AINUX

— TASTE OF LINUX —

WELCOME TO THE WORLD OF LINUX

DAY - 10

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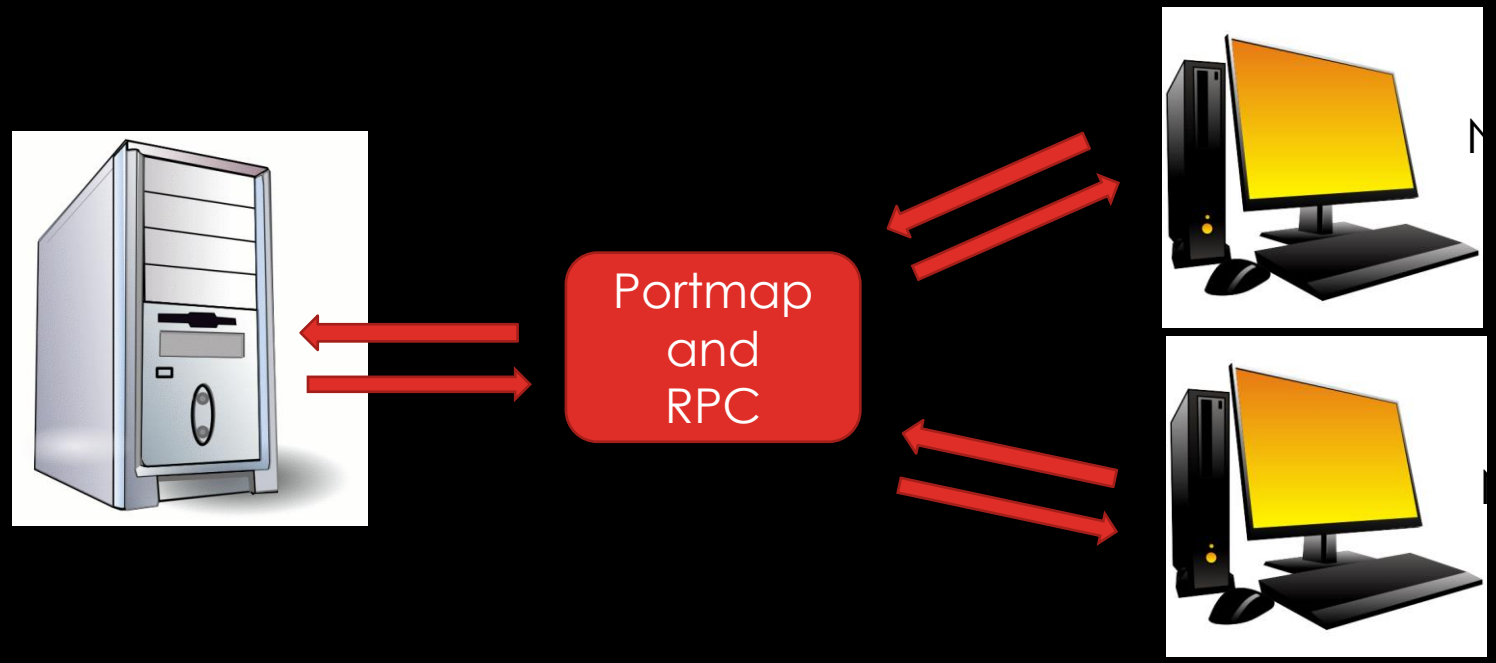
Accessing Network Storage with NFS

What is NFS

NFS stands for "**Network File System**". NFS is an Internet standard protocol used by Linux and UNIX. NFS is a client/server application designed by Sun Microsystems in 1980, that allows all network users to access shared files stored on computers. NFS provides access to shared files through an interface called the Virtual File System (VFS) that runs on TCP/IP. With NFS, computers connected to a network operate as clients while accessing remote files, and as servers while providing remote users access to local shared files. RHEL 7 supports NFSv4 by default.



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What is portmap

The portmap processes ensure that a given NFS connection is allowed and may proceed without error.

What is RPC

NFS uses RPC (Remote Procedure Calls) to route requests between clients and servers, meaning that the portmap service must be enabled and active for NFS communication to occur.

"RPC" requests are mapped into *"portmap"* services to ensure the correct services. When the client machines send the request to the *'RPC'* at the server, then it notify to *'portmap'*. And *'portmap'* then redirects the client to the proper port number. NFS use port number 2049.

Package Name	nfs-utils
Demon name	nfs-server
Port Number	2049
Share dir configuration file	/etc/exports
Configuration file	/etc/sysconfig/nfs
Log file	/var/log/messages

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NFS Server
IP Add: 10.10.10.1/24

NFS Client
IP Add: 10.10.10.2/24

NFS Server Configuration

```
# yum  install  nfs*                                  [To install NFS package & dependencies]
# systemctl start nfs-server.service                  [To start nfs server service]
# systemctl enable nfs-server.service                 [To enable nfs server service for start-up option]
# firewall-cmd  --permanent  --add-service=nfs        [To add NFS entry into firewall]
# firewall-cmd  --permanent  --add-service=rpc-bind   [To add RPC entry into firewall]
# firewall-cmd  --permanent  --add-service=mountd     [To add mountd demon entry into firewall]
# firewall-cmd  --reload                              [To reload firewall configuration]

# mkdir  /shared                                      [To create a directory named 'shared']
```

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cp –rv /etc/* /shared [To give full permission to '*shared*' Directory]
df –sh /shared [To see the folder size]
vim /etc/exports [To share the 'shared' folder]
Type the below line and save it.
/shared *(rw,sync)
[*= shared for any network, rw= read/write, ro= read only, sync= synchronization]
systemcts restart nfs-server

Note: - You can't use "*systemcts restart nfs-server*" command if any client is accessed your shared folder. Cause it after run this command your shared folder will be disconnected from the client machines. Then you should run "*exportfs –r*" to update your changes into "*/etc/exports*" file.

showmount –e [To show the shared directory]

NFS Client Configuration

NFS shares can be mounted through 3 different ways
- Manually mount NFS share using '***mount***' command
- Automatically mount NFS share at the boot time using '***/etc/fstab***'.
- Mount a NFS share on demand through '***automounting***'.

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Manually mount NFS share using *'mount'* command

```
# showmount –e 10.10.10.1                    [To verify the shared folder into NFS Server]
# mkdir  /srv-data                           [To create a directory  to mount shared dir]
# mount  -t  nfs  -o sync  10.10.10.1:/shared  /srv-data
[To mount nfs Shared folder into dir]
```

Automatically mount NFS share at the boot time using *'/etc/fstab'*

```
# showmount –e 10.10.10.1                    [To verify the shared folder into NFS Server]
# mkdir  /srv-data                           [To create a directory  to mount shared dir]
# vim  /etc/fstab
Type the following lines, save and exit.
10.10.10.1:/shared          /srv-data    nfs    sync            0 0
# init 6                                     [Reboot to test]
```

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Mount a NFS share on demand through *'Autofs'*.

What is 'Autofs'

"***Autofs***" aslo referred as Automount, It's a feature of Linux. It is a client-side service. When a client attempts to access a file system that is not presently mounted . Autofs helps us to Automount the file system on demand. It automatically mount the file system when it required to access and also unmount automatically when not in use for a particular timeout value.

Autofs configuration [To remember the steps]

- Verify and install Autofs Packages
- Find the NFS share names
- Edit the autofs main configuration file
- Create a Map file
- Start the autofs service
- Verify the configuration

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Autofs Configuration at client end.

rpm -qa | grep -i autofs [To verify package]
yum install autofs [To install '*autofs*' package]
vim /etc/auto.master [To edit 'autofs' configuration file]

Type down the following , then save and exit

/data1 /etc/test.share --timeout=120

Note:-

Here '*/data1*' is a directory where we want to mount NFS share directory.

Here '*/etc/test.share*' is a map file, where we mention the NFS share path for auto mount.

Here '—timeout=120' is the time for timeout .

mkdir /data1
touch /etc/test.share
vim /etc/test.share

Type down the following , then save and exit

shared -fstype=auto,rw,sync 10.10.10.1:/shared

systemcts start autofs
systemcts enable autofs

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THANK YOU

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