Objectives: Assignment objectives: 1, 2, 3, 4 and 5 1.
Disk management and partitioning.
2. Network design.
3. Network setup and NFS services configurations.
4. DNS server setup and configurations
5. Web server setup and configurations

partType: Report

Assessment: Individually assessed

Tasks Weight: The assignment tasks are as follows:

Task	**Description**	**Weight**
1	Create partitions	10 Marks
2	Set up static networking	5 Marks
3	Set up NFS service	5 Marks
4	Set up DNS server	10 Marks
5	Set up Web server	10 Marks
Total	40 Marks	

Tasks Requirements:

Given the new virtual machine files, students are expected to complete the following tasks in the VMs. The report tasks should include:

- Executed commands in each task.
- Screenshot the NAMES of the files updated for each task.
- Setup and configuration details for each task.
- Testing procedures for each task.
- Troubleshooting and record keeping for each task.

Task 1: Create partitions (10 marks)

Please add a **second** hard disk on both VMs. Create the following partitions on these drives and mount them accordingly. They both **MUST** be **Master Boot Record (**MBR**)** formatted.

	Linux	Windows server
Disk	/dev/sdb	disk 0 (NOT disk 1!)
Partition1	Primary **swap**, 100MB	primary partition 200MB, **FAT32**
Partition2	Primary **EXT4**, 100MB	primary partition 100MB **NTFS**
Mount partition 1 as:	swap	S:
Mount partition 2 as	/www	H:

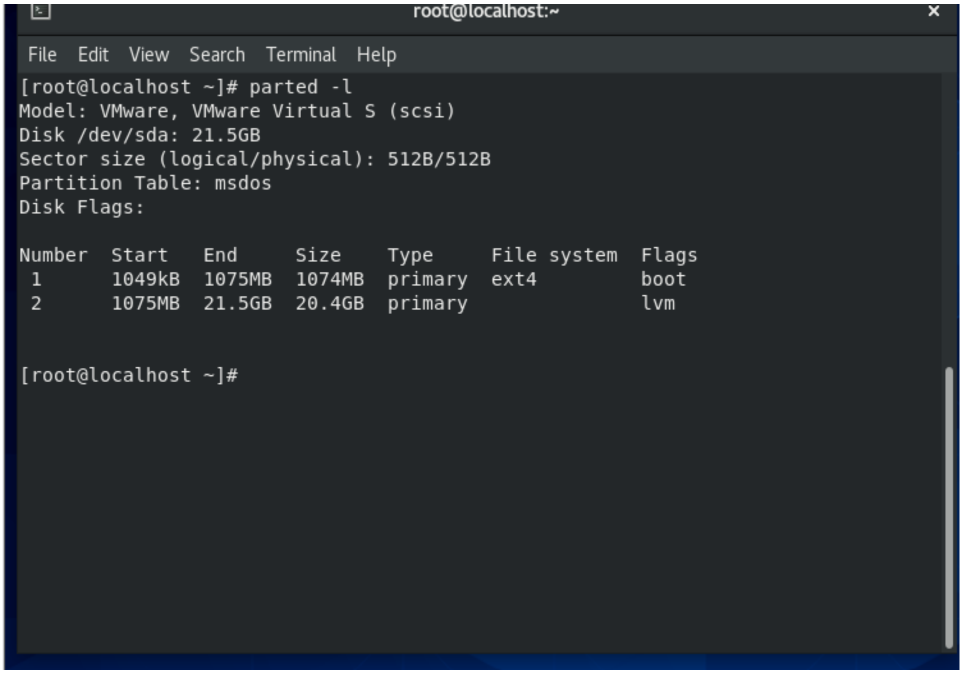
Make sure you demonstrate that the swap partition is **mounted** and is **visible** to the operating system.

1.) How to Test/Check partitions:

a.) CentOS Server - Check partition information from command line, GPT or MBR:

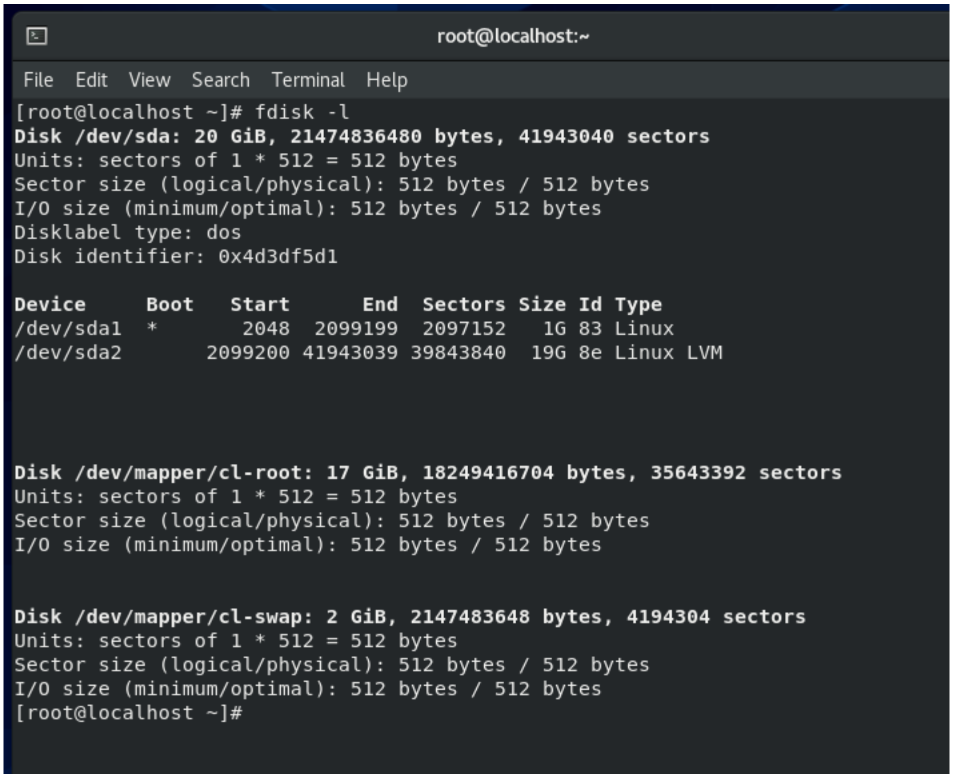
open a cmd window.

type, parted -l



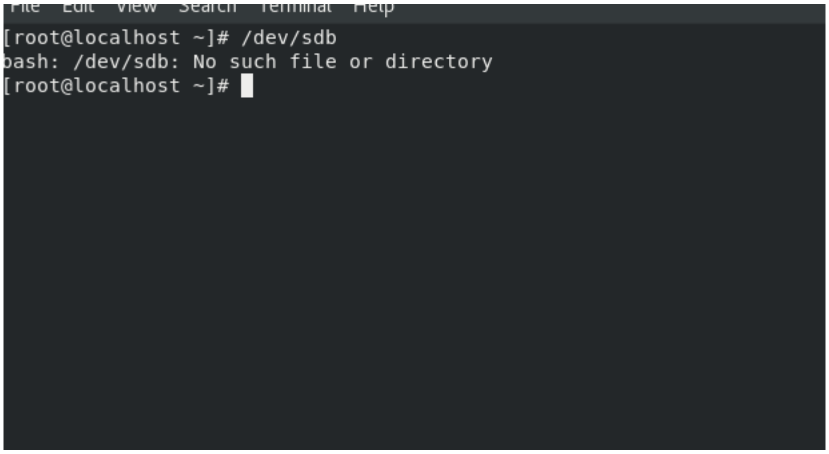
```
[root@localhost ~]# parted -l
Model: VMware, VMware Virtual S (scsi)
Disk /dev/sda: 21.5GB
Sector size (logical/physical): 512B/512B
Partition Table: msdos
Disk Flags:

Number  Start   End     Size    Type     File system  Flags
 1      1049kB  1075MB  1074MB  primary  ext4         boot
 2      1075MB  21.5GB  20.4GB  primary               lvm


[root@localhost ~]#
```

Type fdisk –l



```
[root@localhost ~]# fdisk -l
Disk /dev/sda: 20 GiB, 21474836480 bytes, 41943040 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0x4d3df5d1

Device     Boot   Start      End  Sectors Size Id Type
/dev/sda1  *       2048  2099199  2097152   1G 83 Linux
/dev/sda2       2099200 41943039 39843840  19G 8e Linux LVM




Disk /dev/mapper/cl-root: 17 GiB, 18249416704 bytes, 35643392 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes


Disk /dev/mapper/cl-swap: 2 GiB, 2147483648 bytes, 4194304 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
[root@localhost ~]#
```

Type /dev/sdb



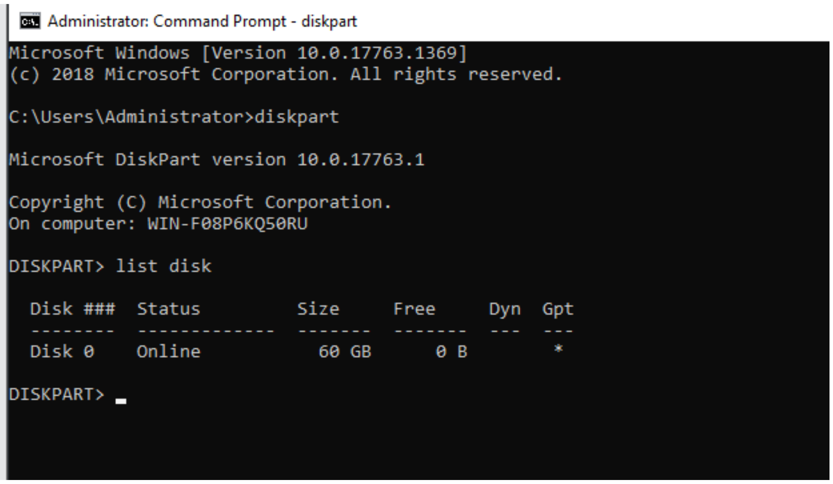
```
[root@localhost ~]# /dev/sdb
bash: /dev/sdb: No such file or directory
[root@localhost ~]#
```

b.) Windows Server - How to Check Which Partition Table Your Disk Is Using

open a cmd window.

type, diskpart

type, list disk



```
Administrator: Command Prompt - diskpart
Microsoft Windows [Version 10.0.17763.1369]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\Administrator>diskpart

Microsoft DiskPart version 10.0.17763.1

Copyright (C) Microsoft Corporation.
On computer: WIN-F08P6KQ50RU

DISKPART> list disk

  Disk ###  Status         Size     Free     Dyn  Gpt
  --------  -------------  -------  -------  ---  ---
  Disk 0    Online           60 GB      0 B        *

DISKPART> _
```

CentOS1

1.) Create Drive in VMWare

Step 1:

Open VM > Settings and click Add

Step 2:

Click hard Disk> Select Disk Type

Step 3:

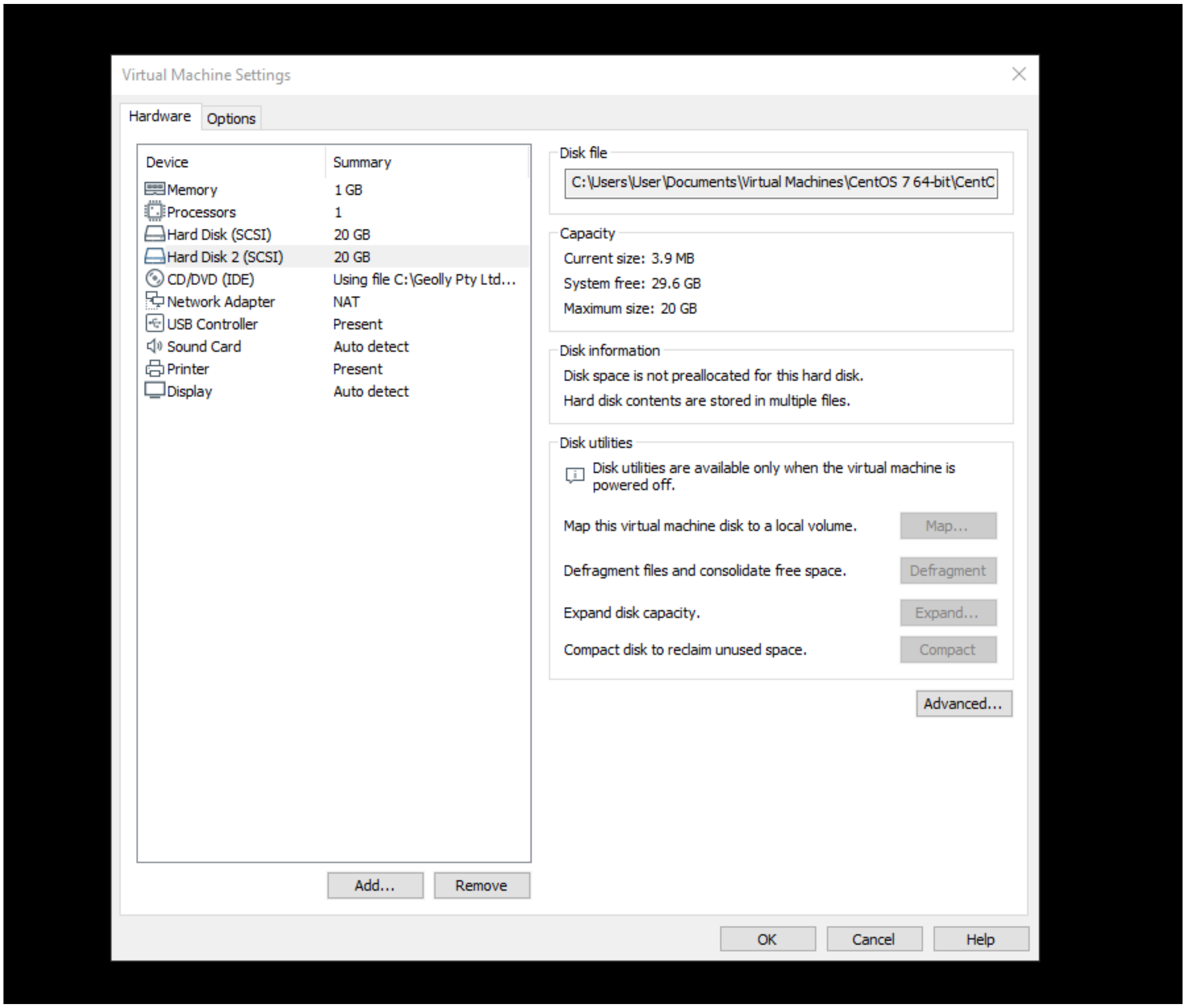
Select Disk> Created a New Virtual Disk

Step 4:

Select Virtual Virtual Disk

Step 5:

Allocate All disk> Browse> Advanced



Device	Summary
Memory	1 GB
Processors	1
Hard Disk (SCSI)	20 GB
Hard Disk 2 (SCSI)	20 GB
CD/DVD (IDE)	Using file C:\Geolly Pty Ltd...
Network Adapter	NAT
USB Controller	Present
Sound Card	Auto detect
Printer	Present
Display	Auto detect

Disk file

C:\Users\User\Documents\Virtual Machines\CentOS 7 64-bit\CentC

Capacity

Current size: 3.9 MB

System free: 29.6 GB

Maximum size: 20 GB

Disk information

Disk space is not preallocated for this hard disk.

Hard disk contents are stored in multiple files.

Disk utilities

Disk utilities are available only when the virtual machine is powered off.

Map this virtual machine disk to a local volume.

Defragment files and consolidate free space.

Expand disk capacity.

Compact disk to reclaim unused space.

2.) Create swap partition

Type lsblk

Type blkid

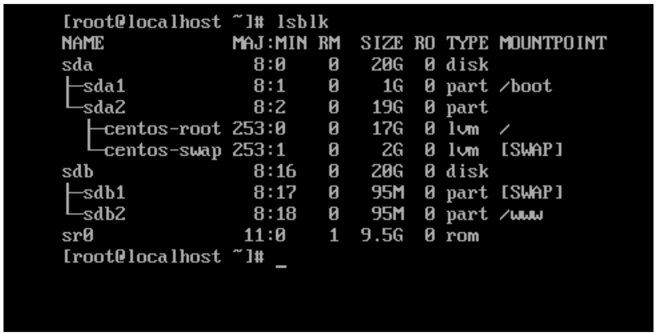
*fdisk / dev/sdb

A new prompt will appear, type ‘p’ to display the current partitions. Verify that you do not have any existing partitions here.

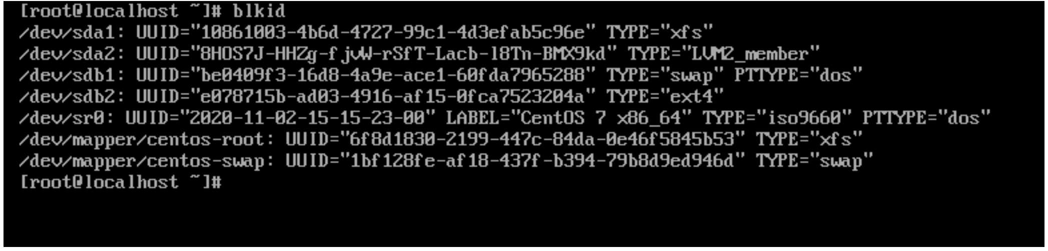
To create a new swap partition type “**n**“. Since this will be the first partition make it primary by selecting ‘**p**‘. Select ‘**1**‘ for the partition number. To accept the default settings for the beginning sector, just press ‘enter’. On the next prompt entre a value of **+2G** to set the size of swap partition.

On the next prompt, press ‘**t**‘ to change the partition type. Enter the number ‘1’, to change the partition that was just created

Type ‘**82**‘ and press enter. Type 82 is for swap partitions. Verify the results by checking the partition table by typing ‘p’. Type ‘w’ to write the changes made.

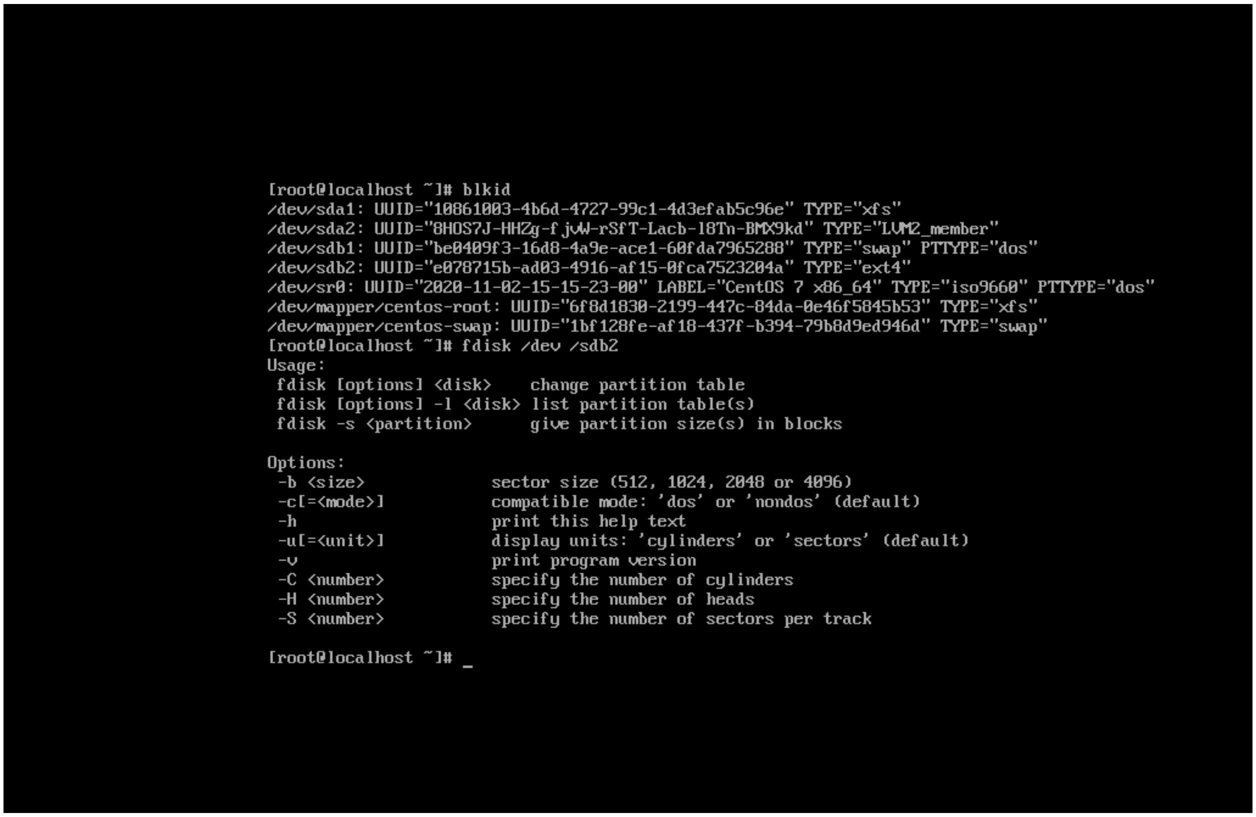


```
[root@localhost ~]# lsblk
NAME            MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
sda               8:0    0   20G  0 disk
├─sda1            8:1    0    1G  0 part /boot
└─sda2            8:2    0   19G  0 part
  ├─centos-root 253:0    0   17G  0 lvm  /
  └─centos-swap 253:1    0    2G  0 lvm  [SWAP]
sdb               8:16   0   20G  0 disk
├─sdb1            8:17   0   95M  0 part [SWAP]
└─sdb2            8:18   0   95M  0 part /www
sr0              11:0    1  9.5G  0 rom
[root@localhost ~]# _
```

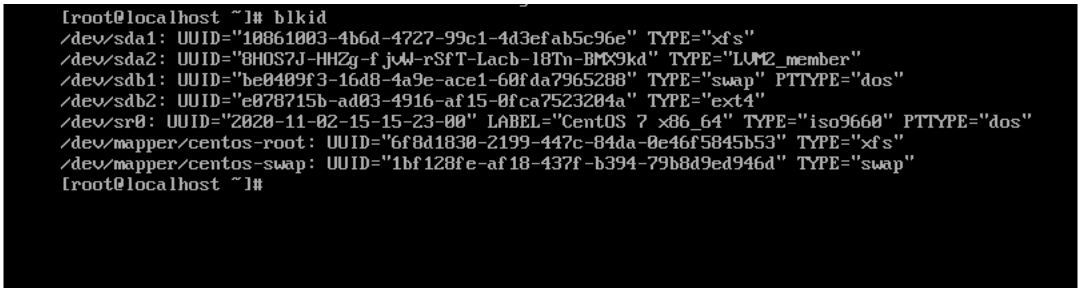


```
[root@localhost ~]# blkid
/dev/sda1: UUID="10861003-4b6d-4727-99c1-4d3efab5c96e" TYPE="xfs"
/dev/sda2: UUID="8HOS7J-HHZg-fjvW-rSfT-Lacb-l8Tn-BMX9kd" TYPE="LVM2_member"
/dev/sdb1: UUID="be0409f3-16d8-4a9e-ace1-60fda7965288" TYPE="swap" PTTYPE="dos"
/dev/sdb2: UUID="e078715b-ad03-4916-af15-0fca7523204a" TYPE="ext4"
/dev/sr0: UUID="2020-11-02-15-15-23-00" LABEL="CentOS 7 x86_64" TYPE="iso9660" PTTYPE="dos"
/dev/mapper/centos-root: UUID="6f8d1830-2199-447c-84da-0e46f5845b53" TYPE="xfs"
/dev/mapper/centos-swap: UUID="1bf128fe-af18-437f-b394-79b8d9ed946d" TYPE="swap"
[root@localhost ~]#
```

3.) Create ext4 partition
Type blkid
Type fdisk /dev/sdb
*mkfs.ext4 /dev/sdb2
Type Blkid

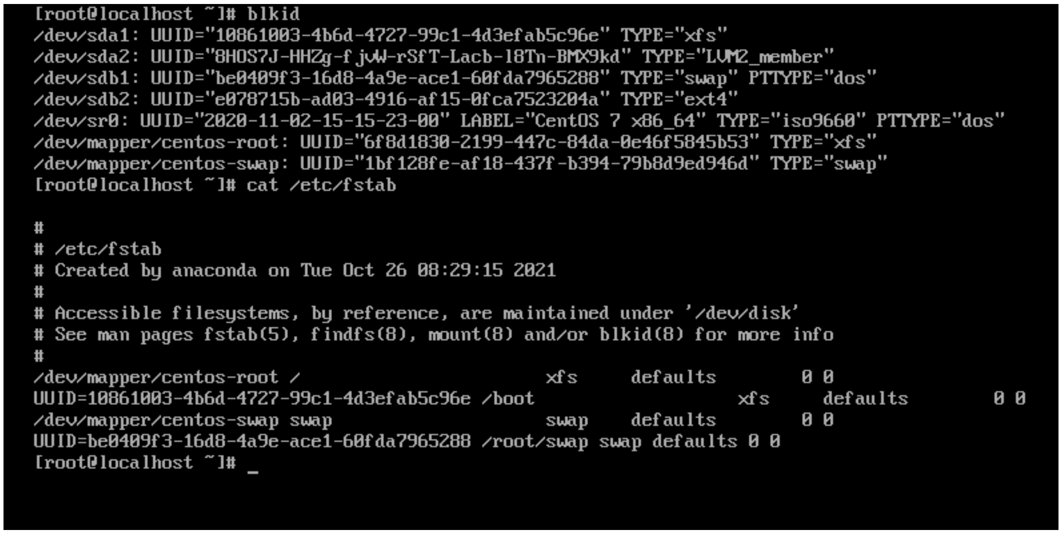


```
[root@localhost ~]# blkid
/dev/sda1: UUID="10861003-4b6d-4727-99c1-4d3efab5c96e" TYPE="xfs"
/dev/sda2: UUID="8HOS7J-HHZg-fjvW-rSfT-Lacb-l8Tn-BMX9kd" TYPE="LVM2_member"
/dev/sdb1: UUID="be0409f3-16d8-4a9e-ace1-60fda7965288" TYPE="swap" PTTYPE="dos"
/dev/sdb2: UUID="e078715b-ad03-4916-af15-0fca7523204a" TYPE="ext4"
/dev/sr0: UUID="2020-11-02-15-15-23-00" LABEL="CentOS 7 x86_64" TYPE="iso9660" PTTYPE="dos"
/dev/mapper/centos-root: UUID="6f8d1830-2199-447c-84da-0e46f5845b53" TYPE="xfs"
/dev/mapper/centos-swap: UUID="1bf128fe-af18-437f-b394-79b8d9ed946d" TYPE="swap"
[root@localhost ~]# fdisk /dev /sdb2
Usage:
 fdisk [options] <disk>    change partition table
 fdisk [options] -l <disk> list partition table(s)
 fdisk -s <partition>      give partition size(s) in blocks

Options:
 -b <size>             sector size (512, 1024, 2048 or 4096)
 -c[=<mode>]           compatible mode: 'dos' or 'nondos' (default)
 -h                    print this help text
 -u[=<unit>]           display units: 'cylinders' or 'sectors' (default)
 -v                    print program version
 -C <number>           specify the number of cylinders
 -H <number>           specify the number of heads
 -S <number>           specify the number of sectors per track

[root@localhost ~]# _
```



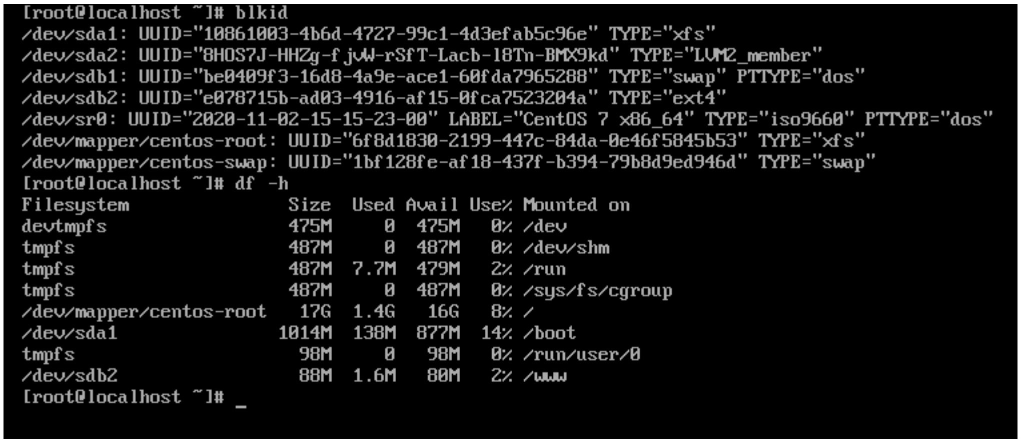
```
[root@localhost ~]# blkid
/dev/sda1: UUID="10861003-4b6d-4727-99c1-4d3efab5c96e" TYPE="xfs"
/dev/sda2: UUID="8HOS7J-HHZg-fjvW-rSfT-Lacb-18Tn-BMX9kd" TYPE="LVM2_member"
/dev/sdb1: UUID="be0409f3-16d8-4a9e-ace1-60fda7965288" TYPE="swap" PTTYPE="dos"
/dev/sdb2: UUID="e078715b-ad03-4916-af15-0fca7523204a" TYPE="ext4"
/dev/sr0: UUID="2020-11-02-15-15-23-00" LABEL="CentOS 7 x86_64" TYPE="iso9660" PTTYPE="dos"
/dev/mapper/centos-root: UUID="6f8d1830-2199-447c-84da-0e46f5845b53" TYPE="xfs"
/dev/mapper/centos-swap: UUID="1bf128fe-af18-437f-b394-79b8d9ed946d" TYPE="swap"
[root@localhost ~]#
```

4.) Mounting partition swap
Type blkid
*echo "UUID=be0409f3-16d8-4a9e-ace1-60fda7965288 /root/swap swap defaults 0 0" >>/etc/fstab
Type cat /etc/fstab
*swapon –a



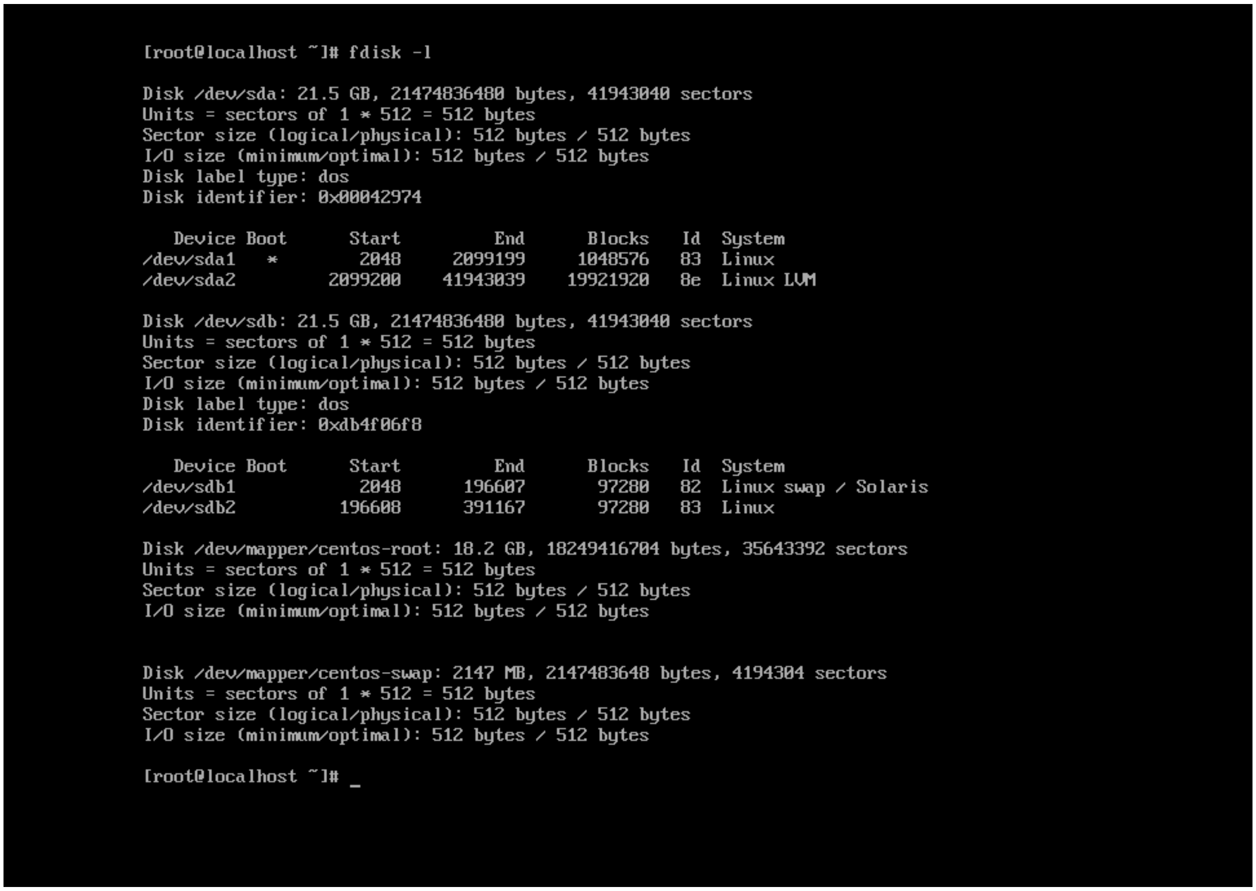
```
[root@localhost ~]# blkid
/dev/sda1: UUID="10861003-4b6d-4727-99c1-4d3efab5c96e" TYPE="xfs"
/dev/sda2: UUID="8HOS7J-HHZg-fjvW-rSfT-Lacb-18Tn-BMX9kd" TYPE="LVM2_member"
/dev/sdb1: UUID="be0409f3-16d8-4a9e-ace1-60fda7965288" TYPE="swap" PTTYPE="dos"
/dev/sdb2: UUID="e078715b-ad03-4916-af15-0fca7523204a" TYPE="ext4"
/dev/sr0: UUID="2020-11-02-15-15-23-00" LABEL="CentOS 7 x86_64" TYPE="iso9660" PTTYPE="dos"
/dev/mapper/centos-root: UUID="6f8d1830-2199-447c-84da-0e46f5845b53" TYPE="xfs"
/dev/mapper/centos-swap: UUID="1bf128fe-af18-437f-b394-79b8d9ed946d" TYPE="swap"
[root@localhost ~]# cat /etc/fstab

#
# /etc/fstab
# Created by anaconda on Tue Oct 26 08:29:15 2021
#
# Accessible filesystems, by reference, are maintained under '/dev/disk'
# See man pages fstab(5), findfs(8), mount(8) and/or blkid(8) for more info
#
/dev/mapper/centos-root /                       xfs     defaults        0 0
UUID=10861003-4b6d-4727-99c1-4d3efab5c96e /boot                   xfs     defaults        0 0
/dev/mapper/centos-swap swap                    swap    defaults        0 0
UUID=be0409f3-16d8-4a9e-ace1-60fda7965288 /root/swap swap defaults 0 0
[root@localhost ~]# _
```

5.) Mounting partition ext4
Type blkid
*mkdir /www
*mount /dev/sdb2 /www
Type df –h



```
[root@localhost ~]# blkid
/dev/sda1: UUID="10861003-4b6d-4727-99c1-4d3efab5c96e" TYPE="xfs"
/dev/sda2: UUID="8HOS7J-HHZg-fjvW-rSfT-Lacb-18Tn-BMX9kd" TYPE="LVM2_member"
/dev/sdb1: UUID="be0409f3-16d8-4a9e-ace1-60fda7965288" TYPE="swap" PTTYPE="dos"
/dev/sdb2: UUID="e078715b-ad03-4916-af15-0fca7523204a" TYPE="ext4"
/dev/sr0: UUID="2020-11-02-15-15-23-00" LABEL="CentOS 7 x86_64" TYPE="iso9660" PTTYPE="dos"
/dev/mapper/centos-root: UUID="6f8d1830-2199-447c-84da-0e46f5845b53" TYPE="xfs"
/dev/mapper/centos-swap: UUID="1bf128fe-af18-437f-b394-79b8d9ed946d" TYPE="swap"
[root@localhost ~]# df -h
Filesystem               Size  Used Avail Use% Mounted on
devtmpfs                 475M     0  475M   0% /dev
tmpfs                    487M     0  487M   0% /dev/shm
tmpfs                    487M  7.7M  479M   2% /run
tmpfs                    487M     0  487M   0% /sys/fs/cgroup
/dev/mapper/centos-root   17G  1.4G   16G   8% /
/dev/sda1               1014M  138M  877M  14% /boot
tmpfs                     98M     0   98M   0% /run/user/0
/dev/sdb2                 88M  1.6M   80M   2% /www
[root@localhost ~]# _
```

6.) Check if MBR
fdisk –l



```
[root@localhost ~]# fdisk -l

Disk /dev/sda: 21.5 GB, 21474836480 bytes, 41943040 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk label type: dos
Disk identifier: 0x00042974

   Device Boot      Start         End      Blocks   Id  System
/dev/sda1   *        2048     2099199     1048576   83  Linux
/dev/sda2         2099200    41943039    19921920   8e  Linux LVM

Disk /dev/sdb: 21.5 GB, 21474836480 bytes, 41943040 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk label type: dos
Disk identifier: 0xdb4f06f8

   Device Boot      Start         End      Blocks   Id  System
/dev/sdb1            2048      196607       97280   82  Linux swap / Solaris
/dev/sdb2          196608      391167       97280   83  Linux

Disk /dev/mapper/centos-root: 18.2 GB, 18249416704 bytes, 35643392 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes


Disk /dev/mapper/centos-swap: 2147 MB, 2147483648 bytes, 4194304 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

[root@localhost ~]# _
```

Windows
1.) Create Disk in VMware

Step 1.

Right-click on “This PC” and choose “Management”. And go to “Disk Management”.

Step 2.

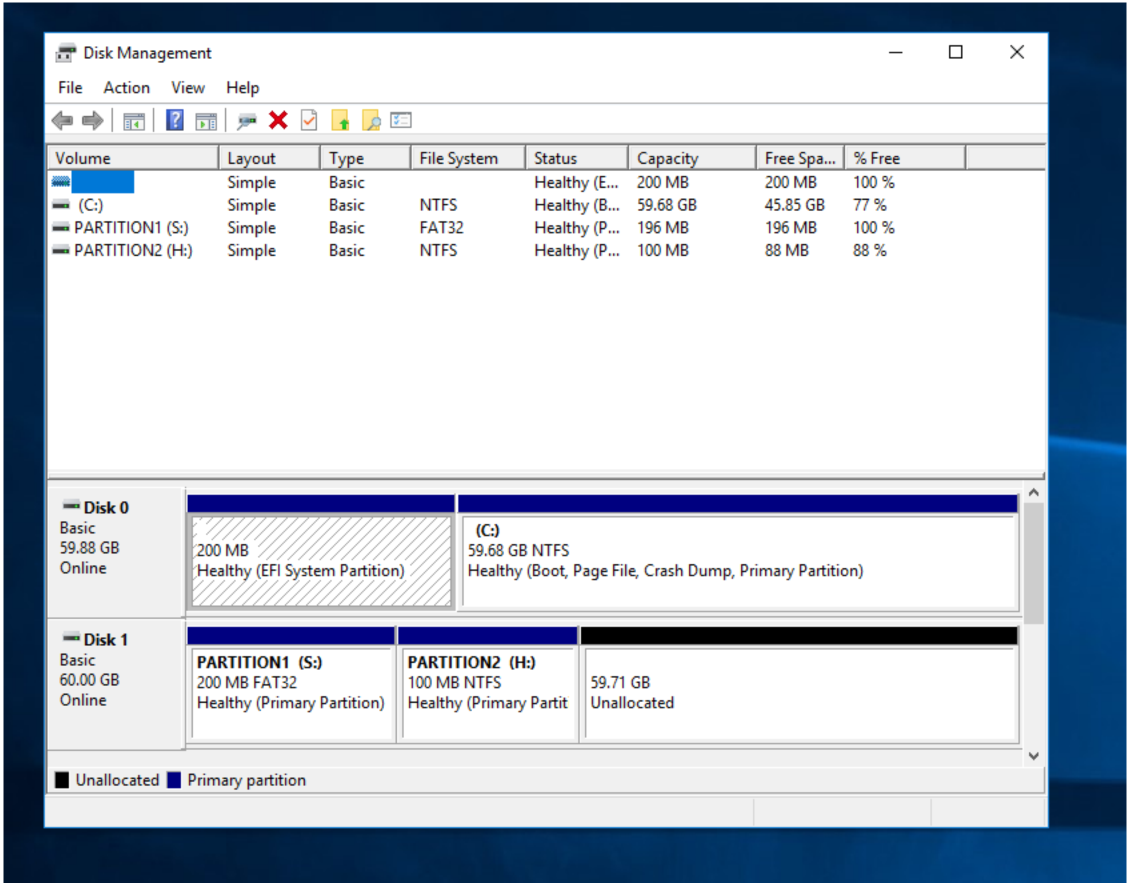
Right-click on “Unallocated space” and choose “New Simple Volume”.

Step 3.
It pops up “New Simple Volume Wizard”

Step 4.
Input the desired size of the partition

Step 5.
Assign a drive letter

Step 6.
format the new partition to different file system and custom the allocation unite size, or set it to default.



Volume	Layout	Type	File System	Status	Capacity	Free Spa...	% Free
	Simple	Basic		Healthy (E...	200 MB	200 MB	100 %
(C:)	Simple	Basic	NTFS	Healthy (B...	59.68 GB	45.85 GB	77 %
PARTITION1 (S:)	Simple	Basic	FAT32	Healthy (P...	196 MB	196 MB	100 %
PARTITION2 (H:)	Simple	Basic	NTFS	Healthy (P...	100 MB	88 MB	88 %

Disk 0
Basic
59.88 GB
Online

200 MB
Healthy (EFI System Partition)

(C:)
59.68 GB NTFS
Healthy (Boot, Page File, Crash Dump, Primary Partition)

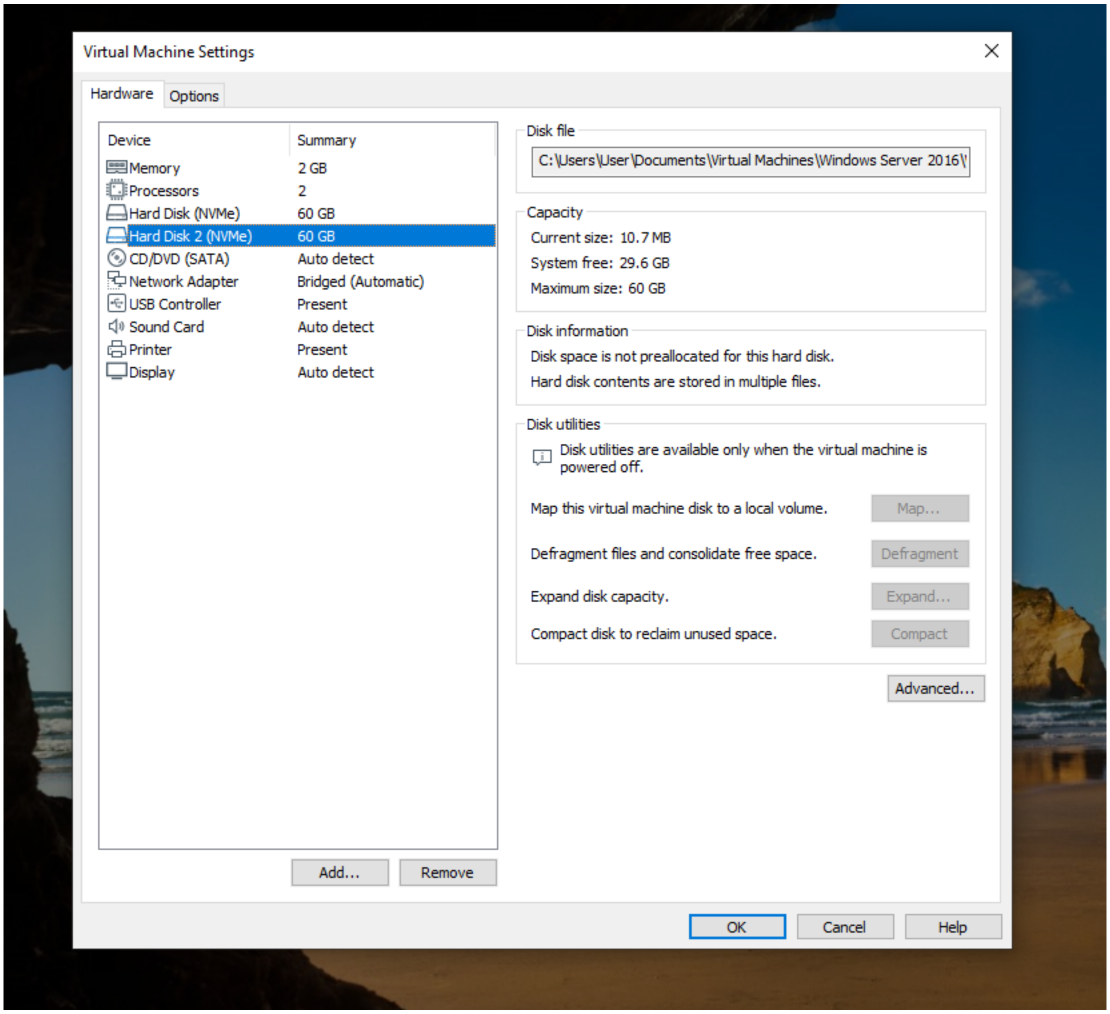
Disk 1
Basic
60.00 GB
Online

PARTITION1 (S:)
200 MB FAT32
Healthy (Primary Partition)

PARTITION2 (H:)
100 MB NTFS
Healthy (Primary Partit

59.71 GB
Unallocated

■ Unallocated 🟦 Primary partition



Virtual Machine Settings

Device	Summary
Memory	2 GB
Processors	2
Hard Disk (NVMe)	60 GB
Hard Disk 2 (NVMe)	60 GB
CD/DVD (SATA)	Auto detect
Network Adapter	Bridged (Automatic)
USB Controller	Present
Sound Card	Auto detect
Printer	Present
Display	Auto detect

Disk file

C:\Users\User\Documents\Virtual Machines\Windows Server 2016\

Capacity

Current size: 10.7 MB

System free: 29.6 GB

Maximum size: 60 GB

Disk information

Disk space is not preallocated for this hard disk.

Hard disk contents are stored in multiple files.

Disk utilities

Disk utilities are available only when the virtual machine is powered off.

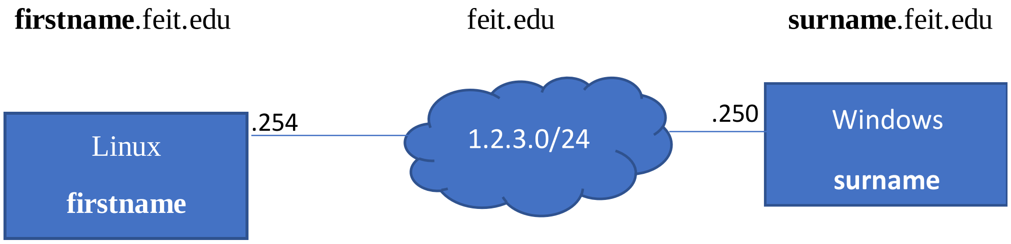
Map this virtual machine disk to a local volume.

Defragment files and consolidate free space.

Expand disk capacity.

Compact disk to reclaim unused space.

Task 2: Set up static networking (5 marks)



Set up static networking for your Linux Centos and Windows server servers given the following parameters:

	Our network	Linux server	Windows server
Network:	1.2.3.0/24	.254	.250
Ethernet:		ens37	Ethernet1
DNS Domain:	feit.edu	feit.edu	feit.edu
Hostname		firstname	surname
Gateway:			

Replace “**surname**” and “**firstname**” in the table with your real name. For example, if your name is “Peter Griffin”, then the hostname for Linux server is “peter” (lower case) and the hostname for Windows Server is “griffin” (lower case). **This rule applies for all the following tasks.**

Choose the appropriate gateway and network parameters so they can **ping** each other and make sure the configuration is permanent. You **MUST** test your configuration.

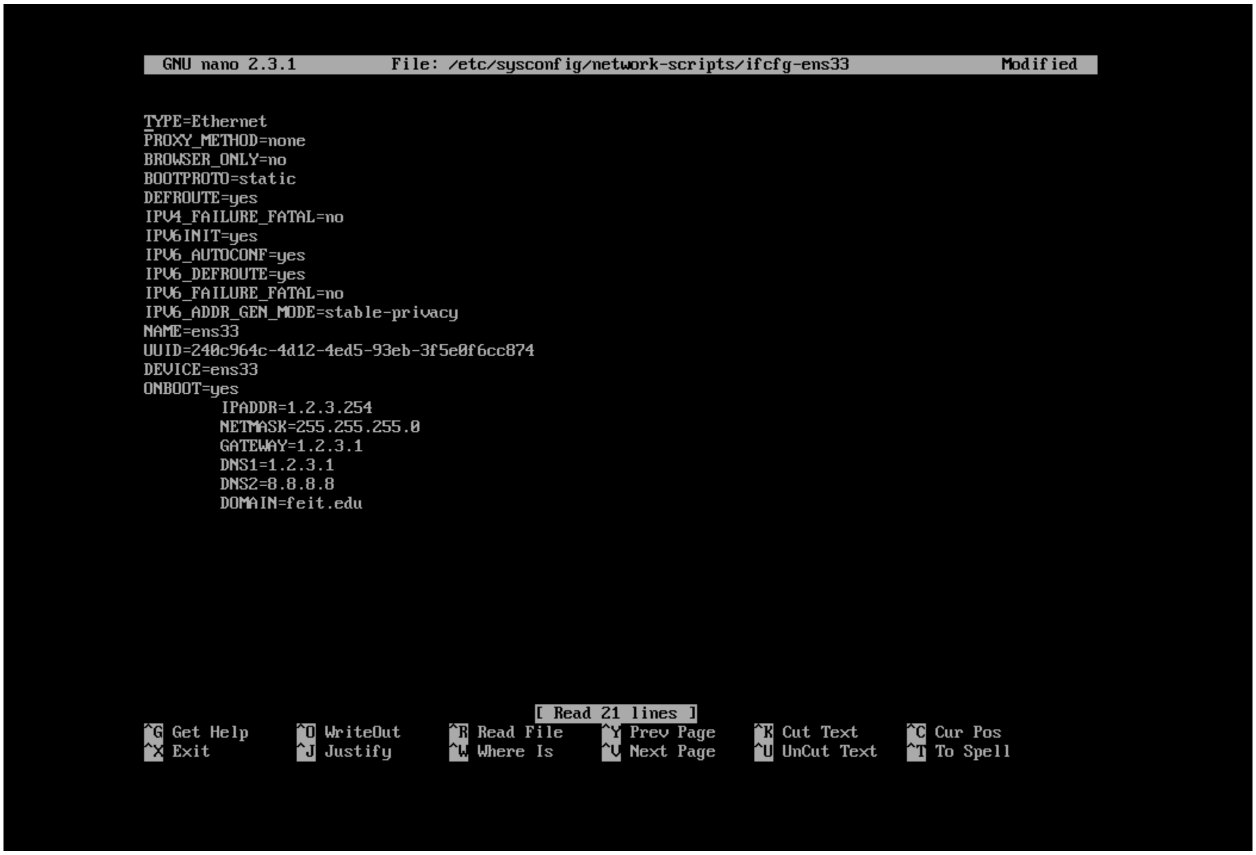
CentOS

1.) Create Network

```
ifconfig
netstat -tulpn
lsof -i
systemctl stop postfix
systemctl disable postfix
systemctl status postfix
systemctl stop avahi-daemon
systemctl disable avahi-daemon
systemctl status avahi-daemon
service postfix stop
chkconfig postfix off
service --status-all
systemctl list-unit-files
systemctl -H remote_host start remote_service
ifconfig
```

Following network template to edit the file and make sure that the ONBOOT statement is set on YES, BOOTPROTO is set to static or none and don’t change HWADDR and UUID values provided by default.

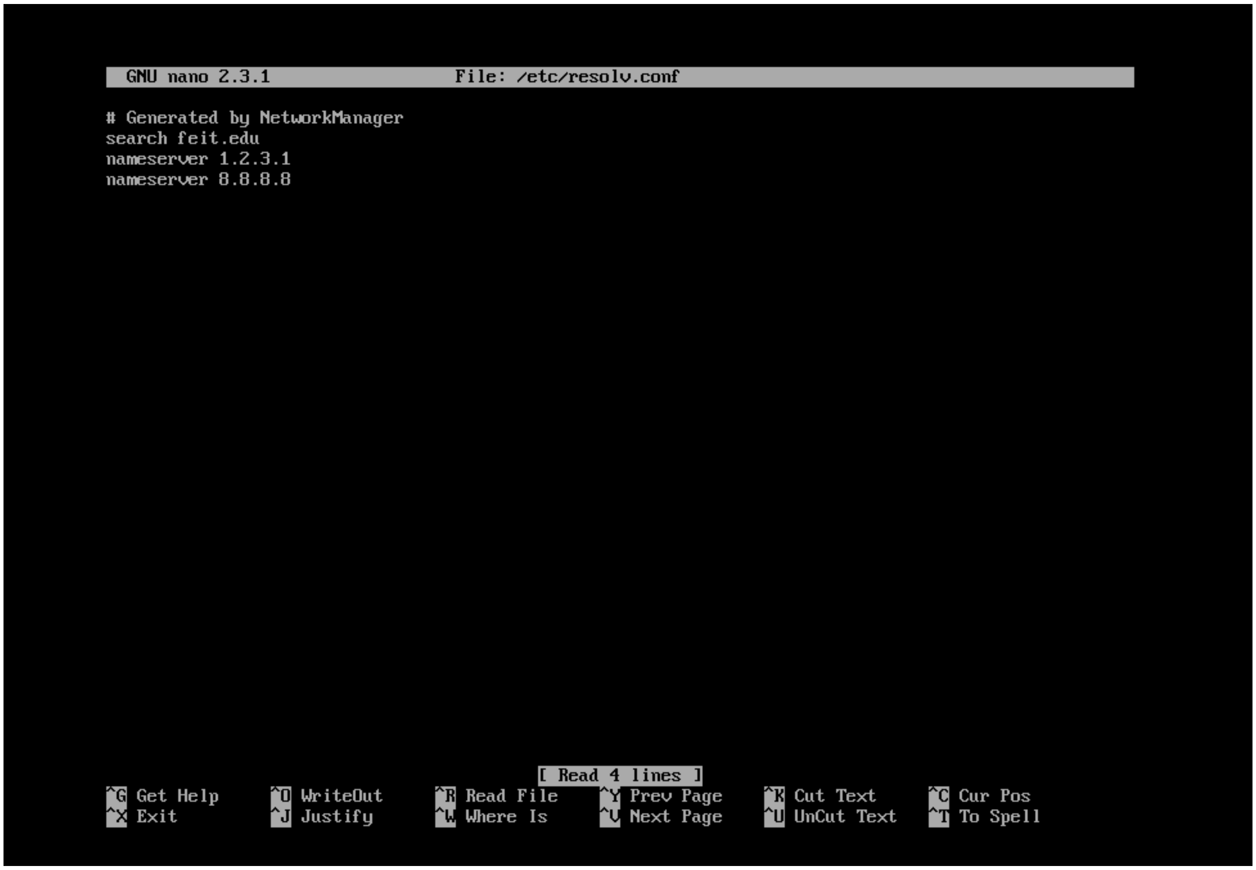
nano /etc/sysconfig/network-scripts/ifcfg-ens33



```
TYPE=Ethernet
PROXY_METHOD=none
BROWSER_ONLY=no
BOOTPROTO=static
DEFROUTE=yes
IPV4_FAILURE_FATAL=no
IPV6INIT=yes
IPV6_AUTOCONF=yes
IPV6_DEFROUTE=yes
IPV6_FAILURE_FATAL=no
IPV6_ADDR_GEN_MODE=stable-privacy
NAME=ens33
UUID=240c964c-4d12-4ed5-93eb-3f5e0f6cc874
DEVICE=ens33
ONBOOT=yes
        IPADDR=1.2.3.254
        NETMASK=255.255.255.0
        GATEWAY=1.2.3.1
        DNS1=1.2.3.1
        DNS2=8.8.8.8
        DOMAIN=feit.edu

[ Read 21 lines ]
```

nano /etc/resolv.conf

* resolv.conf file is used for DNS servers to enabled system-wide*



```
  GNU nano 2.3.1                File: /etc/resolv.conf

# Generated by NetworkManager
search feit.edu
nameserver 1.2.3.1
nameserver 8.8.8.8
```

```
                                            [ Read 4 lines ]
^G Get Help     ^O WriteOut     ^R Read File    ^Y Prev Page    ^K Cut Text     ^C Cur Pos
^X Exit         ^J Justify      ^W Where Is     ^V Next Page    ^U UnCut Text   ^T To Spell
```

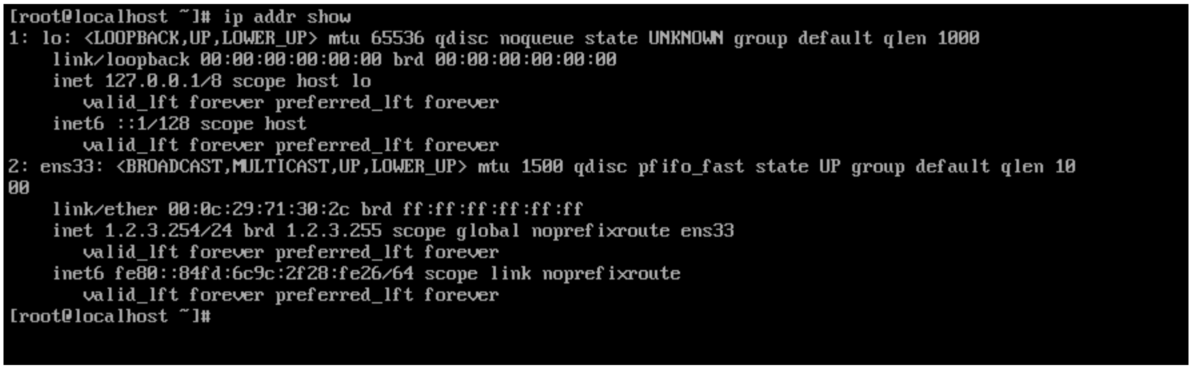
systemctl restart NetworkManager

After restart use the newly static IP address configured to perform remote login with SSH

systemctl status NetworkManager

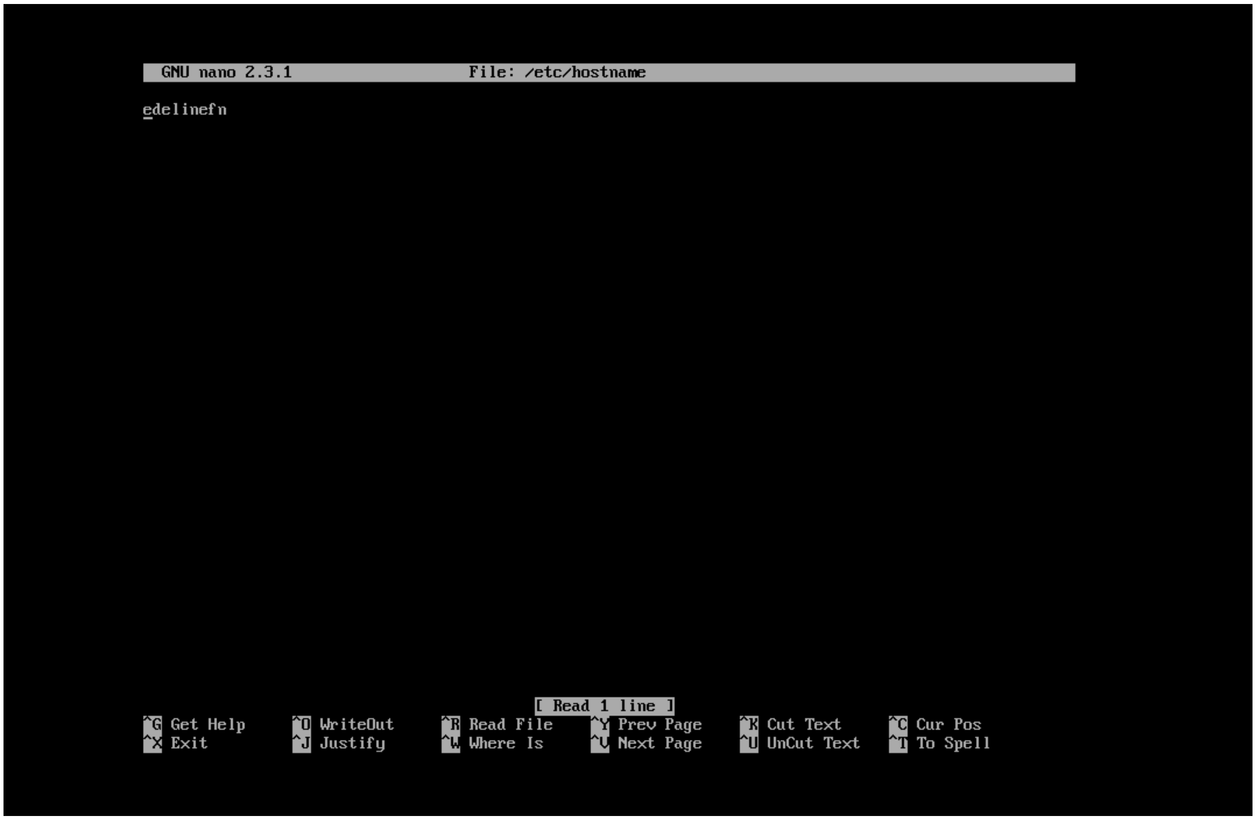
ifconfig

ip addr show



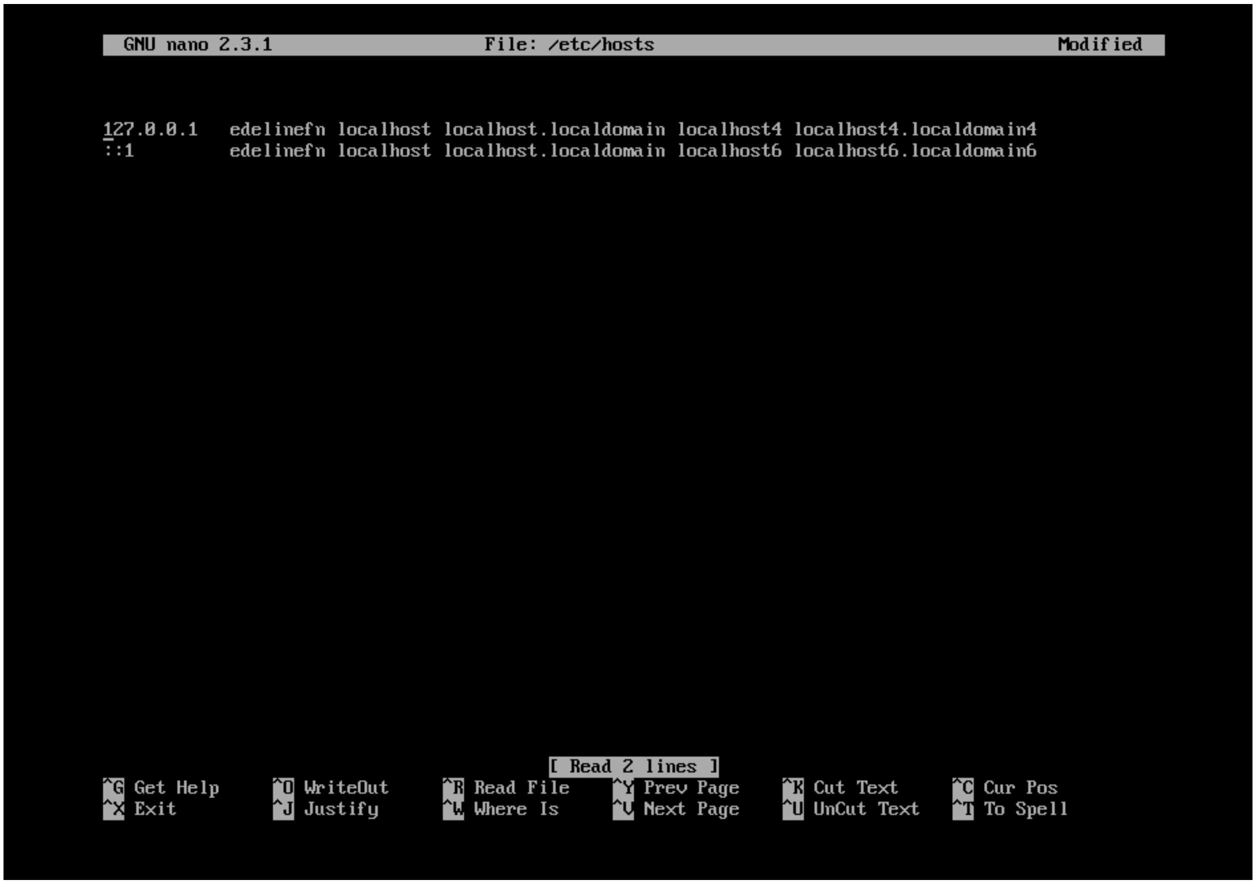
```
[root@localhost ~]# ip addr show
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
       valid_lft forever preferred_lft forever
2: ens33: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 10
00
    link/ether 00:0c:29:71:30:2c brd ff:ff:ff:ff:ff:ff
    inet 1.2.3.254/24 brd 1.2.3.255 scope global noprefixroute ens33
       valid_lft forever preferred_lft forever
    inet6 fe80::84fd:6c9c:2f28:fe26/64 scope link noprefixroute
       valid_lft forever preferred_lft forever
[root@localhost ~]#
```

nano /etc/hostname



```
  GNU nano 2.3.1                 File: /etc/hostname

edelinefn
















                                [ Read 1 line ]
^G Get Help    ^O WriteOut    ^R Read File   ^Y Prev Page   ^K Cut Text    ^C Cur Pos
^X Exit        ^J Justify     ^W Where Is    ^V Next Page   ^U UnCut Text  ^T To Spell
```

nano /etc/hosts

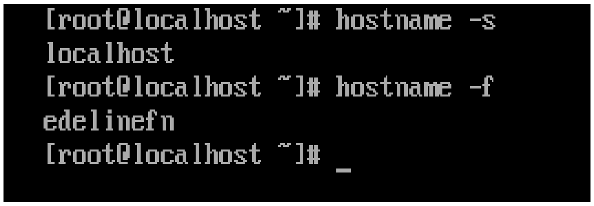


```
  GNU nano 2.3.1                 File: /etc/hosts                                    Modified


127.0.0.1   edelinefn localhost localhost.localdomain localhost4 localhost4.localdomain4
::1         edelinefn localhost localhost.localdomain localhost6 localhost6.localdomain6
















                                       [ Read 2 lines ]
^G Get Help     ^O WriteOut     ^R Read File    ^Y Prev Page    ^K Cut Text     ^C Cur Pos
^X Exit         ^J Justify      ^W Where Is     ^V Next Page    ^U UnCut Text   ^T To Spell
```

hostname -s # For short name

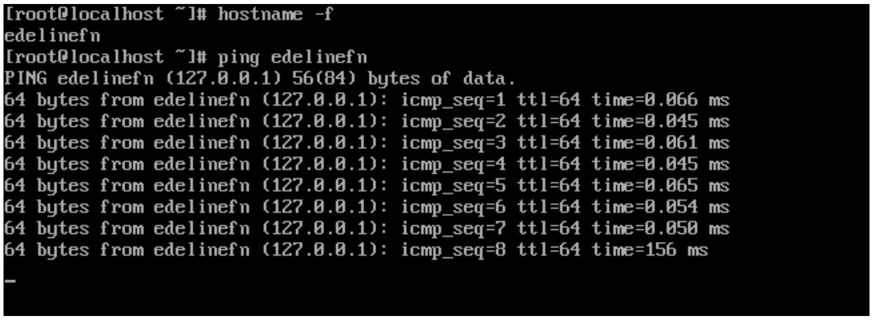
hostname -f # For FQDN name

To test if hostname is correctly set use hostname command



```
[root@localhost ~]# hostname -s
localhost
[root@localhost ~]# hostname -f
edelinefn
[root@localhost ~]# _
```

ping edelinefn



```
[root@localhost ~]# hostname -f
edelinefn
[root@localhost ~]# ping edelinefn
PING edelinefn (127.0.0.1) 56(84) bytes of data.
64 bytes from edelinefn (127.0.0.1): icmp_seq=1 ttl=64 time=0.066 ms
64 bytes from edelinefn (127.0.0.1): icmp_seq=2 ttl=64 time=0.045 ms
64 bytes from edelinefn (127.0.0.1): icmp_seq=3 ttl=64 time=0.061 ms
64 bytes from edelinefn (127.0.0.1): icmp_seq=4 ttl=64 time=0.045 ms
64 bytes from edelinefn (127.0.0.1): icmp_seq=5 ttl=64 time=0.065 ms
64 bytes from edelinefn (127.0.0.1): icmp_seq=6 ttl=64 time=0.054 ms
64 bytes from edelinefn (127.0.0.1): icmp_seq=7 ttl=64 time=0.050 ms
64 bytes from edelinefn (127.0.0.1): icmp_seq=8 ttl=64 time=156 ms
_
```

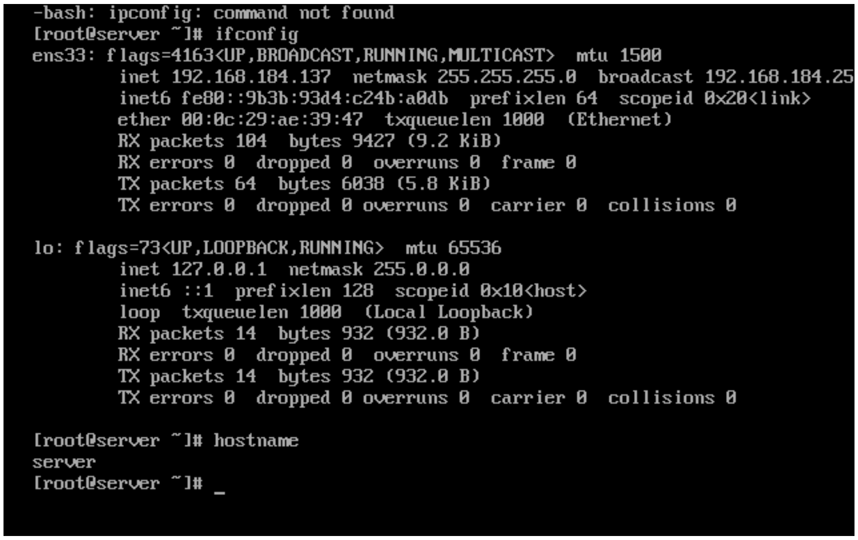
Task 3: Set up NFS service (5 marks)

Configure your Linux server as an NFS server. Create a new directory called /public, and export this directory to all machines on your local subnet. The directory should be both readable and writable to NFS clients. Ensure that users can create new files in the NFS-mounted directory.

Make sure the configuration is permanent.

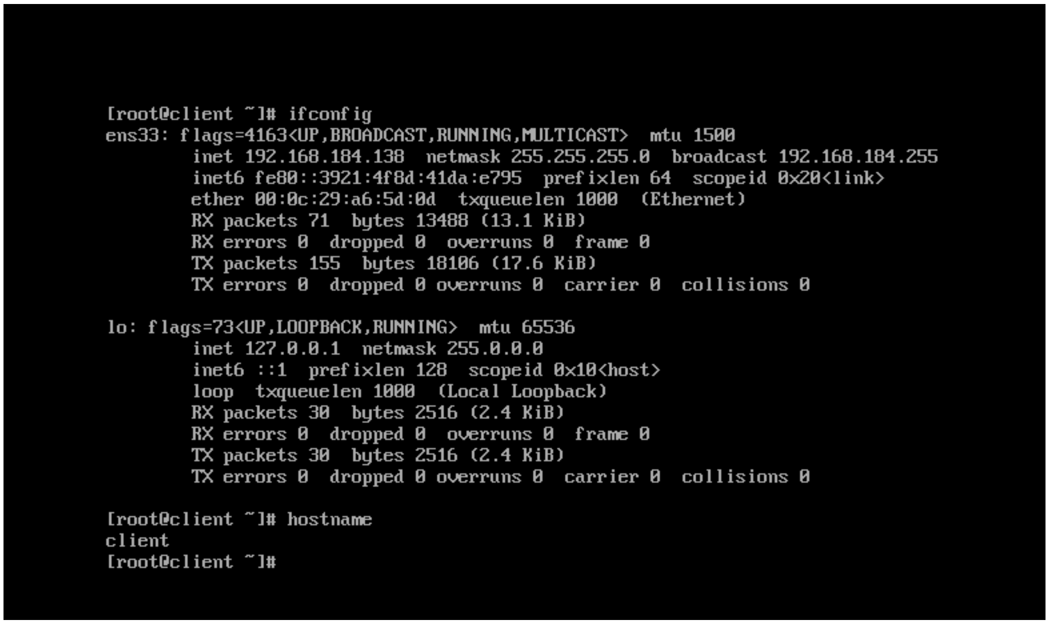
Step 1:

NFS Server: server, IP address: 192.168.184.137



```
-bash: ipconfig: command not found
[root@server ~]# ifconfig
ens33: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.184.137  netmask 255.255.255.0  broadcast 192.168.184.25
        inet6 fe80::9b3b:93d4:c24b:a0db  prefixlen 64  scopeid 0x20<link>
        ether 00:0c:29:ae:39:47  txqueuelen 1000  (Ethernet)
        RX packets 104  bytes 9427 (9.2 KiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 64  bytes 6038 (5.8 KiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0x10<host>
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 14  bytes 932 (932.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 14  bytes 932 (932.0 B)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

[root@server ~]# hostname
server
[root@server ~]# _
```

NFS Client: client, IP address: 192.168.184.138



```
[root@client ~]# ifconfig
ens33: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.184.138  netmask 255.255.255.0  broadcast 192.168.184.255
        inet6 fe80::3921:4f8d:41da:e795  prefixlen 64  scopeid 0x20<link>
        ether 00:0c:29:a6:5d:0d  txqueuelen 1000  (Ethernet)
        RX packets 71  bytes 13488 (13.1 KiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 155  bytes 18106 (17.6 KiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0x10<host>
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 30  bytes 2516 (2.4 KiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 30  bytes 2516 (2.4 KiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

[root@client ~]# hostname
client
[root@client ~]#
```

use the nano editor in this tutorial to edit configuration files. Nano can be installed like this.

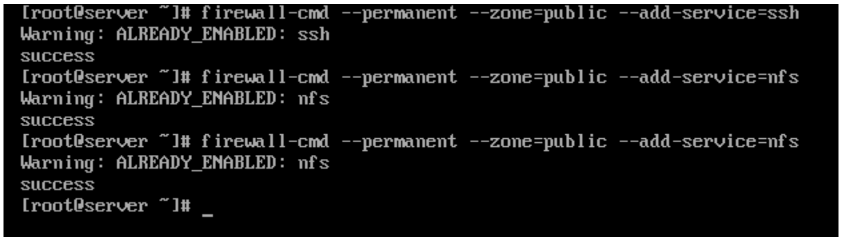
Yum –y install -nano

Step 2: Configure Firewall

Install firewall : yum –y install firewall

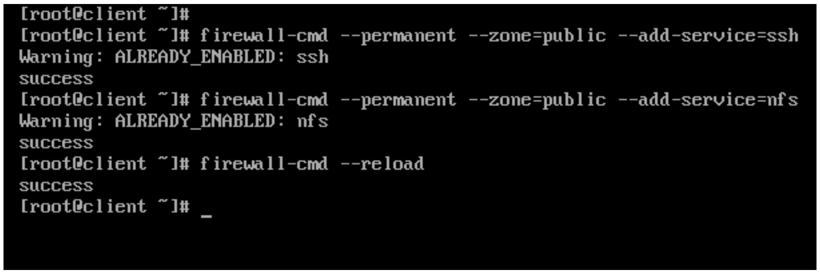
Start firewall:
Systemctl start firewall.service
System enable firewall.service

In Service:
firewall-cmd --permanent --zone=public --add-service=ssh
firewall-cmd --permanent --zone=public --add-service=nfs
firewall-cmd --reload



```
[root@server ~]# firewall-cmd --permanent --zone=public --add-service=ssh
Warning: ALREADY_ENABLED: ssh
success
[root@server ~]# firewall-cmd --permanent --zone=public --add-service=nfs
Warning: ALREADY_ENABLED: nfs
success
[root@server ~]# firewall-cmd --permanent --zone=public --add-service=nfs
Warning: ALREADY_ENABLED: nfs
success
[root@server ~]# _
```

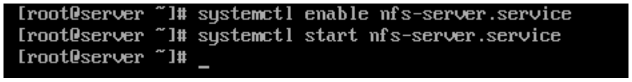
In Client:



```
[root@client ~]#
[root@client ~]# firewall-cmd --permanent --zone=public --add-service=ssh
Warning: ALREADY_ENABLED: ssh
success
[root@client ~]# firewall-cmd --permanent --zone=public --add-service=nfs
Warning: ALREADY_ENABLED: nfs
success
[root@client ~]# firewall-cmd --reload
success
[root@client ~]# _
```

Step 3: Install NFS
In Server:
yum -y install nfs-utils

Then enable and start the nfs server service.
systemctl enable nfs-server.service
systemctl start nfs-server.service

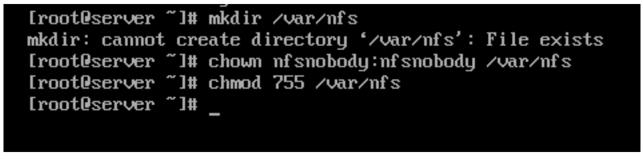


```
[root@server ~]# systemctl enable nfs-server.service
[root@server ~]# systemctl start nfs-server.service
[root@server ~]# _
```

In Client:
yum -y install nfs-utils

Step 4: exporting Directories on the server
In Server:

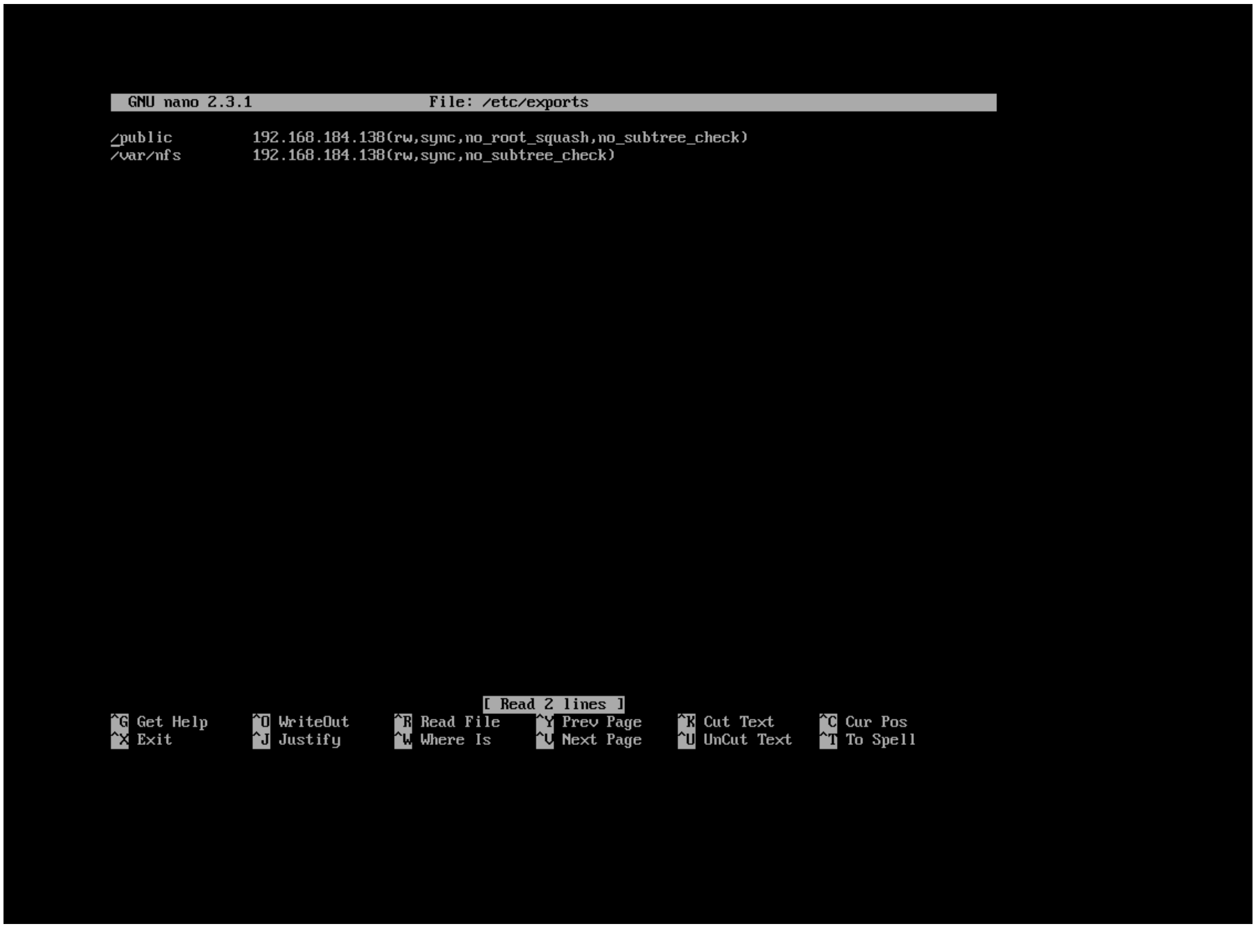
mkdir /var/nfs
chown nfsnobody:nfsnobody /var/nfs
chmod 755 /var/nfs



```
[root@server ~]# mkdir /var/nfs
mkdir: cannot create directory ‘/var/nfs’: File exists
[root@server ~]# chown nfsnobody:nfsnobody /var/nfs
[root@server ~]# chmod 755 /var/nfs
[root@server ~]# _
```

man 5 exports

nano /etc/exports



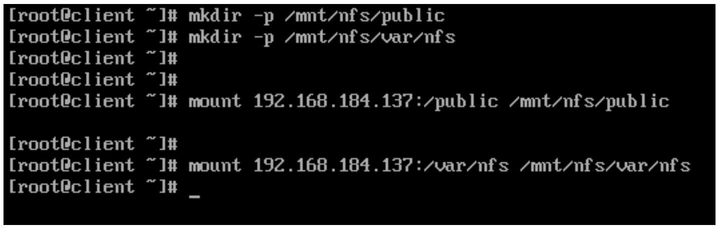
```
/public        192.168.184.138(rw,sync,no_root_squash,no_subtree_check)
/var/nfs       192.168.184.138(rw,sync,no_subtree_check)
```

Whenever modify /etc/exports, we must run:

exportfs –a

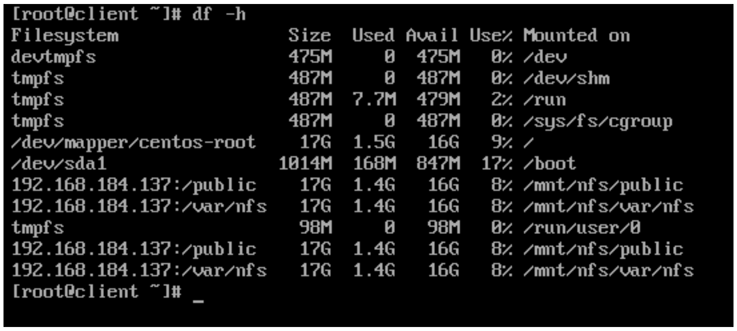
Step 5: Mounting the NFS shares on the client:
In Client:

First we create the directories where we want to mount the NFS shares, e.g.:
mkdir -p /mnt/nfs/public
mkdir -p /mnt/nfs/var/nfs
mount 192.168.184.137:/public /mnt/nfs/public
mount 192.168.184.137:/var/nfs /mnt/nfs/var/nfs



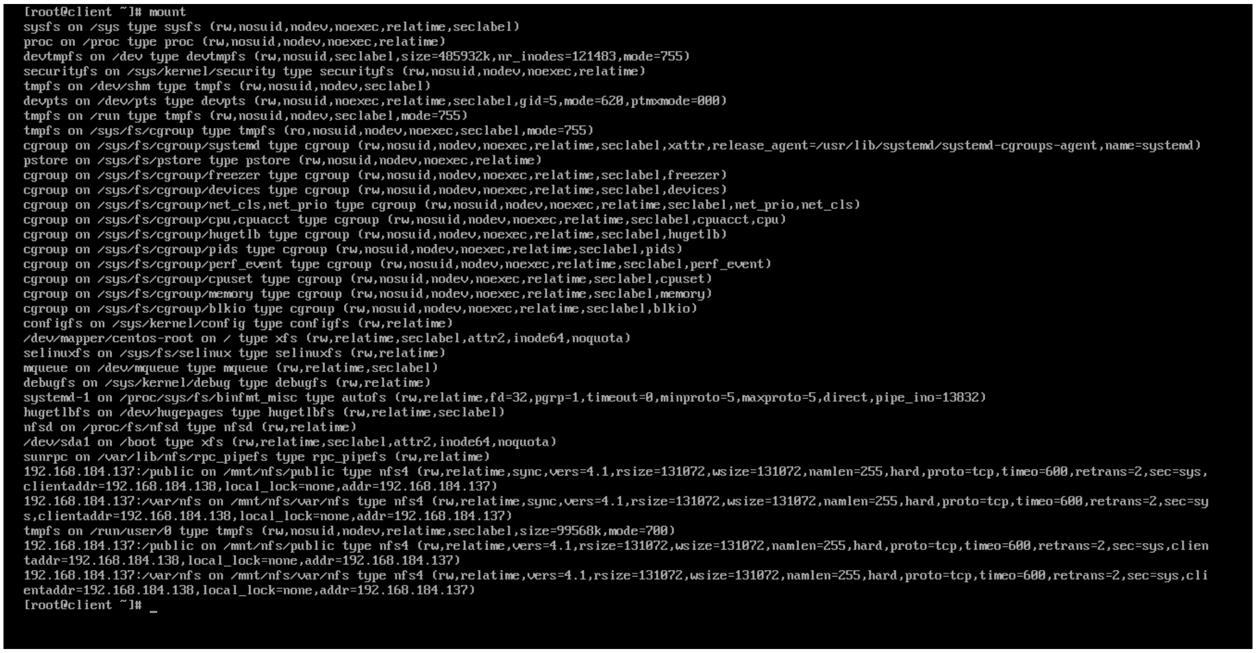
```
[root@client ~]# mkdir -p /mnt/nfs/public
[root@client ~]# mkdir -p /mnt/nfs/var/nfs
[root@client ~]#
[root@client ~]#
[root@client ~]# mount 192.168.184.137:/public /mnt/nfs/public

[root@client ~]#
[root@client ~]# mount 192.168.184.137:/var/nfs /mnt/nfs/var/nfs
[root@client ~]# _
```

df –h



```
[root@client ~]# df -h
Filesystem               Size  Used Avail Use% Mounted on
devtmpfs                 475M     0  475M   0% /dev
tmpfs                    487M     0  487M   0% /dev/shm
tmpfs                    487M  7.7M  479M   2% /run
tmpfs                    487M     0  487M   0% /sys/fs/cgroup
/dev/mapper/centos-root   17G  1.5G   16G   9% /
/dev/sda1               1014M  168M  847M  17% /boot
192.168.184.137:/public   17G  1.4G   16G   8% /mnt/nfs/public
192.168.184.137:/var/nfs  17G  1.4G   16G   8% /mnt/nfs/var/nfs
tmpfs                     98M     0   98M   0% /run/user/0
192.168.184.137:/public   17G  1.4G   16G   8% /mnt/nfs/public
192.168.184.137:/var/nfs  17G  1.4G   16G   8% /mnt/nfs/var/nfs
[root@client ~]# _
```

Mount



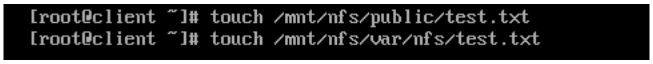
```
[root@client ~]# mount
sysfs on /sys type sysfs (rw,nosuid,nodev,noexec,relatime,seclabel)
proc on /proc type proc (rw,nosuid,nodev,noexec,relatime)
devtmpfs on /dev type devtmpfs (rw,nosuid,seclabel,size=485932k,nr_inodes=121483,mode=755)
securityfs on /sys/kernel/security type securityfs (rw,nosuid,nodev,noexec,relatime)
tmpfs on /dev/shm type tmpfs (rw,nosuid,nodev,seclabel)
devpts on /dev/pts type devpts (rw,nosuid,noexec,relatime,seclabel,gid=5,mode=620,ptmxmode=000)
tmpfs on /run type tmpfs (rw,nosuid,nodev,seclabel,mode=755)
tmpfs on /sys/fs/cgroup type tmpfs (ro,nosuid,nodev,noexec,seclabel,mode=755)
cgroup on /sys/fs/cgroup/systemd type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,xattr,release_agent=/usr/lib/systemd/systemd-cgroups-agent,name=systemd)
pstore on /sys/fs/pstore type pstore (rw,nosuid,nodev,noexec,relatime)
cgroup on /sys/fs/cgroup/freezer type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,freezer)
cgroup on /sys/fs/cgroup/devices type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,devices)
cgroup on /sys/fs/cgroup/net_cls,net_prio type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,net_prio,net_cls)
cgroup on /sys/fs/cgroup/cpu,cpuacct type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,cpuacct,cpu)
cgroup on /sys/fs/cgroup/hugetlb type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,hugetlb)
cgroup on /sys/fs/cgroup/pids type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,pids)
cgroup on /sys/fs/cgroup/perf_event type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,perf_event)
cgroup on /sys/fs/cgroup/cpuset type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,cpuset)
cgroup on /sys/fs/cgroup/memory type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,memory)
cgroup on /sys/fs/cgroup/blkio type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,blkio)
configfs on /sys/kernel/config type configfs (rw,relatime)
/dev/mapper/centos-root on / type xfs (rw,relatime,seclabel,attr2,inode64,noquota)
selinuxfs on /sys/fs/selinux type selinuxfs (rw,relatime)
mqueue on /dev/mqueue type mqueue (rw,relatime,seclabel)
debugfs on /sys/kernel/debug type debugfs (rw,relatime)
systemd-1 on /proc/sys/fs/binfmt_misc type autofs (rw,relatime,fd=32,pgrp=1,timeout=0,minproto=5,maxproto=5,direct,pipe_ino=13832)
hugetlbfs on /dev/hugepages type hugetlbfs (rw,relatime,seclabel)
nfsd on /proc/fs/nfsd type nfsd (rw,relatime)
/dev/sda1 on /boot type xfs (rw,relatime,seclabel,attr2,inode64,noquota)
sunrpc on /var/lib/nfs/rpc_pipefs type rpc_pipefs (rw,relatime)
192.168.184.137:/public on /mnt/nfs/public type nfs4 (rw,relatime,sync,vers=4.1,rsize=131072,wsize=131072,namlen=255,hard,proto=tcp,timeo=600,retrans=2,sec=sys,
clientaddr=192.168.184.138,local_lock=none,addr=192.168.184.137)
192.168.184.137:/var/nfs on /mnt/nfs/var/nfs type nfs4 (rw,relatime,sync,vers=4.1,rsize=131072,wsize=131072,namlen=255,hard,proto=tcp,timeo=600,retrans=2,sec=sy
s,clientaddr=192.168.184.138,local_lock=none,addr=192.168.184.137)
tmpfs on /run/user/0 type tmpfs (rw,nosuid,nodev,relatime,seclabel,size=99568k,mode=700)
192.168.184.137:/public on /mnt/nfs/public type nfs4 (rw,relatime,vers=4.1,rsize=131072,wsize=131072,namlen=255,hard,proto=tcp,timeo=600,retrans=2,sec=sys,clien
taddr=192.168.184.138,local_lock=none,addr=192.168.184.137)
192.168.184.137:/var/nfs on /mnt/nfs/var/nfs type nfs4 (rw,relatime,vers=4.1,rsize=131072,wsize=131072,namlen=255,hard,proto=tcp,timeo=600,retrans=2,sec=sys,cli
entaddr=192.168.184.138,local_lock=none,addr=192.168.184.137)
[root@client ~]# _
```

Step 6: testing

In Client:

touch /mnt/nfs/public/test.txt

touch /mnt/nfs/var/nfs/test.txt

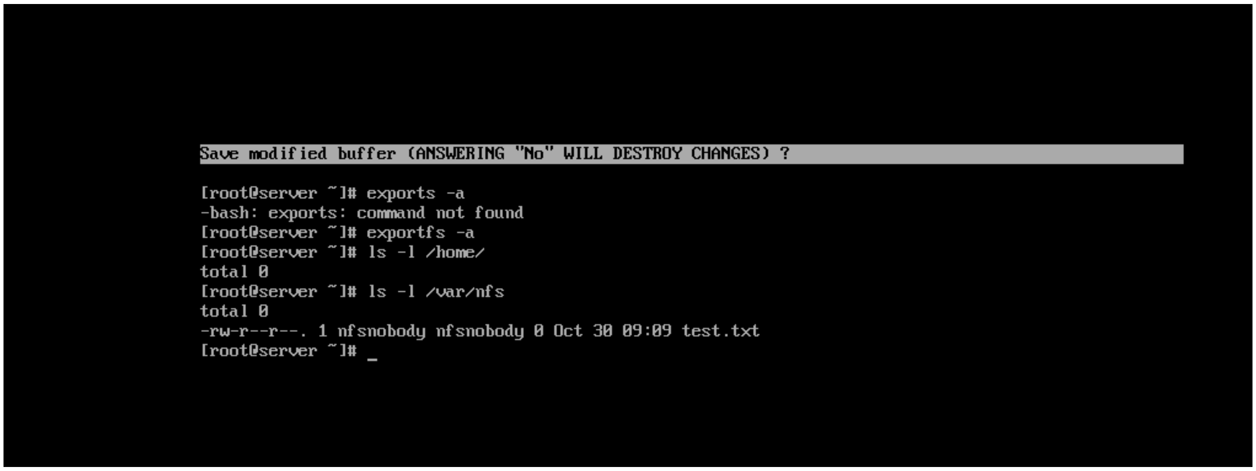


```
[root@client ~]# touch /mnt/nfs/public/test.txt
[root@client ~]# touch /mnt/nfs/var/nfs/test.txt
```

In Server:

Ls –l/home

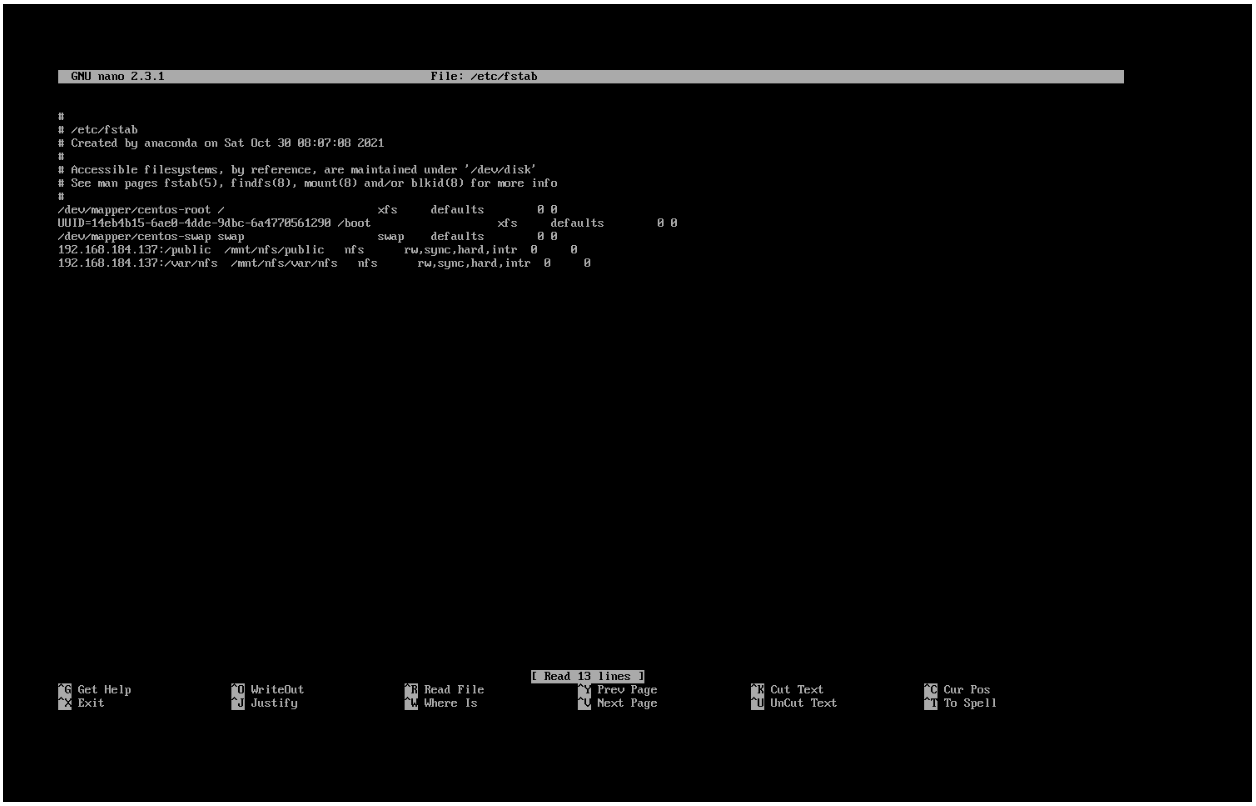
Ls –l var/nfs



```
Save modified buffer (ANSWERING "No" WILL DESTROY CHANGES) ?

[root@server ~]# exports -a
-bash: exports: command not found
[root@server ~]# exportfs -a
[root@server ~]# ls -l /home/
total 0
[root@server ~]# ls -l /var/nfs
total 0
-rw-r--r--. 1 nfsnobody nfsnobody 0 Oct 30 09:09 test.txt
[root@server ~]# _
```

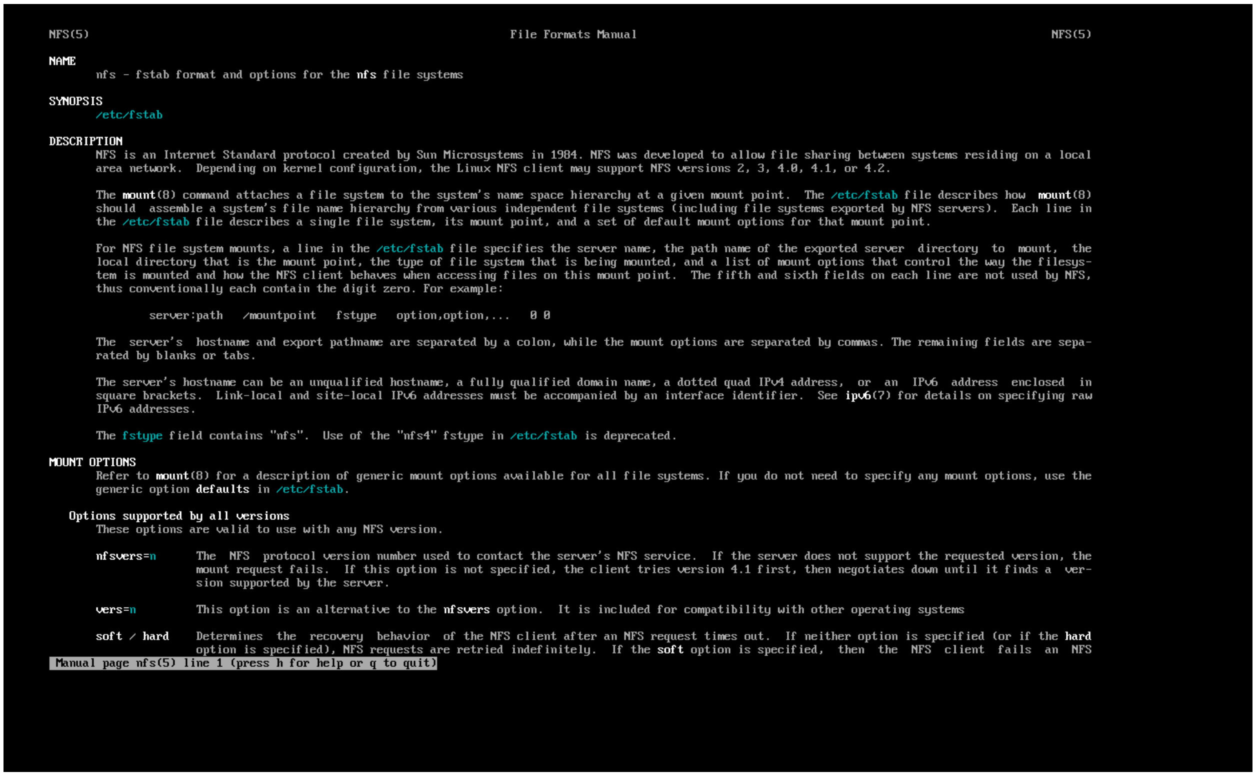
Step 7: Mounting NFS Shares at boot Time
In Client:

Nano /etc/fstab



```
  GNU nano 2.3.1                        File: /etc/fstab


#
# /etc/fstab
# Created by anaconda on Sat Oct 30 08:07:08 2021
#
# Accessible filesystems, by reference, are maintained under '/dev/disk'
# See man pages fstab(5), findfs(8), mount(8) and/or blkid(8) for more info
#
/dev/mapper/centos-root /                       xfs     defaults        0 0
UUID=14eb4b15-6ae0-4dde-9dbc-6a4770561290 /boot                   xfs     defaults        0 0
/dev/mapper/centos-swap swap                    swap    defaults        0 0
192.168.184.137:/public  /mnt/nfs/public   nfs      rw,sync,hard,intr  0     0
192.168.184.137:/var/nfs  /mnt/nfs/var/nfs   nfs      rw,sync,hard,intr  0     0









                                   [ Read 13 lines ]
^G Get Help     ^O WriteOut     ^R Read File    ^Y Prev Page    ^K Cut Text     ^C Cur Pos
^X Exit         ^J Justify      ^W Where Is     ^V Next Page    ^U UnCut Text   ^T To Spell
```

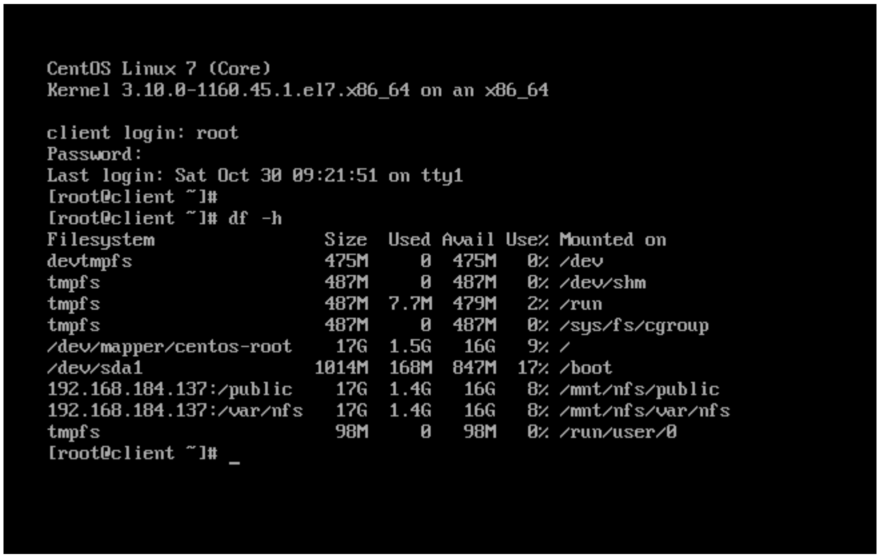
Man nfs



```
NFS(5)                                File Formats Manual                                NFS(5)

NAME
       nfs - fstab format and options for the nfs file systems

SYNOPSIS
       /etc/fstab

DESCRIPTION
       NFS is an Internet Standard protocol created by Sun Microsystems in 1984. NFS was developed to allow file sharing between systems residing on a local
       area network.  Depending on kernel configuration, the Linux NFS client may support NFS versions 2, 3, 4.0, 4.1, or 4.2.

       The mount(8) command attaches a file system to the system's name space hierarchy at a given mount point.  The /etc/fstab file describes how  mount(8)
       should  assemble a system's file name hierarchy from various independent file systems (including file systems exported by NFS servers).  Each line in
       the /etc/fstab file describes a single file system, its mount point, and a set of default mount options for that mount point.

       For NFS file system mounts, a line in the /etc/fstab file specifies the server name, the path name of the exported server  directory  to  mount,  the
       local directory that is the mount point, the type of file system that is being mounted, and a list of mount options that control the way the filesys-
       tem is mounted and how the NFS client behaves when accessing files on this mount point.  The fifth and sixth fields on each line are not used by NFS,
       thus conventionally each contain the digit zero. For example:

               server:path   /mountpoint   fstype   option,option,...   0 0

       The  server's  hostname and export pathname are separated by a colon, while the mount options are separated by commas. The remaining fields are sepa-
       rated by blanks or tabs.

       The server's hostname can be an unqualified hostname, a fully qualified domain name, a dotted quad IPv4 address,  or  an  IPv6  address  enclosed  in
       square brackets.  Link-local and site-local IPv6 addresses must be accompanied by an interface identifier.  See ipv6(7) for details on specifying raw
       IPv6 addresses.

       The fstype field contains "nfs".  Use of the "nfs4" fstype in /etc/fstab is deprecated.

MOUNT OPTIONS
       Refer to mount(8) for a description of generic mount options available for all file systems. If you do not need to specify any mount options, use the
       generic option defaults in /etc/fstab.

   Options supported by all versions
       These options are valid to use with any NFS version.

       nfsvers=n      The  NFS  protocol version number used to contact the server's NFS service.  If the server does not support the requested version, the
                      mount request fails.  If this option is not specified, the client tries version 4.1 first, then negotiates down until it finds a  ver-
                      sion supported by the server.

       vers=n         This option is an alternative to the nfsvers option.  It is included for compatibility with other operating systems

       soft / hard    Determines  the  recovery  behavior  of the NFS client after an NFS request times out.  If neither option is specified (or if the hard
                      option is specified), NFS requests are retried indefinitely.  If the soft option is specified,  then  the  NFS  client  fails  an  NFS
 Manual page nfs(5) line 1 (press h for help or q to quit)
```

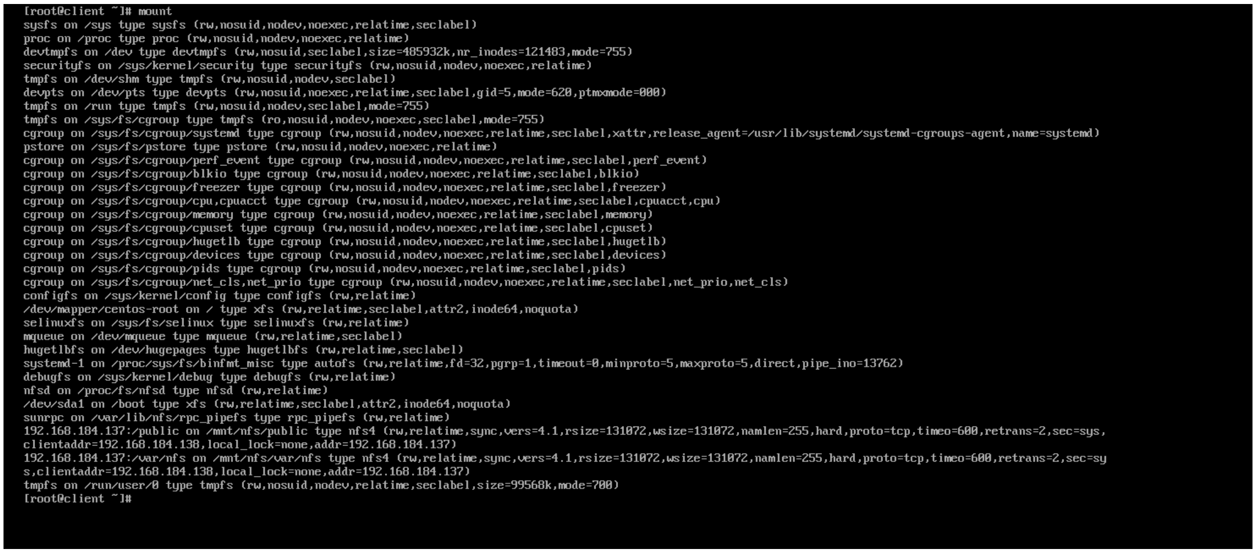
REBOOT

Df –h



```
CentOS Linux 7 (Core)
Kernel 3.10.0-1160.45.1.el7.x86_64 on an x86_64

client login: root
Password:
Last login: Sat Oct 30 09:21:51 on tty1
[root@client ~]#
[root@client ~]# df -h
Filesystem                Size  Used Avail Use% Mounted on
devtmpfs                  475M     0  475M   0% /dev
tmpfs                     487M     0  487M   0% /dev/shm
tmpfs                     487M  7.7M  479M   2% /run
tmpfs                     487M     0  487M   0% /sys/fs/cgroup
/dev/mapper/centos-root    17G  1.5G   16G   9% /
/dev/sda1                1014M  168M  847M  17% /boot
192.168.184.137:/public    17G  1.4G   16G   8% /mnt/nfs/public
192.168.184.137:/var/nfs   17G  1.4G   16G   8% /mnt/nfs/var/nfs
tmpfs                      98M     0   98M   0% /run/user/0
[root@client ~]# _
```

Mount



```
[root@client ~]# mount
sysfs on /sys type sysfs (rw,nosuid,nodev,noexec,relatime,seclabel)
proc on /proc type proc (rw,nosuid,nodev,noexec,relatime)
devtmpfs on /dev type devtmpfs (rw,nosuid,seclabel,size=485932k,nr_inodes=121483,mode=755)
securityfs on /sys/kernel/security type securityfs (rw,nosuid,nodev,noexec,relatime)
tmpfs on /dev/shm type tmpfs (rw,nosuid,nodev,seclabel)
devpts on /dev/pts type devpts (rw,nosuid,noexec,relatime,seclabel,gid=5,mode=620,ptmxmode=000)
tmpfs on /run type tmpfs (rw,nosuid,nodev,seclabel,mode=755)
tmpfs on /sys/fs/cgroup type tmpfs (ro,nosuid,nodev,noexec,seclabel,mode=755)
cgroup on /sys/fs/cgroup/systemd type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,xattr,release_agent=/usr/lib/systemd/systemd-cgroups-agent,name=systemd)
pstore on /sys/fs/pstore type pstore (rw,nosuid,nodev,noexec,relatime)
cgroup on /sys/fs/cgroup/perf_event type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,perf_event)
cgroup on /sys/fs/cgroup/blkio type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,blkio)
cgroup on /sys/fs/cgroup/freezer type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,freezer)
cgroup on /sys/fs/cgroup/cpu,cpuacct type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,cpuacct,cpu)
cgroup on /sys/fs/cgroup/memory type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,memory)
cgroup on /sys/fs/cgroup/cpuset type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,cpuset)
cgroup on /sys/fs/cgroup/hugetlb type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,hugetlb)
cgroup on /sys/fs/cgroup/devices type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,devices)
cgroup on /sys/fs/cgroup/pids type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,pids)
cgroup on /sys/fs/cgroup/net_cls,net_prio type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,net_prio,net_cls)
configfs on /sys/kernel/config type configfs (rw,relatime)
/dev/mapper/centos-root on / type xfs (rw,relatime,seclabel,attr2,inode64,noquota)
selinuxfs on /sys/fs/selinux type selinuxfs (rw,relatime)
mqueue on /dev/mqueue type mqueue (rw,relatime,seclabel)
hugetlbfs on /dev/hugepages type hugetlbfs (rw,relatime,seclabel)
systemd-1 on /proc/sys/fs/binfmt_misc type autofs (rw,relatime,fd=32,pgrp=1,timeout=0,minproto=5,maxproto=5,direct,pipe_ino=13762)
debugfs on /sys/kernel/debug type debugfs (rw,relatime)
nfsd on /proc/fs/nfsd type nfsd (rw,relatime)
/dev/sda1 on /boot type xfs (rw,relatime,seclabel,attr2,inode64,noquota)
sunrpc on /var/lib/nfs/rpc_pipefs type rpc_pipefs (rw,relatime)
192.168.184.137:/public on /mnt/nfs/public type nfs4 (rw,relatime,sync,vers=4.1,rsize=131072,wsize=131072,namlen=255,hard,proto=tcp,timeo=600,retrans=2,sec=sys,
clientaddr=192.168.184.138,local_lock=none,addr=192.168.184.137)
192.168.184.137:/var/nfs on /mnt/nfs/var/nfs type nfs4 (rw,relatime,sync,vers=4.1,rsize=131072,wsize=131072,namlen=255,hard,proto=tcp,timeo=600,retrans=2,sec=sy
s,clientaddr=192.168.184.138,local_lock=none,addr=192.168.184.137)
tmpfs on /run/user/0 type tmpfs (rw,nosuid,nodev,relatime,seclabel,size=99568k,mode=700)
[root@client ~]#
```

Task 4: Set up DNS server (10 marks)

1) Configure your Windows server (**surname**) as the master DNS server for the domain feit.edu
2) Create host entries for the **firstname** and **surname** servers in this domain as mentioned in question 1.
3) Create an entry for the main name server, ***ns*** which will reside on the **surname** server.
4) Create an alias for www.feit.edu which points to **firstname**.feit.edu.
5) Create a mail server entry such that all email addressed to @feit.edu is forwarded to **surname**.feit.edu.
6) Configure **both** Linux and Windows servers to use **surname** as their main DNS resolver and **feit.edu** as the default search domain.
7) Create a reverse lookup zone for our subnet.

1:

- Right-click the Forward Lookup Zones node> click New Zone.
- In the New Zone Wizard>The New Zone Wizard page> click Next.
- On the Zone Type page, select Primary Zone> click Next.
- In zone file> creates a new file with this file name: > click next
- On Dynamic Update> do not allow dynamic updates> click next
- On completing the new zone wizard page> Finish

2:

- Right-click the Forward Lookup Zones node> click New Zone.
- New Zone Wizard, on the welcome the New Zone Wizard page>click Next.
- On the Zone Type page, select Secondary Zone, and then click Next.
- On the Zone Name page, in the Zone Name box, type the zone name> click Next.
- On the Master DNS Servers page, in the Master Servers list, type the FQDN or IP address of the server that hosts a copy of the zone, press Enter> click Next
- On the Completing The New Zone Wizard page> click Finish.

7:

- Open DNS Management snap-in.
- If an entry for the DNS server you want to connect to does not exist, right-click on DNS in the left pane and select Connect to DNS Server
- Expand the server in the left pane and click on Reverse Lookup Zones.
- Right-click on Reverse Lookup Zones and select New Zone.
- Select the zone type
- If you selected to store the zone data in Active Directory, next you will be asked which servers you want to replicate the DNS data to. Click Next
- Type the Network ID for the reverse zone or enter a reverse zone name to use.
- Fill out the information for the remaining screens. They will vary depending on if you are creating a primary, secondary, or stub zone.

Task 5: Set up Web server (10 marks)

1) On the Linux server, create a web server and **index.html** file in the default httpd web directory. This file should ONLY contain the exact case sensitive word
HELLO

2) Create a virtual host for http://www.feit.edu and this should reside in the /www directory. Create this directory if necessary. Create an **index.html** file in this directory which should ONLY contain the exact case sensitive word **UTS**

NOTES:

(a) Do **not** use Default.htm or index.htm as the home page;
(b) you should ensure that the alias for www in previous tasks is working BEFORE you attempt part (2)
(c) The index.html files do not have to be HTML-valid – only have the exact word as required (d) You should test both http://**firstname**.feit.edu and http://www.feit.edu from each server (Linux Server and Windows Server) and they should display different web pages!