



Network File System (NFS)



Unit objectives

After completing this unit, you should be able to:

- Why used NFS?
- Review feature enhancement on each version
- Review configurations NFS Server <—> NFS Clients
- Mounting NFS Shares
- Mounting NFS Shares - Persistent

Why use NFS?

- Developed by Sun Microsystems. Hand over to IETF in 2010
- Allow client computer access files over computer network much like accessing local disks.
- One of NAS offerings
- Standard protocol widely used by Linux, UNIX
- Actively enhanced by community
- Windows uses SMB/CIFS

NFS Version

Version	Remarks
1	Used internal within Sun Microsystem. for experimental purposes
2	Works with UDP only. Stateless data (with locking implement externally) Limited to 32-bits (2 GB of file size)
3	Supports 64-bit file sizes (>2GB of file size) Add support for asynchronous writes (improve write performance) Caching capability (avoid need to re-fetch data) Add support for TCP Still supported by RHELv8.2
4	Performance improvements, mandates strong security Stateful protocol First version developed by IETF Still supported by RHELv8.2
4.1	Support cluster deployment. Provide scalable and parallel access Still supported by RHELv8.2
4.2	Support server-side clone and copy, sparsefile, space reservation, application data block (ADB) , labeled NFS with sec_label. Can use either UDP or TCP Default in RHELv8.2

NFS Servers – Export shares (directories)



Server : 192.168.5.100

On Server

- Install NFS-server packages
- Modify /etc/exports
- Start NFS-server services
- Configure Firewall and SELinux

On Clients

- Manual mount
- Modify /etc/fstab
- Verify `df -h`
- Demand mount `autofs`



Client1

Client2

Mounting NFS Shares

1. Identify: List available NFS Shares in server

```
# rpcinfo -n 2049 192.168.5.100
```

```
# showmount -e 192.168.5.100
```

```
/share
```

2. Mount point: Create mount point

```
# mkdir -p /mnt/database
```

3. Mount: Connect the NFS share

```
# mount -t nfs -o rw,sync 192.168.5.100:/share /mnt/database
```

Mounting NFS Shares - Persistent

- Modify /etc/fstab

```
192.168.5.100:/share /mnt/database nfs rw,soft,sync 0 0
```

- Mount all file systems based on /etc/fstab

```
# mount -a
```

Unmounting NFS Share

- Modify /etc/fstab

<remove nfs entries >

- Make sure user save and close connection to the mountpoint

umount /mnt/database

Quiz

1. You have configured and enable NFS Server services. But client complaint about accessing the server. What is the likely caused?
 - a) NFS Server service is not running in the client
 - b) NFS Client server is not running in the Server
 - c) Firewall not configured accordingly on the NFS Server
 - d) Firewall not configured accordingly on the NFS Client

2. Which command reveals share resources exported by servera?
 - a) `systemctl status nfs-server`
 - b) `mount -t nfs servera:/share /mountpoint`
 - c) `cat /proc/fs/nfsd/exports`
 - d) `showmount -e servera`

3. Which statement is valid?
 - a) NFS protocol is widely used in Linux, Windows and UNIX environment
 - b) NFS is supported by Sun Microsystem
 - c) RHELv8.2 support upto NFSv4.2
 - d) By default firewall settings allow NFS connections

4. True or False: Asynchronous mode allow better faster write.

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4. True or False: Asynchronous mode allow better faster write.

Unit summary

Having completed this unit, you should be able to:

- Understand why used NFS
- Recognize feature enhancement on each version
- Recognize configurations NFS Server <—> NFS Clients
- Mount NFS Shares
- Mount NFS Shares persistently