# Configure AutoFS To Auto Mount The File-System (NFS Share) in Linux (RHEL

Autofs is a service in Linux like operating system which automatically mounts the file system and remote shares when it is accessed.

Main advantage of autofs is that you don't need to mount file system at all time, file system is only mounted when it is in demand.

Server Configuration (192.168.1.109):

# yum repolist

Configure YUM in RHEL 7:

yum install -y nfs\*

mkdir /public

mkdir /private

chmod 777 /public

touch /public/calpublic.txt

chmod 777 /private

touch /private/calprivate.txt

```
chmod 777 /private
```

touch /private/calprivate.txt

# vim /etc/exports

/public 192.168.1.110(ro,sync) /private 192.168.1.110(rw,sync)

exportfs -arvf

firewall-cmd --permanent --add-service=nfs

firewall-cmd --permanent --add-service=rpc-bind

firewall-cmd --permanent --add-service=mountd

firewall-cmd --reload

firewall-cmd --permanent --add-service=mountd

firewall-cmd --reload

systemctl start nfs-server

systemctl enable nfs-server

systemctl status nfs-server

systemctl start rpcbind

systemctl enable rpcbind

```
Client Configuration (192.168.1.110):
yum repolist
yum install autofs -y
 rpm -qi autofs
 mkdir /automount
 mkdir -p /automount/private
 mkdir -p /automount/public
 vim /etc/auto.master
 /automount /etc/automount.txt -timeout=60
 vim /etc/automount.txt
 public -ro,sync 192.168.1.109:/public
 private -rw,sync 192.168.1.109:/private
systemctl start autofs
systemctl enable autofs
systemctl status autofs
systemctl start rpcbind
systemctl enable rpcbind
```

Test AutoFS:

Login on Client Machine and check the mount point details, here you won't see any NFS Share.

df -hT

cd /automount/

## cd private

Again Check the mount point details, here you will see the private NFS Share.

df -hT

cd ..; cd public

Again Check the mount point details, here you will see the public NFS Share.

df-hT

Now go inside both the directories one by one & try to create and remove some files, here you will find that only RW filesystem allows you to do that not the RO Filesystem.

Now come out of NFS Shares and wait for more than one min, again \ Check the mount point details, here you won't see any NFS Share.

Beacuse both NFS shares got unmounted automatically themself due to AutoFS Service.

You are done.

## # Practical

```
[root@nfs-server ~]# yum repolist
Loaded plugins: langpacks, product-id, search-disabled-repos, subscription-manager
This system is not registered with an entitlement server. You can use subscription-manager to registe
                                                                                                                                                                            5.5 kB
4.7 kB
2.8 kB
103 kB
2.0 MB
1.0 MB
6.8 MB
epel/x86_64/metalink
                                                                                                                                                                                              00:00:00
00:00:00
epel
localrepo
                                                                                                                                                                                              00:00:00
(1/4): localrepo/group_gz
(2/4): localrepo/primary
(3/4): epel/x86_64/updateinfo
(4/4): epel/x86_64/primary_db
localrepo
                                                                                                                                                                                             00:00:00
                                                                                                                                                                                              00:00:06
                                                                                                                                                                                              00:00:53
                                                                                                                                                                                                     5229/5229
repo id
epel/x86_64
localrepo
                                                                repo name
Extra Packages for Enterprise Linux 7 - x86_64
localrepo
                                                                                                                                                                                                              status
                                                                                                                                                                                                             13,228
5,229
tocatrepo

repolist: 18,457
[root@nfs-server ~]# yum install nfs* -y

Loaded plugins: langpacks, product-id, search-disabled-repos, subscription-manager
This system is not registered with an entitlement server. You can use subscription-manager to registe
```

```
libquadmath.x86_64 0:4.8.5-39.el7
  numpy.x86_64 1:1.7.1-13.el7
  perl-Error.noarch 1:0.17020-2.el7
  perl-Git.noarch 0:1.8.3.1-20.el7
perl-TermReadKey.x86_64 0:2.30-20.el7
  pyparsing.noarch 0:1.5.6-9.el7
  python-beaker.noarch 0:1.5.4-10.el7
  python-mako.noarch 0:0.8.1-2.el7
 python-markupsafe.x86_64 0:0.11-10.el7
python-matplotlib.x86_64 0:1.2.0-16.el7
python-nose.noarch 0:1.3.7-1.el7
  python-paste.noarch 0:1.7.5.1-9.20111221hg1498.el7
  python-tempita.noarch 0:0.5.1-6.el7
  stix-math-fonts.noarch 0:1.1.0-5.el7
  t1lib.x86_64 0:5.1.2-14.el7
  texlive-base.noarch 2:2012-43.20130427_r30134.el7 texlive-dvipng.noarch 2:svn26689.1.14-43.el7
  texlive-dvipng-bin.x86_64 2:svn26509.0-43.20130427_r30134.el7
  texlive-kpathsea.noarch 2:svn28792.0-43.el7
  texlive-kpathsea-bin.x86_64 2:svn27347.0-43.20130427_r30134.el7
  texlive-kpathsea-lib.x86_64 2:2012-43.20130427 r30134.el7
Complete!
[root@nfs-server ~]#
```

```
[root@nfs-server private]# cal 2020 > calprivate.txt
[root@nfs-server private]# cat calprivate.txt 🛮
                                                    2 3 4 5 6
9 10 11 12 13
             2
                3
                  4
                                          2
          1
                                       1
                                                  1
     7 8 9 10 11
                                         9
                                       8
                                                 8
 5 6
                        3 4 5 6
                                              14 15 16 17 18 19 20
12 13 14 15 16 17 18
                       10 11 12 13 14 15 16
                       17 18 19 20 21 22 23
                                              21 22 23 24 25 26 27
19 20 21 22 23 24 25
26 27 28 29 30
                       24 25 26 27 28 29 30
                                              28 29 30
                       31
        July
                              August
                                                    September
Su Mo Tu We Th Fr Sa
                       Su Mo Tu We Th Fr Sa
                                              Su Mo Tu We Th Fr Sa
            2
               3 4
                                                          3
                                                             4 5
                                                    8 9 10 11 12
         8 9 10 11
5 6
                                         8
                                               6
                       9 10 11 12 13 14 15
16 17 18 19 20 21 22
12 13 14 15 16 17 18
                                              13 14 15 16 17 18 19
19 20 21 22 23 24 25
                                              20 21 22 23 24 25 26
26 27 28 29 30 31
                       23 24 25 26 27 28 29
                                              27 28 29 30
                       30 31
      October 0
                             November
                                                    December
                                              Su Mo Tu We Th Fr Sa
1 2 3 4 5
Su Mo Tu We Th Fr Sa
                       Su Mo Tu We Th Fr Sa
                             3 4
                                      6
             1
                2
                 3
                        1
                                   5
               9 10
                          9 10 11 12 13 14
                                                       9 10 11 12
   5 6
            8
                        8
                                               6
                                                 7
                                                    8
4
11 12 13 14 15 16 17
                                              13 14 15 16 17 18 19
                       15 16 17 18 19 20 21
                                              20 21 22 23 24 25 26
                       22 23 24 25 26 27 28
18 19 20 21 22 23 24
25 26 27 28 29 30 31
                       29 30
                                              27 28 29 30 31
JESSIUII JEIVEIS
Quick connect...
                    $ 5. 192.168.1.110 (root)
 [root@nfs-server ~]# vim /etc/exports
             5. 192.168.1.110 (root)
Juick connect...
/public 192.168.1.110(ro,sync)
/private 192.168.1.110(rw,sync)
[root@nfs-server ~]# exportfs -arvf
exporting 192.168.1.110:/private
exporting 192.168.1.110:/public
exporting 192.168.1.110:/private to kernel
exportfs: 192.168.1.110:/private: Function not implemented
exporting 192.168.1.110:/public to kernel
exportfs: 192.168.1.110:/public: Function not implemented
```

# Add Services in the firewall

[root@nfs-server ~]#

#### # head to NFS client

```
[root@nfs-client ~]# ip addr
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN qlen 1
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: ens33: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP qlen 1000
    link/ether 00:0c:29:48:0a:cc brd ff:ff:ff:ff:ff
    inet 192.163.1.110/24 brd 192.168.1.255 scope global dynamic ens33
        valid_lft 85389sec preferred_lft 85389sec
    inet6 fe80::e4d6:3286:d595:376d/64 scope link
        valid_lft forever preferred_lft forever
3: virbr0: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc noqueue state DOWN qlen 1000
    link/ether 52:54:00:17:8b:88 brd ff:ff:ff:ff:ff
    inet 192.168.122.1/24 brd 192.168.122.255 scope global virbr0
        valid_lft forever preferred_lft forever
4: virbr0-nic: <BROADCAST,MULTICAST> mtu 1500 qdisc pfifo_fast master virbr0 state DOWN qlen 1000
    link/ether 52:54:00:17:8b:88 brd ff:ff:ff:ff:ff:ff
```

```
[root@nfs-client yum.repos.d]# yum repolist
Loaded plugins: fastestmirror, langpacks
Loading mirror speeds from cached hostfile
repo id repo name status
Localrepo localrepo 3,894
repolist: 3,894
[root@nfs-client yum.repos.d]#
```

# install Autofs package with help of localrepo @ client machine

```
Installing:
autofs x86_64
Installing for dependencies:
                           x86 64
                                                      1:5.0.7-69.el7
                                                                                               localrepo
                                                                                                                             808 k
 hesiod
                           x86_64
                                                     3.2.1-3.el7
                                                                                               localrepo
                                                                                                                               30 k
Transaction Summary
Install 1 Package (+1 Dependent package)
Total download size: 838 k
Installed size: 5.1 M
Downloading packages:
Total
                                                                                          2.7 MB/s | 838 kB 00:00:00
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
Installing : hesiod-3.2.1-3.el7.x86_64
                                                                                                                                1/2
```

```
[root@nfs-client yum.repos.d]# rpm -qi autofs
Name
Epoch
Version
               : 5.0.7
               : 69.el7
Release
Architecture: x86_64
Install Date: Sunday 05 April 2020 11:43:56 AM IST
Group : System Environment/Daemons
Size : 5280794
License : GPLv2+
Signature : RSA/SHA256, Thursday 10 August 2017 08:33:22 PM IST, Key ID 24c6a8a7f4a80eb5
Source RPM : autofs-5.0.7-69.el7.src.rpm
Build Date : Friday 04 August 2017 06:35:13 PM IST
Build Host : clbm.rdu2.centos.org
Relocations : (not relocatable)
Packager
               : CentOS BuildSystem < http://bugs.centos.org>
Vendor
               : CentOS
               : A tool for automatically mounting and unmounting filesystems
Summary
root@nfs-client yum.repos.d]# mkdir /automount
root@nfs-client yum.repos.d]# vim /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
automount /etc/automount.txt --timeout=60
# NOTE: mounts done from a hosts map will be mounted with the
# "nosuid" and "nodev" options unless the "suid" and "dev"
# options are explicitly given.
#
/net -hosts
#
# Include /etc/auto.master.d/*.autofs
# The included files must conform to the format of this file.
# +dir:/etc/auto.master.d
#
# Include central master map if it can be found using
# nsswitch sources.
#
# this will umount if is not I use
# this will umount if is not I use
```

[root@nfs-client yum.repos.d]# vim /etc/automount.txt

```
public -ro,sync 192.168.1.109:/public
private -rw,sync 192.168.1.109:/private
[root@nfs-client automount]# mkdir -p /automount/public; mkdir -p /automount/private
total 0
```

```
[root@nfs-client yum.repos.d]# systemctl start autofs
[root@nfs-client yum.repos.d]# systemctl enable autofs

reated symlink from /etc/systemd/system/multi-user.target.wants/autofs.service to /usr/lib/systemd/s

stem/autofs.service.

[root@nfs-client yum.repos.d]# systemctl status autofs

autofs.service - Automounts filesystems on demand

Loaded: loaded (/usr/lib/systemd/system/autofs.service; enabled; vendor preset: disabled)

Active: active (running) since Sun 2020-04-05 11:50:47 IST; 15s ago

Main PID: 4437 (automount)

CGroup: /system.slice/autofs.service

—4437 /usr/sbin/automount --pid-file /run/autofs.pid

Apr 05 11:50:45 nfs-client automount[4437]: master_add_map_source: map source used without taki...nce

Apr 05 11:50:45 nfs-client automount[4437]: open_sss_lib:78: lookup(sss): failed to open /usr/l..ory

Apr 05 11:50:47 nfs-client automount[4437]: /usr/sbin/automount: warning: could not read at lea.....

Apr 05 11:50:47 nfs-client automount[4437]: master_add_map_source: map source used without taki...nce

Apr 05 11:50:47 nfs-client automount[4437]: master_add_map_source: map source used without taki...nce

Apr 05 11:50:47 nfs-client automount[4437]: master_add_map_source: map source used without taki...nce

Apr 05 11:50:47 nfs-client automount[4437]: master_add_map_source: map source used without taki...nce

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Apr 05 11:50:47 nfs-client automount[4437]: master_add_map_source: map source used without taki...nce

Apr 05 11:50:47 nfs-client automount[4437]: master_add_map_source: map source used without taki...nce

Apr 05 11:50:47 nfs-client automount[4437]: master_add_map_source: map source used without taki...nce

Apr 05 11:50:47 nfs-client sutomount[4437]: master_add_map_source: map source used witho
```

```
root@nfs-client yum.repos.d]# cd
root@nfs-client ~]# df -hT
                                 Size Used Avail Use% Mounted on
ilesystem
                       Type
dev/mapper/centos-root xfs
                                                  24% /
                                  17G
                                       4.0G
                                             14G
                                                    0% /dev
levtmpfs
                       devtmpfs
                                 473M
                                          0
                                             473M
                                                    0% /dev/shm
mpfs
                       tmpfs
                                 489M
                                          0
                                             489M
                                       7.2M
mpfs
                       tmpfs
                                 489M
                                             482M
                                                    2% /run
                                                    0% /sys/fs/cgroup
                       tmpfs
                                 489M
                                             489M
mpfs
                                       0
                                                   16% /boot
                                       161M
                                            854M
dev/sda1
                       xfs
                                1014M
                       tmpfs
                                             98M
                                                  1% /run/user/0
mpfs
                                 98M
                                       28K
                       iso9660
dev/sr0
                                 4.3G 4.3G
                                              0 100% /mnt
root@nfs-client ~]# mount -a
root@nfs-client ~]#
```

```
[root@nfs-client ~]# cd /automount/
[root@nfs-client automount]# cd public/
[root@nfs-client public]# df -hT
Filesystem
                          Type
                                           Used Avail Use% Mounted on
                                     Size
/dev/mapper/centos-root xfs
                                      17G
                                            4.0G
                                                   14G
                                                        24% /
                                     473M
                                                  473M
                                                          0% /dev
devtmpfs
                          devtmpfs
                                              0
                                     489M
                                               0
                                                  489M
                                                          0% /dev/shm
tmpfs
                          tmpfs
tmpfs
                          tmpfs
                                     489M
                                            7.2M
                                                  481M
                                                          2% /run
                                                          0% /sys/fs/cgroup
                          tmpfs
                                     489M
                                                  489M
tmpfs
                                              0
                                    1014M
                                            161M
                                                  854M
                                                         16% /boot
/dev/sda1
                          xfs
                                                          1% /run/user/0
                                      98M
                                            28K
tmpfs
                          tmpfs
                                                   98M
                                     4.3G
                                            4.3G
                                                       100% /mnt
/dev/sr0
                          iso9660
                                                    Θ
                         nfs4
192.168.1.109:/public
                                     17G
                                            9.1G
                                                  8.0G
                                                         54% /automount/public
[root@nfs-client public]#
```

```
[root@nfs-client public]# cd ..
[root@nfs-client automount]# cd private
[root@nfs-client private]# df _-hT
                                       Size
                                              Used Avail Use% Mounted on
ilesystem
                           Type
                                                            24% /
/dev/mapper/centos-root xfs
                                        17G
                                              4.0G
                                                      14G
devtmpfs
                                                             0% /dev
                           devtmpfs
                                       473M
                                                 0
                                                     473M
tmpfs
                           tmpfs
                                       489M
                                                 0
                                                     489M
                                                             0% /dev/shm
tmpfs
                            tmpfs
                                       489M
                                              7.2M
                                                     481M
                                                             2% /run
                                       489M
                                                 Θ
                                                     489M
                                                             0% /sys/fs/cgroup
tmpfs
                           tmpfs
                                                            16% /boot
/dev/sda1
                           xfs
                                      1014M
                                              161M
                                                     854M
                            tmpfs
mpfs
                                        98M
                                               28K
                                                      98M
                                                             1% /run/user/0
                           iso9660
                                                        0 100% /mnt
/dev/sr0
                                       4.3G
                                              4.3G
192.168.1.109:/public
                           nfs4
                                        17G
                                              9.1G
                                                     8.0G
                                                           54% /automount/public
                                             9.1G 8.0G 54% /automount/privat@
192.168.1.109:/private nfs4
                                        17G
[root@nfs-client private]# 📕
```

```
[root@nfs-client private]# ll
total 4
-rw-r--r--. 1 root root 1963 Apr 5 11:37 calprivate.txt
[root@nfs-client private]# cat
^C
[root@nfs-client private]#
```

```
[root@nfs-client private]# ll
total 4
-rw-r--r--. 1 root root 1963 Apr 5 11:37 calprivate.txt
[root@nfs-client private]# rm calprivate.txt
rm: remove regular file 'calprivate.txt'? y
[root@nfs-client private]# ll
total 0
[root@nfs-client private]# |
```

# server

```
# Cannot create / rm files in Public .. READ ONLY
```

### # But in Pvt . You can create/ del filessytem + Dir as its Read/ Write file System

```
[root@nfs-client public]# cd ..
[root@nfs-client automount]# cd private
[root@nfs-client private]# ll
total 0
[root@nfs-client private]# touch a b
[root@nfs-client private]# ll
total 0
-rw-r--r-- 1 nfsnobody nfsnobody 0 Apr 5 12:10 a
-rw-r--r-- 1 nfsnobody nfsnobody 0 Apr 5 12:10 b
[root@nfs-client private]# mkdir aa bb
[root@nfs-client private]# ll
total 0
-rw-r--r-- 1 nfsnobody nfsnobody 0 Apr 5 12:10 a
drwxr-xr-x. 2 nfsnobody nfsnobody 6 Apr 5 12:10 aa
-rw-r--r-- 1 nfsnobody nfsnobody 0 Apr 5 12:10 b
drwxr-xr-x. 2 nfsnobody nfsnobody 0 Apr 5 12:10 bb
[root@nfs-client private]# ■
```

```
[root@nfs-client private]# df -hT
Filesystem Type
                                      Size
                                             Used Avail Use% Mounted on
/dev/mapper/centos-root
                                       17G
                                             4.0G
                                                     14G
                                                           24% /
                           xfs
                                                            0% /dev
                                      473M
devtmpfs
                           devtmpfs
                                                0
                                                    473M
                                                            0% /dev/shm
tmpfs
                           tmpfs
                                       489M
                                                 0
                                                    489M
                                             7.2M
tmpfs
                                      489M
                                                    481M
                                                            2% /run
                           tmpfs
                                      489M
                                                    489M
                                                            0% /sys/fs/cgroup
tmpfs
                           tmpfs
                                                0
                                                           16% /boot
/dev/sda1
                                     1014M
                                                    854M
                           xfs
                                             161M
                           tmpfs
                                       98M
tmpfs
                                              28K
                                                     98M
                                                           1% /run/user/0
/dev/sr0
                           iso9660
                                                       0 100% /mnt
                                       4.3G
                                             4.3G
191.168.1.109:/public
192.168.1.109:/private
                                                    8.0G
                                                          54% /automount/public
                           nfs4
                                       17G
                                             9.1G
                                                           54% /automount/private
                          nfs4
                                        17G
                                             9.1G
                                                    8.0G
[root@nfs-client private]#
```

#### # Wait for 60sec, umounted or not

[root@nfs-client private]# cd [root@nfs-client ~]# **■** 

```
[root@nfs-client ~]# df
ilesystem
                                          Used Avail Use% Mounted on
                         Type
                                    Size
dev/mapper/centos-root xfs
                                    17G
                                          4.0G
                                                  14G
                                                       24% /
                                    473M
devtmpfs
                         devtmpfs
                                             0
                                                 473M
                                                        0% /dev
tmpfs
                                    489M
                         tmpfs
                                             0
                                                 489M
                                                        0% /dev/shm
tmpfs
                         tmpfs
                                    489M
                                          7.2M
                                                 481M
                                                        2% /run
                                    489M
                                             0
                                                        0% /sys/fs/cgroup
mpfs
                         tmpfs
                                                 489M
dev/sda1
                         xfs
                                   1014M
                                          161M
                                                 854M
                                                       16% /boot
                                                        1% /run/user/0
mpfs
                         tmpfs
                                     98M
                                           28K
                                                  98M
                                                    0 100% /mnt
dev/sr0
                         iso9660
                                    4.3G
                                          4.3G
root@nfs-client ~]# 📕
```

#### # But once go inside Auto Dir .. it get automatically mount

```
[root@nfs-client ~]# cd /automount/
[root@nfs-client automount]# cd private
[root@nfs-client private]# df -hT
Filesystem Type
/dev/mapper/centos-root xfs
                                       Size
                                             Used Avail Use% Mounted on
                                             4.0G
                                       17G
                                                     14G
                                                           24% /
                                                            0% /dev
devtmpfs
                           devtmpfs
                                      473M
                                                 0
                                                    473M
tmpfs
                           tmpfs
                                       489M
                                                 0
                                                    489M
                                                            0% /dev/shm
tmpfs
                           tmpfs
                                       489M
                                                    481M
                                              7.2M
                                                            2% /run
tmpfs
                           tmpfs
                                       489M
                                                 0
                                                    489M
                                                            0% /sys/fs/cgroup
/dev/sda1
                                      1014M
                                              161M
                                                    854M
                                                           16% /boot
                           xfs
                           tmpfs
                                        98M
                                                      98M
                                                            1% /run/user/0
                                              28K
tmpfs
/dev/sr0
                                                          100% /mnt
                           iso9660
                                       4.3G
                                             4.3G
                                                        0
192.168.1.109:/private nfs4
[root@nfs-client private]#
                                        17G
                                             9.1G
                                                    8.0G
                                                           54% /automount/private
```