NFS Objectives

1. Configure NFS sever on **server.example.com** and create a directory **/nfsshare**. Share this directory as NFS share to **client.example.com** and mount on **/nfsmount** directory.
   a) User **nfs1** should have full access on this share.
   b) User **nfs2** should have no access on this share

Commands: (On server.example.com)

yum install nfs-utils **(To install NFS Server)**

systemctl start nfs-server **(To start NFS Server)**

systemctl enable nfs-server **(To Enable NFS Server to Start at Boot)**

mkdir /nfsshare **(To create the Directory to be shared)**

semanage fcontext -a -t nfs_t "/nfsshare(/.*)?" **(To Set Selinux Context Type)**

restorecon -Rv /nfsshare **(To Restore context)**

vim /etc/exports **(To Define export)**

/nfsshare *(rw)

:wq

exportfs -arv **(To export the share)**

firewall-cmd --add-service={nfs,rpc-bind,mountd} --permanent **(To configure Firewall)**

firewall-cmd --reload **(To reload firewall)**

setfacl -R -m u:nfs1:rwx /nfsshare **(To configure ACL for user nfs1)**

setfacl -R -m d:u:nfs1:rwx /nfsshare **(To configure Default ACL for user nfs1)**

setfacl -R -m u:nfs2:- /nfsshare **(To configure ACL for user nfs2)**

setfacl -R -m d:u:nfs2:- /nfsshare **(To configure Default ACL for user nfs2)**

Commands: (**On client.example.com**)

yum groups install “Network File System Client” **(To install NFS Client)**

showmount -e server.example.com **(To discover exported share)**

mkdir /nfsmount **(To create mount point)**

mount server.example.com:/nfsshare /nfsmount **(To test mount)**

umount /nfsmount **(To unmount the share)**

vim /etc/fstab **(To mount the share persistently)**

server.example.com:/nfsshare /nfsmount _netdev 0 0

:wq

mount -a **(To mount through fstab)**

mount **(To Verify the mounted share)**

2. Configure NFS share **/nfsclient** on **server.example.com** and mount this share on client.example.com on **/nfshost** directory.
   a) Only host **client.example.com** should have access to this share
   b) No other hosts on network should have access to this share
   c) **client.example.com** should have **read/write** permission on this share.

Commands: (On server.example.com)

yum install nfs-utils (To install NFS Server)

systemctl start nfs-server (To start NFS Server)

systemctl enable nfs-server (To Enable NFS Server to Start at Boot)

mkdir /nfsclient (To create the Directory to be shared)

semanage fcontext -a -t nfs_t "/nfsclient(/.*)?" (To Set Selinux context type)

restorecon -Rv /nfsclient (To Restore context)

vim /etc/exports (To Define export)

/nfsclient client.example.com(rw)

:wq

exportfs -arv (To export the share)

firewall-cmd --add-service={nfs,rpc-bind,mountd} --permanent (To configure Firewall

firewall-cmd --reload (To reload firewall)

Commands: (On client.example.com)

yum groups install “Network File System Client” (To install NFS Client)

showmount -e server.example.com (To discover exported share)

mkdir /nfshost (To create mount point)

mount server.example.com:/nfsclient /nfshost (To test mount)

umount /nfshost (To unmount the share)

vim /etc/fstab (To mount the share persistently)

server.example.com:/nfsclient /nfshost _netdev 0 0

:wq

mount -a (To mount through fstab)

mount (To Verify the mounted share)

3. Configure NFS share **/nfsgroup** on server.example.com and mount this share on client.example.com on **/nfscollab** directory.

a) Share should be available to group members of **nfs** group(nfs3 and nfs4 users)

b) Group members should have full access on this share.

c) Group members should be able to access the files of other group members with group permissions on share.

Commands: (On server.example.com)

yum install nfs-utils (To install NFS Server)

systemctl start nfs-server (To start NFS Server)

systemctl enable nfs-server (To Enable NFS Server to Start at Boot)

mkdir /nfsgroup (To create the Directory to be shared)

semanage fcontext -a -t nfs_t "/nfsgroup(/.*)?" (To Set Selinux context type)

restorecon -Rv /nfsgroup (To Restore context)

vim /etc/exports (To Define export)

/nfsgroup *(rw)

:wq

exportfs -arv (To export the share)

firewall-cmd --add-service={nfs,rpc-bind,mountd} --permanent (To configure Firewall)

firewall-cmd --reload (To reload firewall)

groupadd -g 2222 nfs (To add Group with Specific GID)

usermod -aG nfs nfs3 (To assign Group nfs to user nfs3)

usermod -aG nfs nfs4 (To assign Group nfs to user nfs4)

chown :nfs /nfsgroup (To set Group Ownership to nfs on Directory)

chmod g+rwx /nfsgroup (To provide Full permissions at Group level)

chmod g+s /nfsgroup (To Set GID Bit)

Commands: (**On client.example.com**)

yum groups install “Network File System Client” (To install NFS Client)

showmount -e server.example.com (To discover exported share)

mkdir /nfscollab (To create mount point)

mount server.example.com:/nfsgroup /nfscollab (To test mount)

umount /nfscollab (To unmount the share)

vim /etc/fstab (To mount the share persistently)

server.example.com:/nfsgroup /nfscollab _netdev 0 0

:wq

mount -a (To mount through fstab)

mount (To Verify the mounted share)

groupadd -g 2222 nfs (To add Group with Specific GID)

usermod -aG nfs nfs3 (To assign Group nfs to user nfs3)
usermod -aG nfs nfs4 (To assign Group nfs to user nfs4)

4. Configure NFS server on **server.example.com** and create directory **/protected**. Share this directory with highest Kerberos protection(krb5p) to **client.example.com** only and mount this on **/nfssecure** directory. Make this mount persistent by making an entry in file system table file.
   a) Root user should not have admin permissions but should be able to access share as **nfsnobody**

Commands: (On server.example.com)

yum install nfs-utils (To install NFS Server)

systemctl start nfs-server (To start NFS Server)

systemctl enable nfs-server (To Enable NFS Server to Start at Boot)

mkdir /protected (To create the Directory to be shared)

semanage fcontext -a -t nfs_t "/protected(/.*)?" (To Set Selinux context type)

restorecon -Rv /protected (To Restore context)

vim /etc/exports (To Define export)

/protected client.example.com(rw,sec=krb5p)

:wq

exportfs -arv (To export the share)

firewall-cmd --add-service={nfs,rpc-bind,mountd} --permanent (To configure Firewall)

firewall-cmd --reload (To reload firewall)

ipa-getkeytab -s ipaserver.example.com -p nfs/server.example.com -k /etc/krb5.keytab

klist -k (To verify Kerberos Principal Keys present in krb5.keytab file)

systemctl start nfs-secure-server (To start Secure NFS Server Service)

systemctl enable nfs-secure-server (To start Secure NFS Server Service)

Commands: (On client.example.com)

yum groups install “Network File System Client” (To install NFS Client)

systemctl start nfs-secure (To start NFS Secure service)

systemctl enable nfs-secure (To enable NFS Secure Service)

klist -k (To verify Kerberos Principal Keys present in krb5.keytab file)

showmount -e server.example.com (To discover exported share)

mkdir /nfssecure (To create mount point)

mount -o sec=krb5p server.example.com:/protected /mount (To test mount)

umount /nfssecure (To unmount the share)

vim /etc/fstab (To mount the share persistently)

server.example.com:/protected /nfssecure _netdev,sec=krb5p 0 0

:wq

mount -a (To mount through fstab)

mount (To Verify the mounted share)

kinit admin (To Authenticate against Kerberos Server)

5. Configure NFS share **/nfsuser** on server.example.com and mount this share on **client.example.com** on directory **/nfs3**.

   a) Set the user and Group ownership of this share to **nfs3** and **nfs** respectively.

   b) User **nfs3** should have full access to this share

   c) Group **nfs** should have read access to this share.

Commands: (On server.example.com)

yum install nfs-utils (To install NFS Server)

systemctl start nfs-server (To start NFS Server)

systemctl enable nfs-server (To Enable NFS Server to Start at Boot)

mkdir /nfsuser (To create the Directory to be shared)

semanage fcontext -a -t nfs_t "/nfsuser(/.*)?" (To Set Selinux Context Type)

restorecon -Rv /nfsuser (To Restore context)

vim /etc/exports (To Define export)

/nfsuser *(rw)

:wq

exportfs -arv (To export the share)

firewall-cmd --add-service={nfs,rpc-bind,mountd} --permanent (To configure Firewall)

firewall-cmd --reload (To reload firewall)

chown nfs3:nfs /nfsuser (To set User and Group Ownership to nfs3 and nfs)

Commands: (On client.example.com)

yum groups install “Network File System Client” (To install NFS Client)

showmount -e server.example.com (To discover exported share)

mkdir /nfs3 (To create mount point)

mount server.example.com:/nfsuser /nfs3 (To test mount)

umount /nfs3 (To unmount the share)

vim /etc/fstab (To mount the share persistently)

server.example.com:/nfsuser /nfs3 _netdev 0 0

:wq

mount -a (To mount through fstab)

mount (To Verify the mounted share)

6. Configure NFS share **/nfsnetwork** on **server.example.com** and mount this on **client.example.com** on directory **/multinet**.
    a) Share should be available to **example.com** network with **read/write** permissions.

Commands: (On server.example.com)

yum install nfs-utils (To install NFS Server)

systemctl start nfs-server (To start NFS Server)

systemctl enable nfs-server (To Enable NFS Server to Start at Boot)

mkdir /nfsnetwork (To create the Directory to be shared)

semanage fcontext -a -t nfs_t "/nfsnetwork(/.*)?" (To Set Selinux Context Type)

restorecon -Rv /nfsnetwork (To Restore context)

vim /etc/exports (To Define export)

/nfsnetwork 192.168.122.0/24(rw)

:wq

exportfs -arv (To export the share)

firewall-cmd --add-service={nfs,rpc-bind,mountd} --permanent (To configure Firewall)

firewall-cmd --reload (To reload firewall)

Commands: (On client.example.com)

yum groups install “Network File System Client” (To install NFS Client)

showmount -e server.example.com (To discover exported share)

mkdir /multinet(To create mount point)

mount server.example.com:/nfsnetwork /multinet (To test mount)

umount /multinet (To unmount the share)

vim /etc/fstab (To mount the share persistently)

server.example.com:/nfsnetwork /multinet _netdev 0 0

:wq

mount -a (To mount through fstab)

mount (To Verify the mounted share)

7. Set the Selinux Boolean **samba_share_nfs** to 1 on **server.example.com** and change should be persistent after reboot.

Commands: (On server.example.com)

getsebool -a | grep samba_share_nfs (To list the Selinux Boolean)

setsebool -P samba_share_nfs 1 (To set the Selinux Boolean to 1)