pooja personal]# cd ..
[root@pooja access]# df -hT
df: /root/fs1: Stale file handle
df: /root/fs2: Stale file handle
df: /root/fs3: Stale file handle
df: /root/fs4: Stale file handle
df: /root/fs5: Stale file handle
Filesystem              Type      Size  Used Avail Use% Mounted on
devtmpfs                devtmpfs  872M     0  872M   0% /dev
tmpfs                   tmpfs     901M     0  901M   0% /dev/shm
tmpfs                   tmpfs     901M  9.7M  891M   2% /run
tmpfs                   tmpfs     901M     0  901M   0% /sys/fs/cgroup
/dev/mapper/rhel-root   xfs        17G   13G  4.8G  73% /
/dev/nvme0n1p1          xfs      1014M  229M  786M  23% /boot
tmpfs                   tmpfs     181M  1.2M  179M   1% /run/user/42
tmpfs                   tmpfs     181M  4.6M  176M   3% /run/user/1000
/dev/sr0                iso9660   7.9G  7.9G     0 100% /run/media/pooja/RHEL-8-2-0-BaseOS-x86_64
tmpfs                   tmpfs     181M     0  181M   0% /run/user/0
192.168.254.133:/private nfs4      17G   13G  4.8G  73% /access/personal
```


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