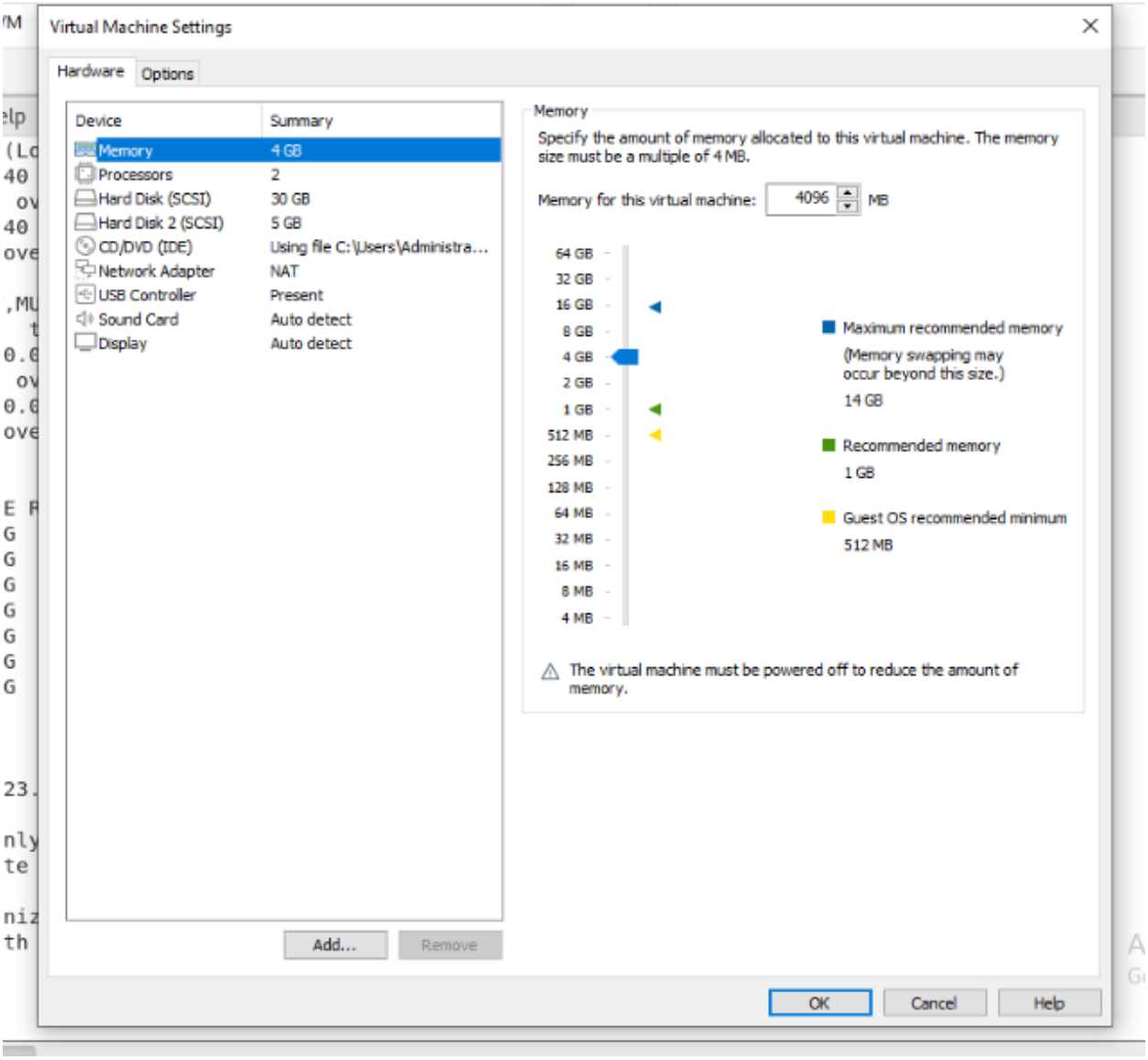
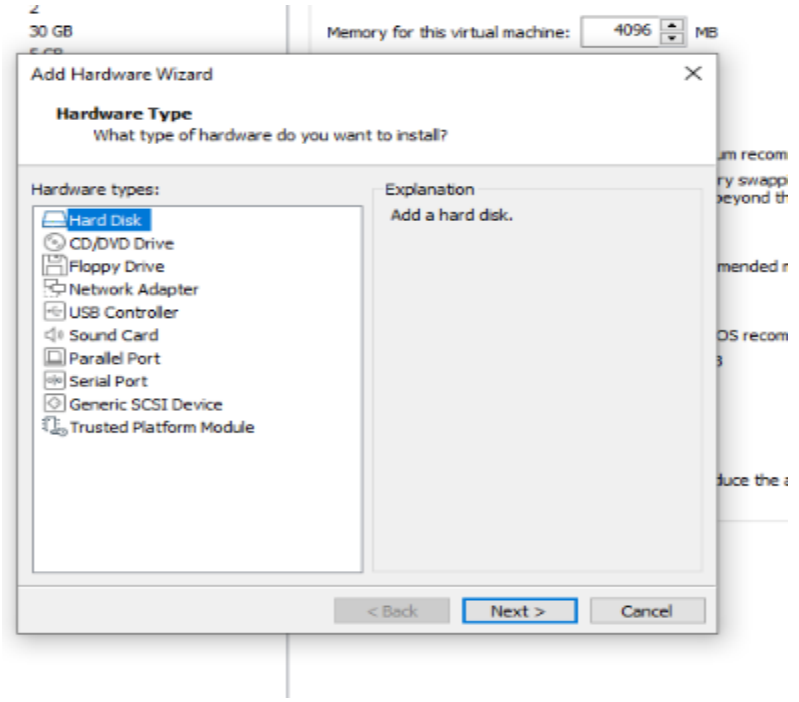
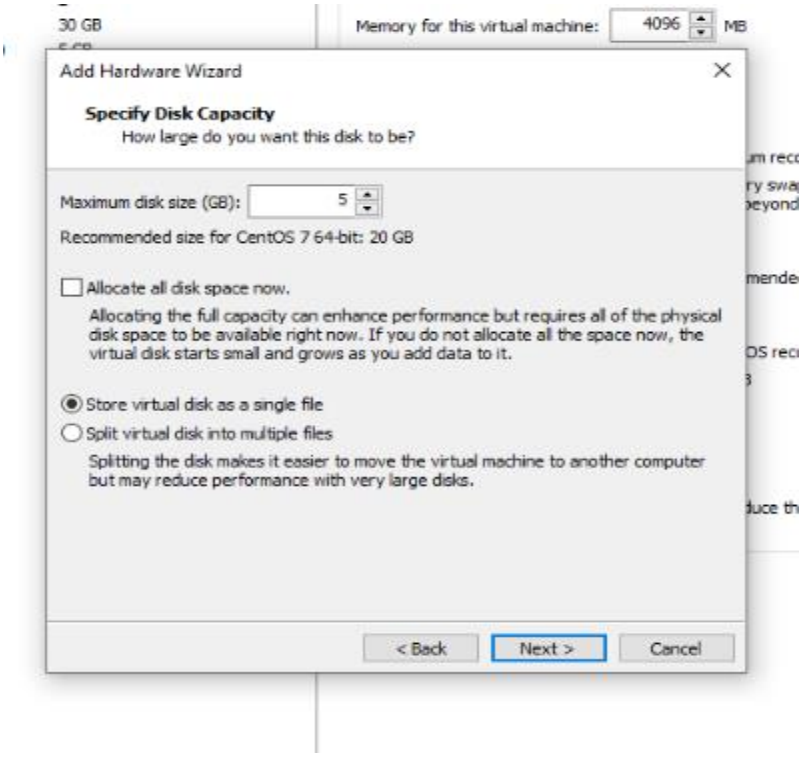
Simple Disk Partitioning

1. Add disk to linux
2. Create the partition from the disk
3. Create mount point for the partition
4. Create the file system
5. Mount the partition and verify

1) Adding the disk to linux



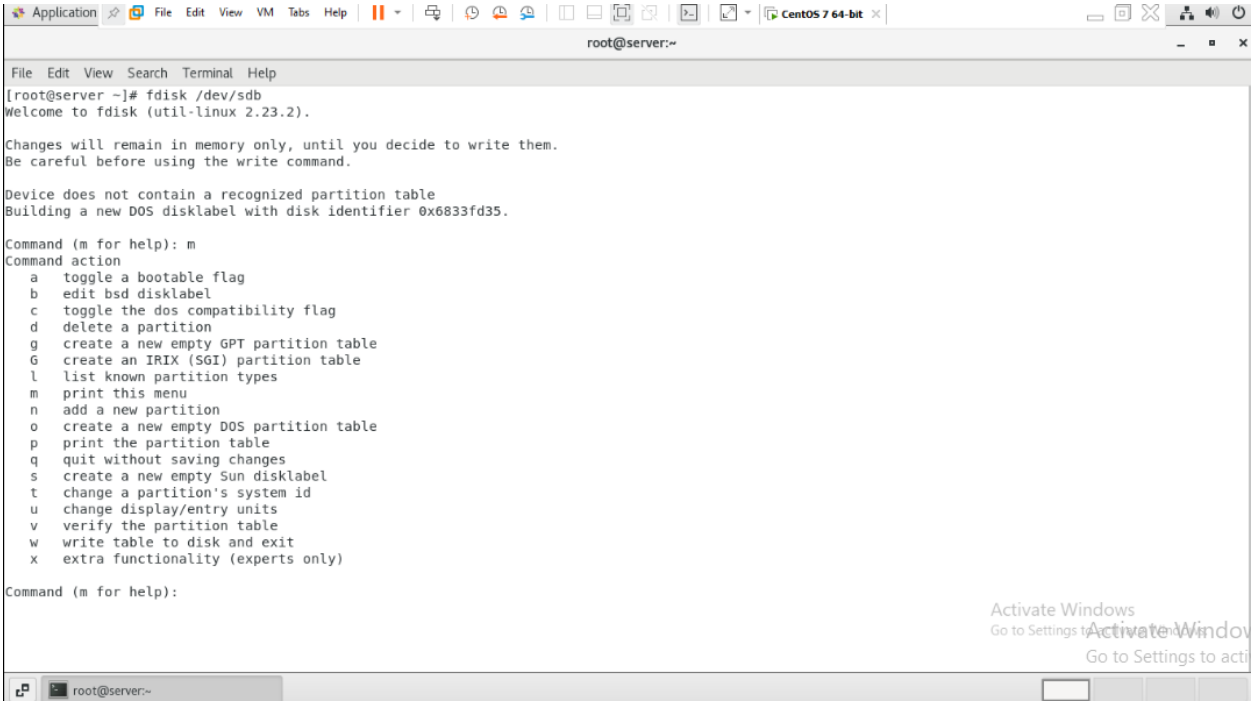


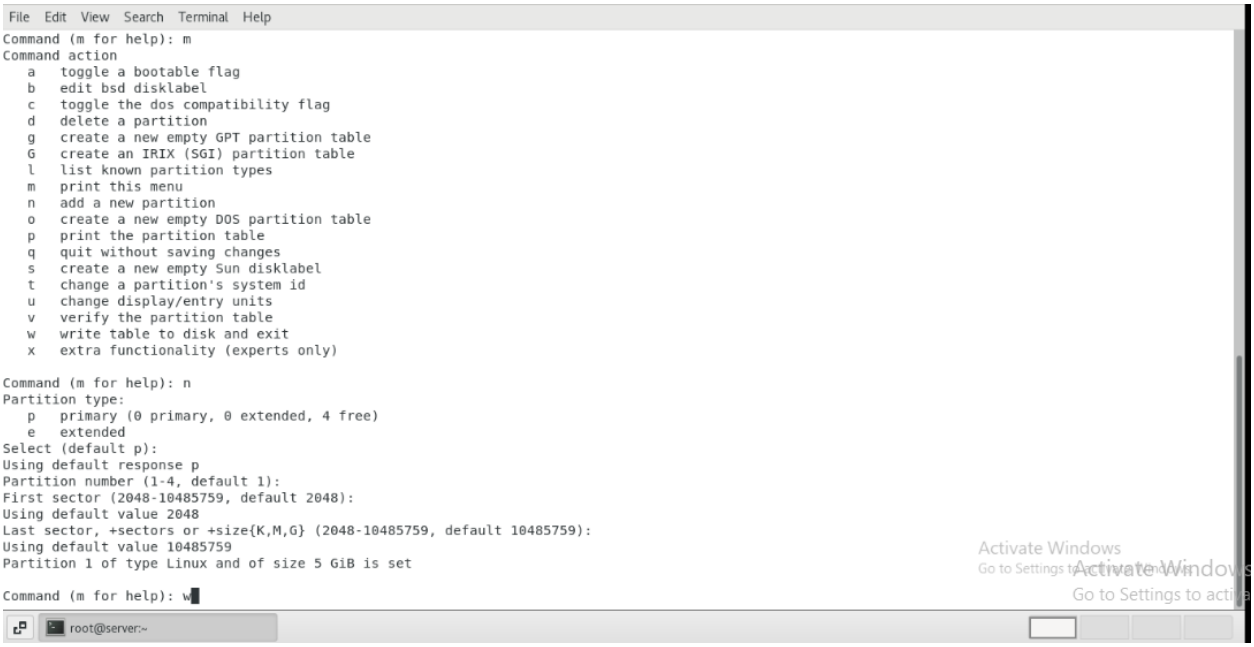


After this restart the vm and verify using **#lsblk** command .

2) Create the partition from the disk

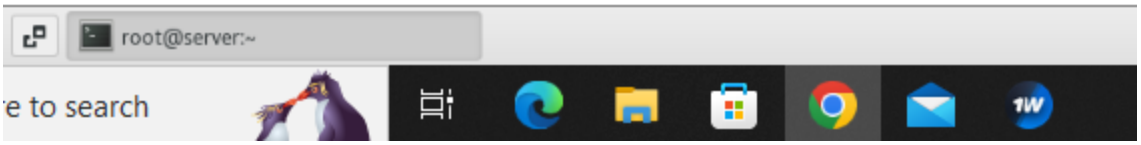
We can use fdisk command to do this .





```
Command (m for help): w
The partition table has been altered!

Calling ioctl() to re-read partition table.
Syncing disks.
[root@server ~]# lsblk
NAME            MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
sda               8:0    0   30G  0 disk
├─sda1            8:1    0    1G  0 part /boot
└─sda2            8:2    0   29G  0 part
  ├─centos-root 253:0    0   26G  0 lvm  /
  └─centos-swap 253:1    0    3G  0 lvm  [SWAP]
sdb               8:16   0    5G  0 disk
└─sdb1            8:17   0    5G  0 part
sr0              11:0    1  4.4G  0 rom  /run/media/root/CentOS 7 x86_64
[root@server ~]#
```



Here we created the partition named as “sdb1” .

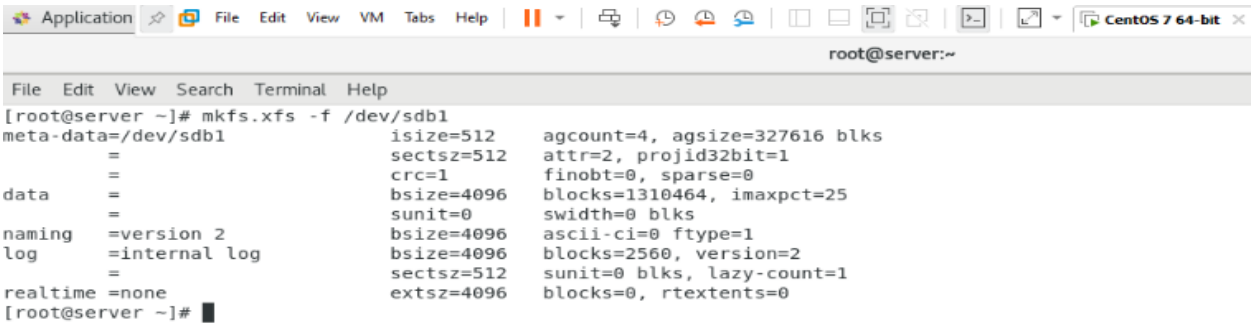
3) Create mount point for that partition

First create a mountpoint for partition

 # mkdir /stdpart

4) create the file system

We can create the filesystem using the command #mkfs



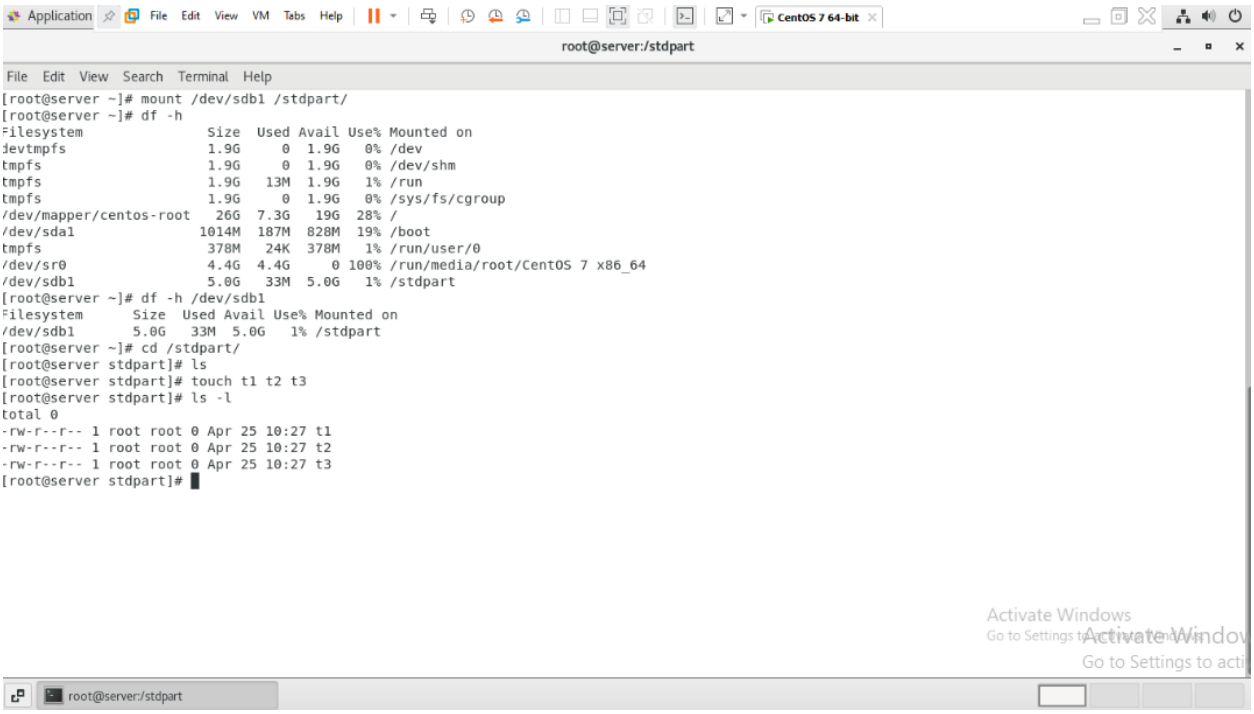
5) Mount the partition

2 ways to mount

1. Temporary

#mount <what-to-mount> <where-to-mount>

#mount /dev/sdb1 /stdpart



To unmount the partition we can use #umount commad

```
umount: /stdpart: target is busy.
        (In some cases useful info about processes that use
         the device is found by lsof(8) or fuser(1))
[root@server stdpart]# cd
[root@server ~]# umount /stdpart
[root@server ~]# df -h
Filesystem               Size  Used Avail Use% Mounted on
devtmpfs                 1.9G     0  1.9G   0% /dev
tmpfs                    1.9G     0  1.9G   0% /dev/shm
tmpfs                    1.9G   13M  1.9G   1% /run
tmpfs                    1.9G     0  1.9G   0% /sys/fs/cgroup
/dev/mapper/centos-root   26G  7.3G   19G  28% /
/dev/sda1               1014M  187M  828M  19% /boot
tmpfs                    378M   24K  378M   1% /run/user/0
/dev/sr0                 4.4G  4.4G     0 100% /run/media/root/CentOS 7 x86_64
[root@server ~]#
```

2. Permenent mount

File is /dev/fstab

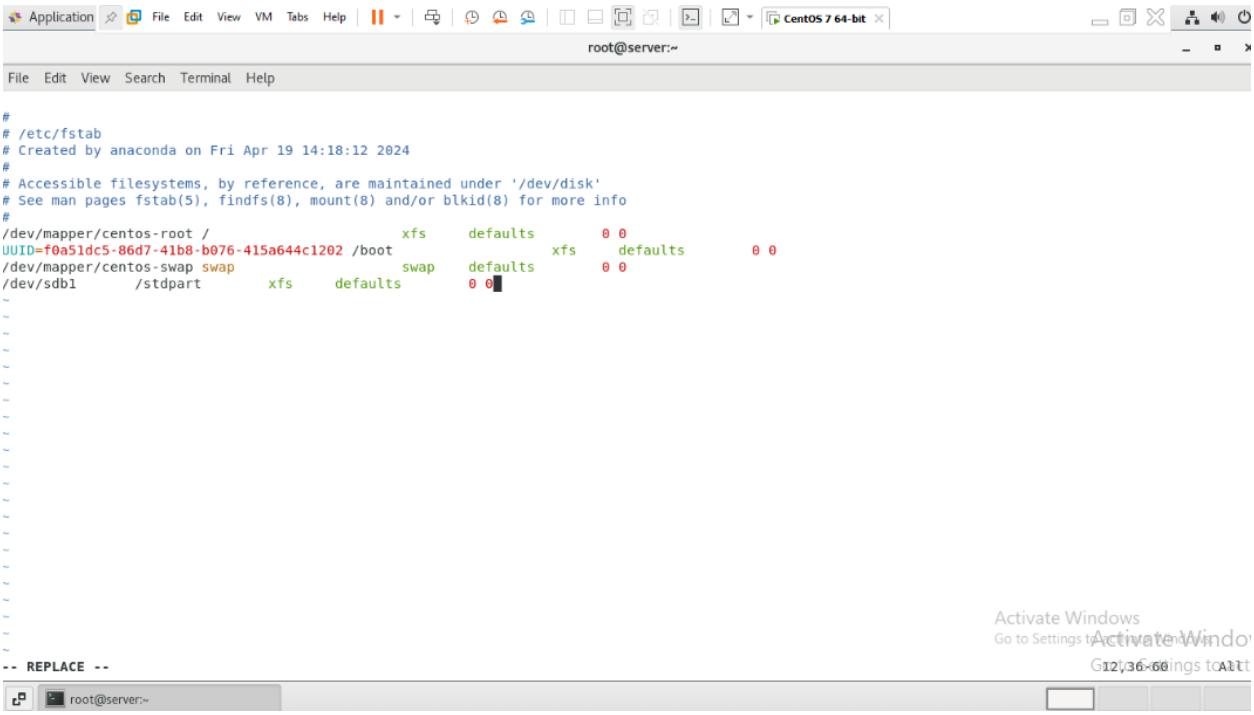
It is better to take backup of this file.

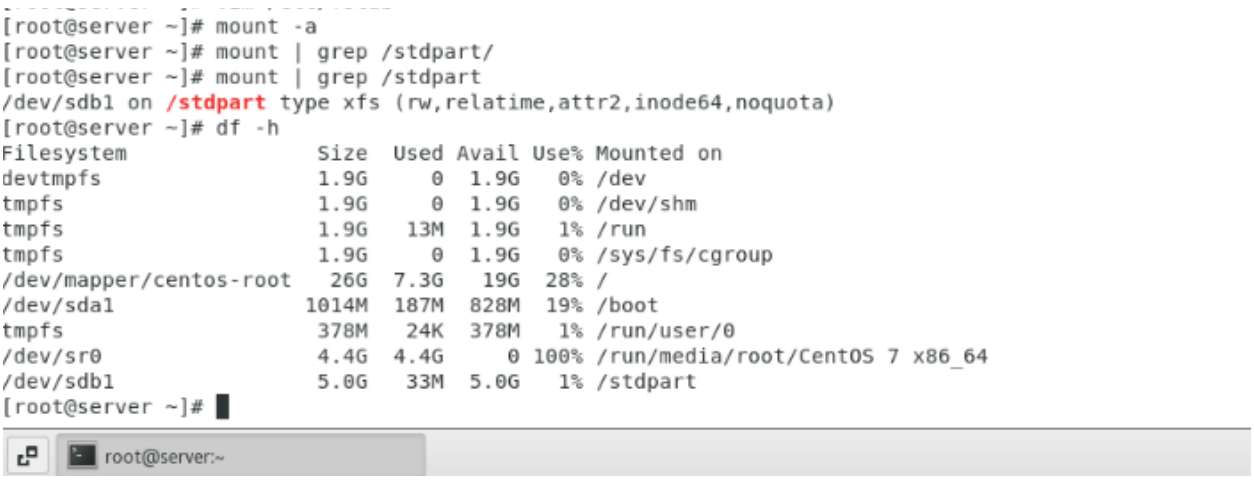
#cp /etc/fstab /tmp/fstab-backup

Fstab file has 6 entries

1. What to mount
2. Where to mount
3. File system
4. Options to mount
5. Backup operation
6. File system check

```
/dev/sr0                  4.4G  4.4G     0 100% /run/media/root/C
[root@server ~]# cp /etc/fstab /tmp/fstab-backup
[root@server ~]# ls -l /tmp/fstab-backup
-rw-r--r-- 1 root root 465 Apr 25 10:37 /tmp/fstab-backup
[root@server ~]# vim /etc/fstab
```



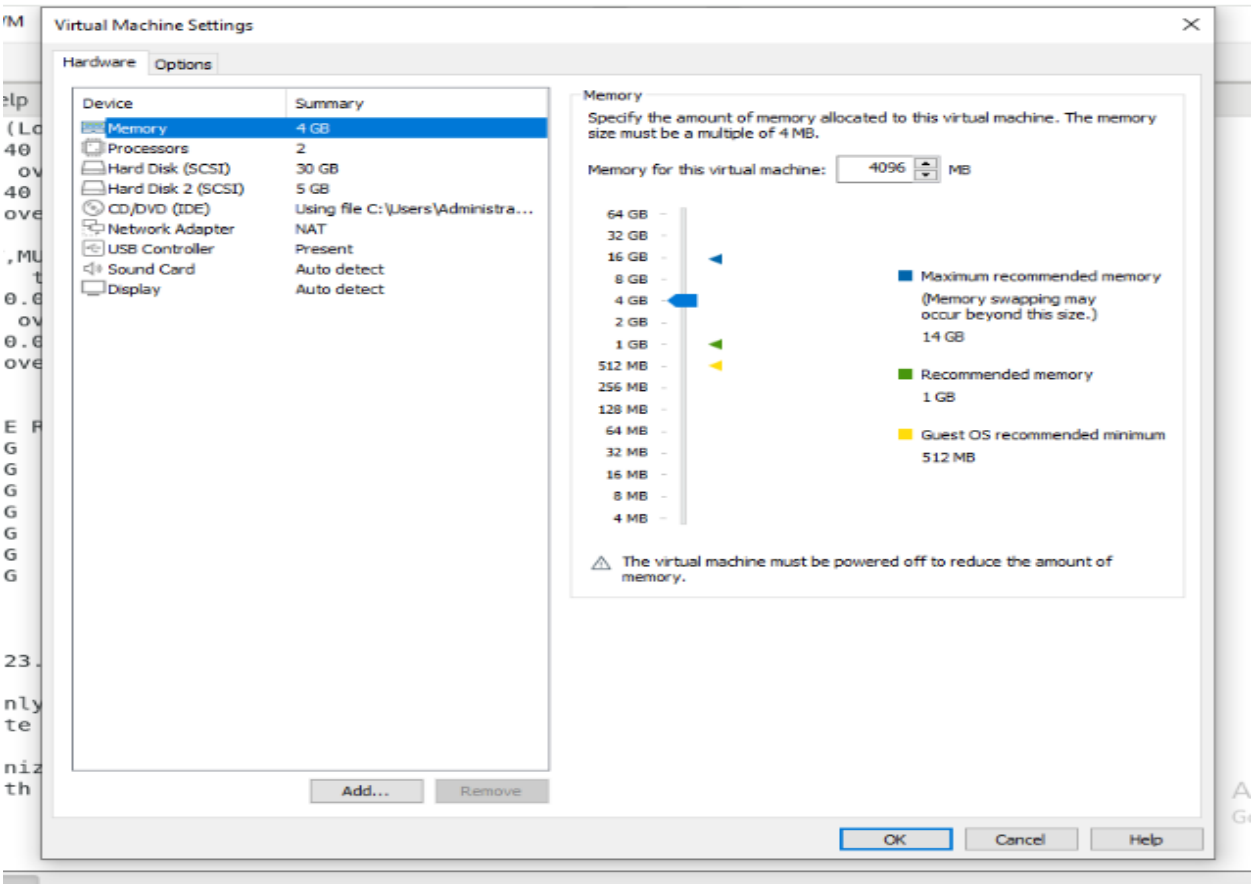


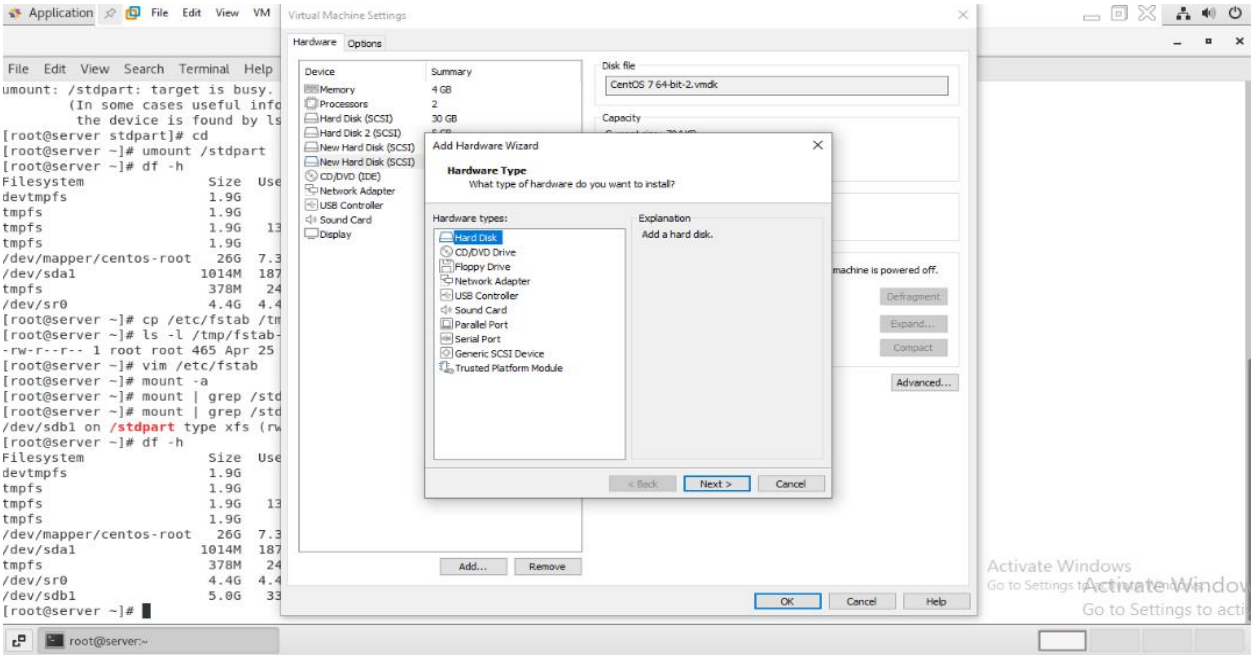
LVM – Logical Volume Manager

There are 4 steps here

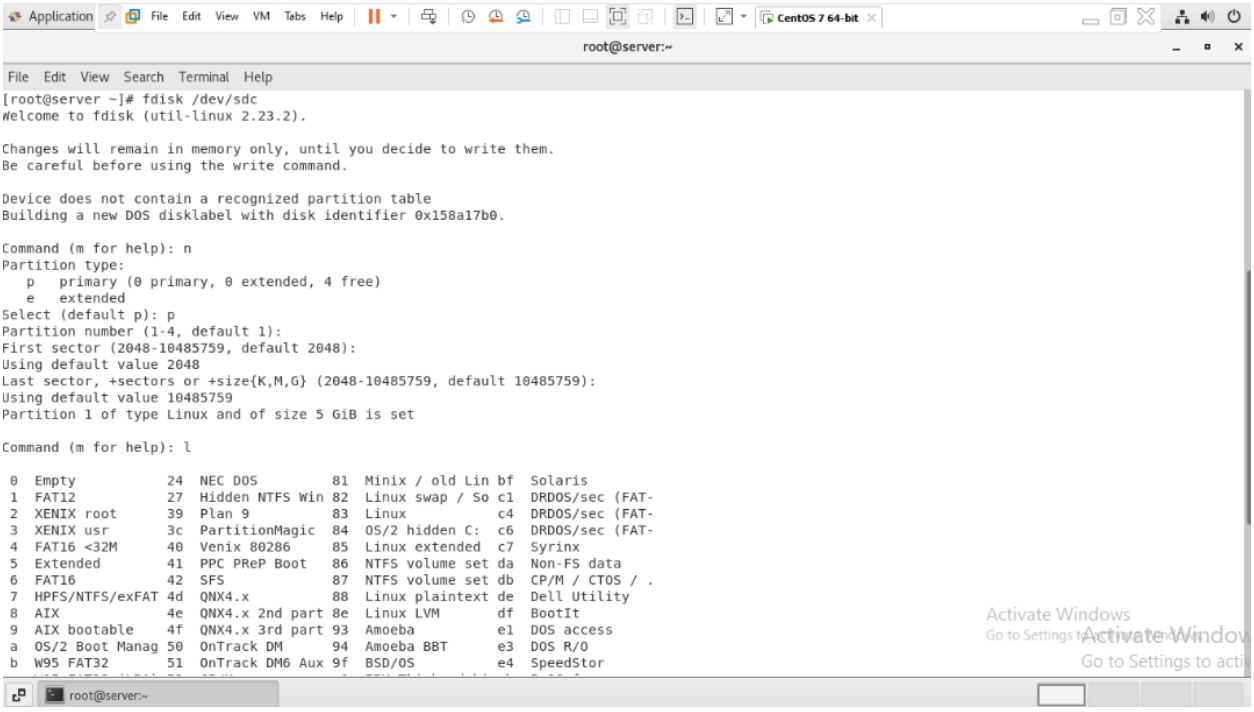
Physical drive --> physical volume --> volume group --> logical volume

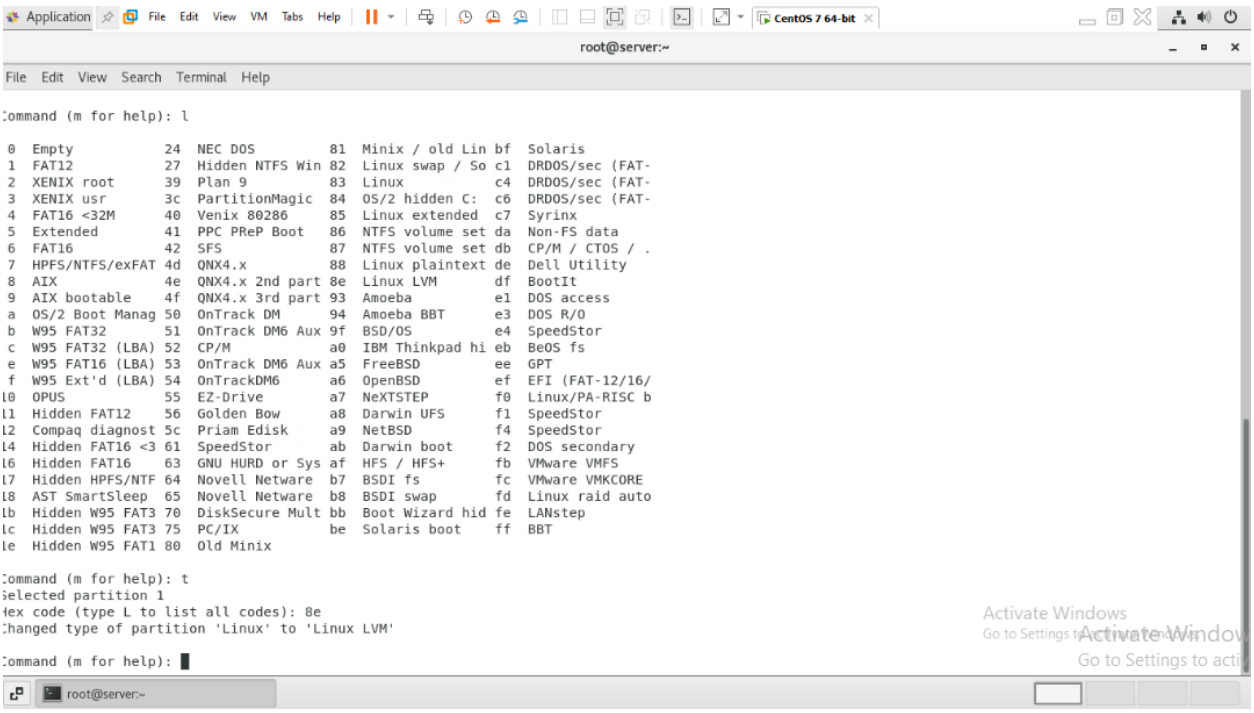
1. Add three 5GB hardisk into vm and restart the machine


Virtual Machine Settings
Hardware
Options
Device
Summary
Memory
4 GB
Processors
2
Hard Disk (SCSI)
30 GB
Hard Disk 2 (SCSI)
5 GB
CD/DVD (IDE)
Using file C:\Users\Administra...
Network Adapter
NAT
USB Controller
Present
Sound Card
Auto detect
Display
Auto detect
Add...
Remove
Memory
Specify the amount of memory allocated to this virtual machine. The memory size must be a multiple of 4 MB.
Memory for this virtual machine:
4096
MB
64 GB
32 GB
16 GB
8 GB
4 GB
2 GB
1 GB
512 MB
256 MB
128 MB
64 MB
32 MB
16 MB
8 MB
4 MB
Maximum recommended memory
(Memory swapping may occur beyond this size.)
14 GB
Recommended memory
1 GB
Guest OS recommended minimum
512 MB
The virtual machine must be powered off to reduce the amount of memory.
OK
Cancel
Help


Application
File Edit View VM
Virtual Machine Settings
Hardware
Options
Device
Summary
Memory
4 GB
Processors
2
Hard Disk (SCSI)
30 GB
Hard Disk 2 (SCSI)
New Hard Disk (SCSI)
New Hard Disk (SCSI)
CD/DVD (IDE)
Network Adapter
USB Controller
Sound Card
Display
Disk file
CentOS 7 64-bit-2.vmdk
Capacity
Add Hardware Wizard
Hardware Type
What type of hardware do you want to install?
Hardware types:
Hard Disk
CD/DVD Drive
Floppy Drive
Network Adapter
USB Controller
Sound Card
Parallel Port
Serial Port
Generic SCSI Device
Trusted Platform Module
Explanation
Add a hard disk.
< Back
Next >
Cancel
Add...
Remove
OK
Cancel
Help
Defragment
Expand...
Compact
Advanced...
File Edit View Search Terminal Help
umount: /stdpart: target is busy.
(In some cases useful info
the device is found by ls
[root@server stdpart]# cd
[root@server ~]# umount /stdpart
[root@server ~]# df -h
Filesystem Size Use
devtmpfs 1.9G
tmpfs 1.9G
tmpfs 1.9G 13
tmpfs 1.9G
/dev/mapper/centos-root 26G 7.3
/dev/sda1 1014M 187
tmpfs 378M 24
/dev/sr0 4.4G 4.4
[root@server ~]# cp /etc/fstab /tm
[root@server ~]# ls -l /tmp/fstab-
-rw-r--r-- 1 root root 465 Apr 25
[root@server ~]# vim /etc/fstab
[root@server ~]# mount -a
[root@server ~]# mount | grep /std
[root@server ~]# mount | grep /std
/dev/sdb1 on /stdpart type xfs (rw
[root@server ~]# df -h
Filesystem Size Use
devtmpfs 1.9G
tmpfs 1.9G
tmpfs 1.9G 13
tmpfs 1.9G
/dev/mapper/centos-root 26G 7.3
/dev/sda1 1014M 187
tmpfs 378M 24
/dev/sr0 4.4G 4.4
/dev/sdb1 5.0G 33
[root@server ~]#
root@server:~
Activate Windows
Go to Settings to activate Windows.

2) Make partition for those disk





```
Command (m for help): w
The partition table has been altered!

Calling ioctl() to re-read partition table.
Syncing disks.
[root@server ~]# lsblk
NAME            MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
sda               8:0    0   30G  0 disk
├─sda1            8:1    0    1G  0 part /boot
└─sda2            8:2    0   29G  0 part
  ├─centos-root 253:0    0   26G  0 lvm  /
  └─centos-swap 253:1    0    3G  0 lvm  [SWAP]
sdb               8:16   0    5G  0 disk
└─sdb1            8:17   0    5G  0 part /stdpart
sdc               8:32   0    5G  0 disk
└─sdc1            8:33   0    5G  0 part
sdd               8:48   0    5G  0 disk
sde               8:64   0    5G  0 disk
sr0              11:0    1  4.4G  0 rom  /run/media/root/CentOS 7 x86_64
[root@server ~]#
```

root@server:~

Do these for sdd and sde

```
Calling ioctl() to re-read partition table.
Syncing disks.
[root@server ~]# lsblk
NAME            MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
sda               8:0    0   30G  0 disk
├─sda1            8:1    0    1G  0 part /boot
└─sda2            8:2    0   29G  0 part
  ├─centos-root 253:0    0   26G  0 lvm  /
  └─centos-swap 253:1    0    3G  0 lvm  [SWAP]
sdb               8:16   0    5G  0 disk
└─sdb1            8:17   0    5G  0 part /stdpart
sdc               8:32   0    5G  0 disk
└─sdc1            8:33   0    5G  0 part
sdd               8:48   0    5G  0 disk
└─sdd1            8:49   0    5G  0 part
sde               8:64   0    5G  0 disk
└─sde1            8:65   0    5G  0 part
sr0              11:0    1  4.4G  0 rom  /run/media/root/CentOS 7 x86_64
[root@server ~]#
```

root@server:~

```
[root@server ~]# mount -a
[root@server ~]# mount | grep /lvm
/dev/mapper/vg1-lv1 on /lvm type xfs (rw,relatime,attr2,inode64,noquota)
[root@server ~]# df -h
Filesystem               Size  Used Avail Use% Mounted on
devtmpfs                 1.9G     0  1.9G   0% /dev
tmpfs                    1.9G     0  1.9G   0% /dev/shm
tmpfs                    1.9G   13M  1.9G   1% /run
tmpfs                    1.9G     0  1.9G   0% /sys/fs/cgroup
/dev/mapper/centos-root   26G  7.3G   19G  28% /
/dev/sdb1                5.0G   33M  5.0G   1% /stdpart
/dev/sda1               1014M  187M  828M  19% /boot
tmpfs                    378M   24K  378M   1% /run/user/0
/dev/sr0                 4.4G  4.4G     0 100% /run/media/root/CentOS 7 x86_64
/dev/mapper/vg1-lv1       15G   33M   15G   1% /lvm
[root@server ~]#
```

Create physical volume

root@server:~

File Edit View Search Terminal Help

```
[root@server ~]# pvs
  PV         VG     Fmt  Attr PSize   PFree
  /dev/sda2  centos lvm2 a--  <29.00g    0
[root@server ~]# pvcreate /dev/sdc1 /dev/sdd1 /dev/sde1
  Physical volume "/dev/sdc1" successfully created.
  Physical volume "/dev/sdd1" successfully created.
  Physical volume "/dev/sde1" successfully created.
[root@server ~]# pvs
  PV         VG     Fmt  Attr PSize   PFree
  /dev/sda2  centos lvm2 a--  <29.00g     0
  /dev/sdc1         lvm2 ---   <5.00g <5.00g
  /dev/sdd1         lvm2 ---   <5.00g <5.00g
  /dev/sde1         lvm2 ---   <5.00g <5.00g
[root@server ~]#
```

Create Volume Group

```
[root@server ~]# vgcreate vg1  /dev/sdc1 /dev/sdd1 /dev/sde1
  Volume group "vg1" successfully created
[root@server ~]# vgs
  VG     #PV #LV #SN Attr   VSize   VFree
  centos   1   2   0 wz--n- <29.00g      0
  vg1      3   0   0 wz--n- <14.99g <14.99g
[root@server ~]# vgdisplay
  --- Volume group ---
  VG Name               vg1
  System ID
  Format                lvm2
  Metadata Areas        3
  Metadata Sequence No  1
  VG Access             read/write
  VG Status             resizable
  MAX LV                0
  Cur LV                0
  Open LV               0
  Max PV                0
  Cur PV                3
  Act PV                3
```

Create Logical Volume

```
[root@server ~]# lvcreate -l 100%FREE -n lv1 vg1
  Logical volume "lv1" created.
[root@server ~]# lvs
  LV   VG     Attr       LSize   Pool Origin Data%  Meta%  Move Log Cpy%Sync Convert
  root centos -wi-ao---- <26.00g
  swap centos -wi-ao----   3.00g
  lv1  vg1    -wi-a----- <14.99g
[root@server ~]#
```

Make partition for new Logical Volume

```
[root@server ~]# mkfs.xfs /dev/vg1/lv1
meta-data=/dev/vg1/lv1           isize=512    agcount=4, agsize=982272 blks
         =                       sectsz=512   attr=2, projid32bit=1
         =                       crc=1        finobt=0, sparse=0
data     =                       bsize=4096   blocks=3929088, imaxpct=25
         =                       sunit=0      swidth=0 blks
naming   =version 2              bsize=4096   ascii-ci=0 ftype=1
log      =internal log           bsize=4096   blocks=2560, version=2
         =                       sectsz=512   sunit=0 blks, lazy-count=1
realtime =none                   extsz=4096   blocks=0, rtextents=0
[root@server ~]#
```

Create Mount point

And edit /etc/fstab file

vim /etc/fstab

Add the below line

/dev/vg1/lv1 /lvm xfs defualts 0 0

Then type

#mount -a

Completed .!

To verify, type # df –h

TASK – Delete LVM Partitioning

1. Unmount the partion
2. Removing the mount point
3. Remove the logical volume
4. Remove the volume group
5. Remove the physical volume
6. Delete the partition
7. Remove hardisk

```
[root@server ~]# umount /lvm
[root@server ~]# rm -rf /lvm
```

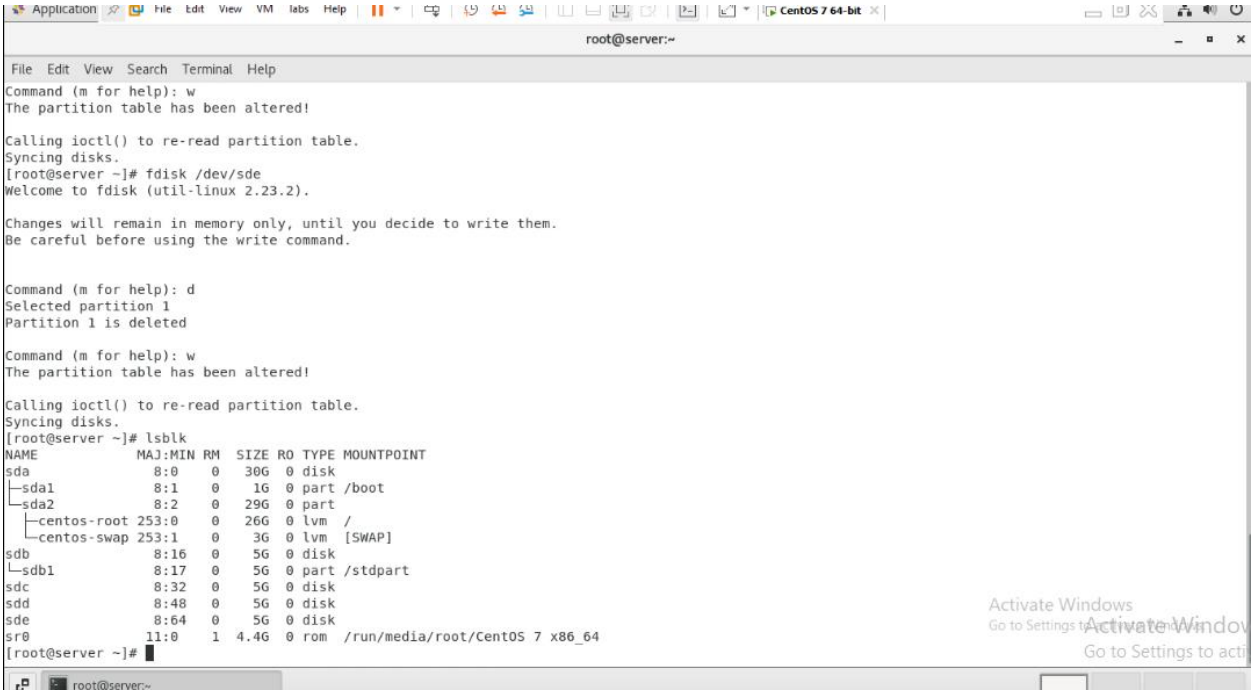
```
[root@server ~]# vgremove vg1
  Volume group "vg1" successfully removed
[root@server ~]# lvremove lv1
```

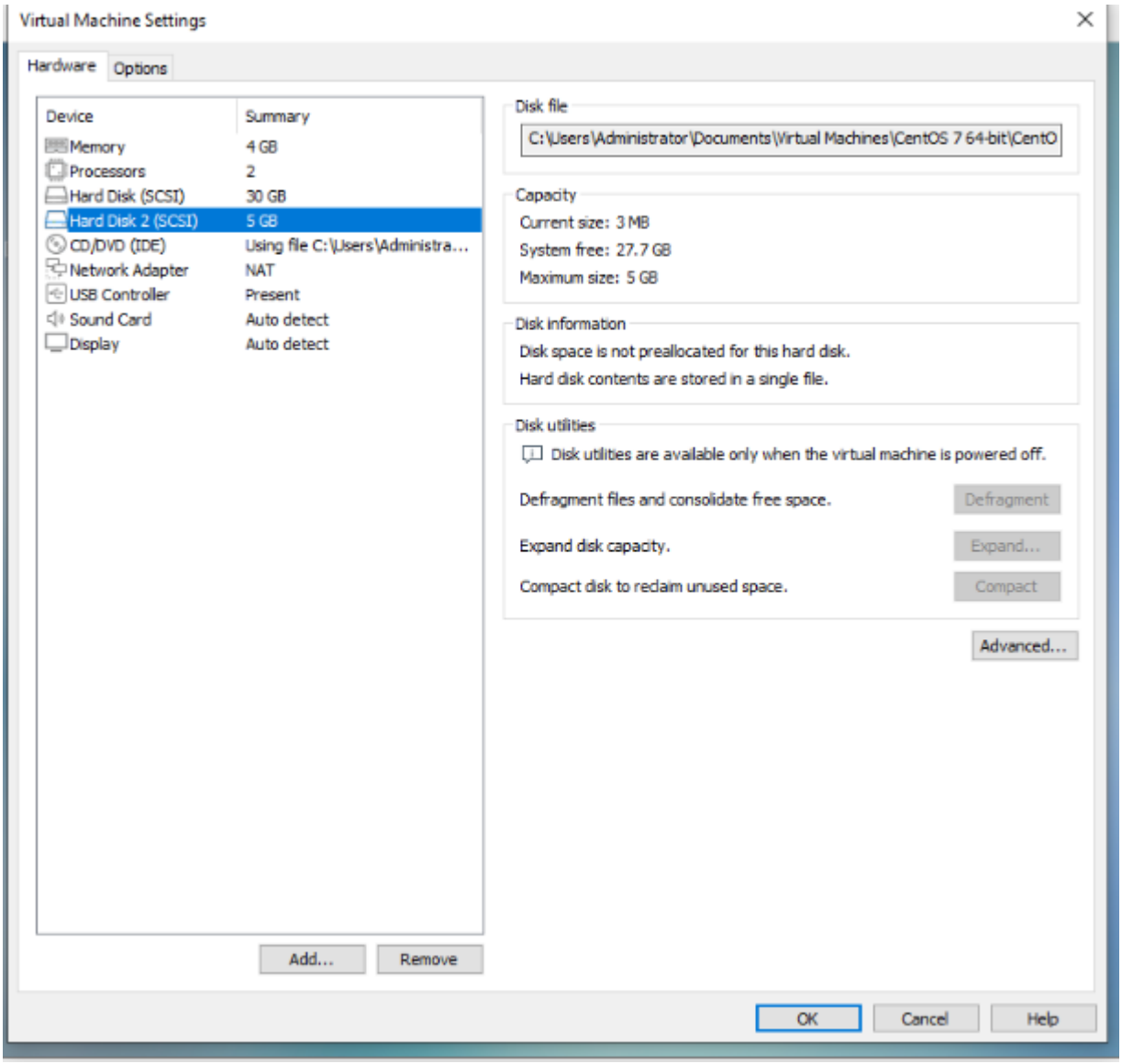
```
[root@server ~]# pvremove /dev/sdc1 /dev/sdd1 /dev/sde1
  Labels on physical volume "/dev/sdc1" successfully wiped.
  Labels on physical volume "/dev/sdd1" successfully wiped.
  Labels on physical volume "/dev/sde1" successfully wiped.
[root@server ~]# fdisk /dev/sdc
Welcome to fdisk (util-linux 2.23.2).

Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.


Command (m for help): d
Selected partition 1
Partition 1 is deleted

Command (m for help): w
The partition table has been altered!
```





Here did every steps .