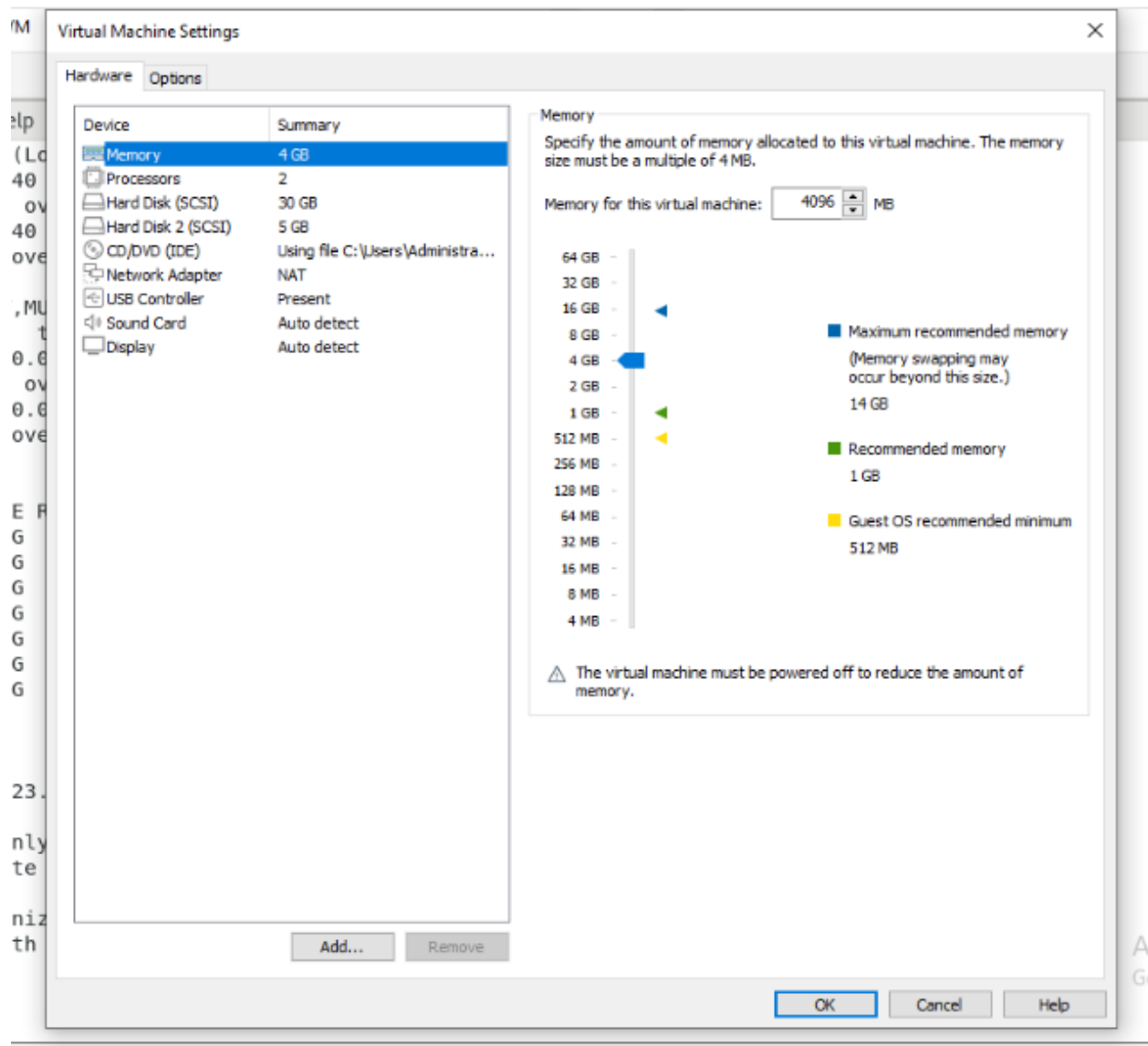
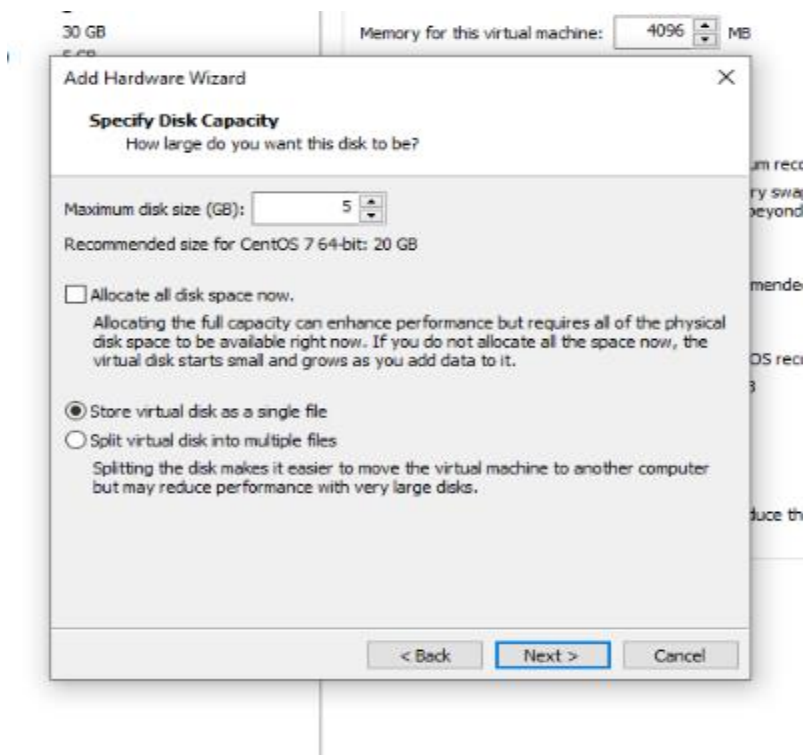
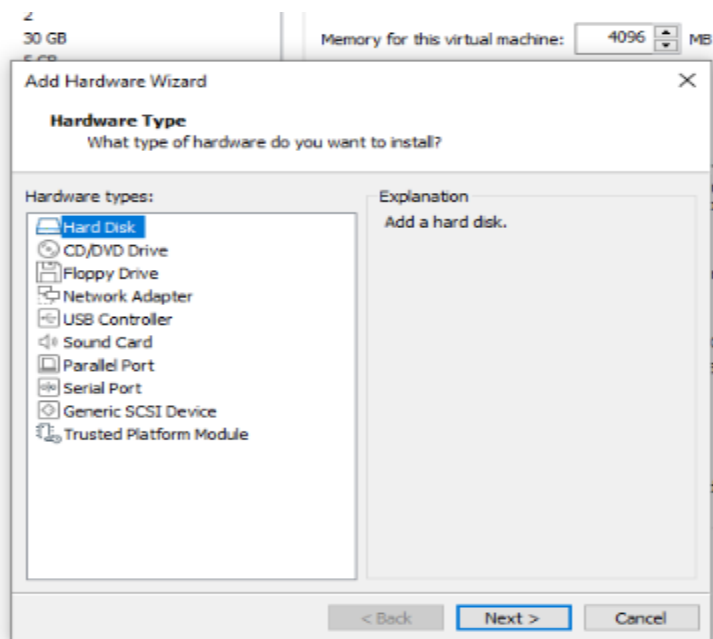


Simple Disk Partitioning

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

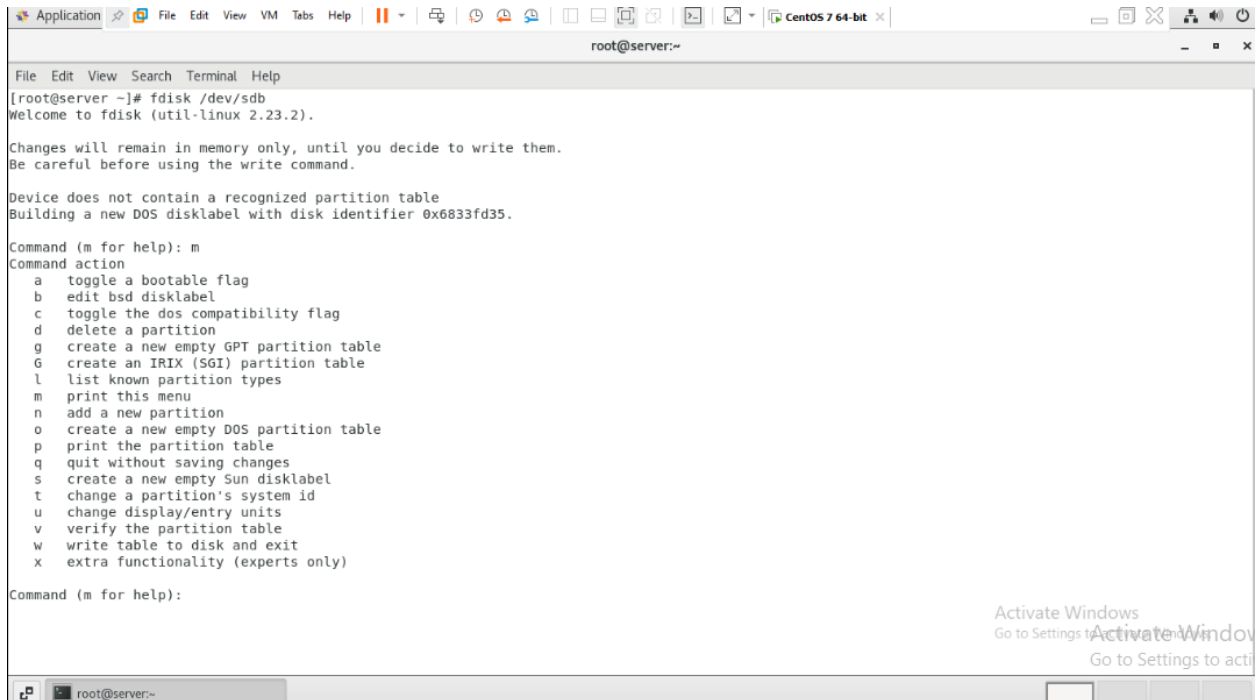




After this restart the vm and verify using **#lsblk** command .

2) Create the partition from the disk

We can use fdisk command to do this .



```
Application File Edit View VM Tabs Help root@server:~
File Edit View Search Terminal Help
[root@server ~]# fdisk /dev/sdb
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.

Device does not contain a recognized partition table
Building a new DOS disklabel with disk identifier 0x6833fd35.

Command (m for help): m
Command action
  a toggle a bootable flag
  b edit bsd disklabel
  c toggle the dos compatibility flag
  d delete a partition
  g create a new empty GPT partition table
  G create an IRIX (SGI) partition table
  l list known partition types
  m print this menu
  n add a new partition
  o create a new empty DOS partition table
  p print the partition table
  q quit without saving changes
  s create a new empty Sun disklabel
  t change a partition's system id
  u change display/entry units
  v verify the partition table
  w write table to disk and exit
  x extra functionality (experts only)

Command (m for help):
```



```
File Edit View Search Terminal Help
Command (m for help): m
Command action
  a toggle a bootable flag
  b edit bsd disklabel
  c toggle the dos compatibility flag
  d delete a partition
  g create a new empty GPT partition table
  G create an IRIX (SGI) partition table
  l list known partition types
  m print this menu
  n add a new partition
  o create a new empty DOS partition table
  p print the partition table
  q quit without saving changes
  s create a new empty Sun disklabel
  t change a partition's system id
  u change display/entry units
  v verify the partition table
  w write table to disk and exit
  x extra functionality (experts only)

Command (m for help): n
Partition type:
  p primary (0 primary, 0 extended, 4 free)
  e extended
Select (default p):
Using default response p
Partition number (1-4, default 1):
First sector (2048-10485759, default 2048):
Using default value 2048
Last sector, +sectors or +size(K,M,G) (2048-10485759, default 10485759):
Using default value 10485759
Partition 1 of type Linux and of size 5 GiB is set

Command (m for help): w
```

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

```
Application  File Edit View VM Tabs Help  CentOS 7 64-bit x
```

```
root@server:~
```

```
File Edit View Search Terminal Help
```

```
[root@server ~]# mkfs.xfs -f /dev/sdb1
```

meta-data=/dev/sdb1	isize=512	agcount=4, agsize=327616 blks
=	sectsz=512	attr=2, projid32bit=1
=	crc=1	finobt=0, sparse=0
data	bsize=4096	blocks=1310464, imaxpct=25
=	sunit=0	swidth=0 blks
naming	=version 2	ascii-ci=0 ftype=1
log	=internal log	blocks=2560, version=2
=	sectsz=512	sunit=0 blks, lazy-count=1
realtime	=none	blocks=0, rtextents=0
extsz=4096		

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

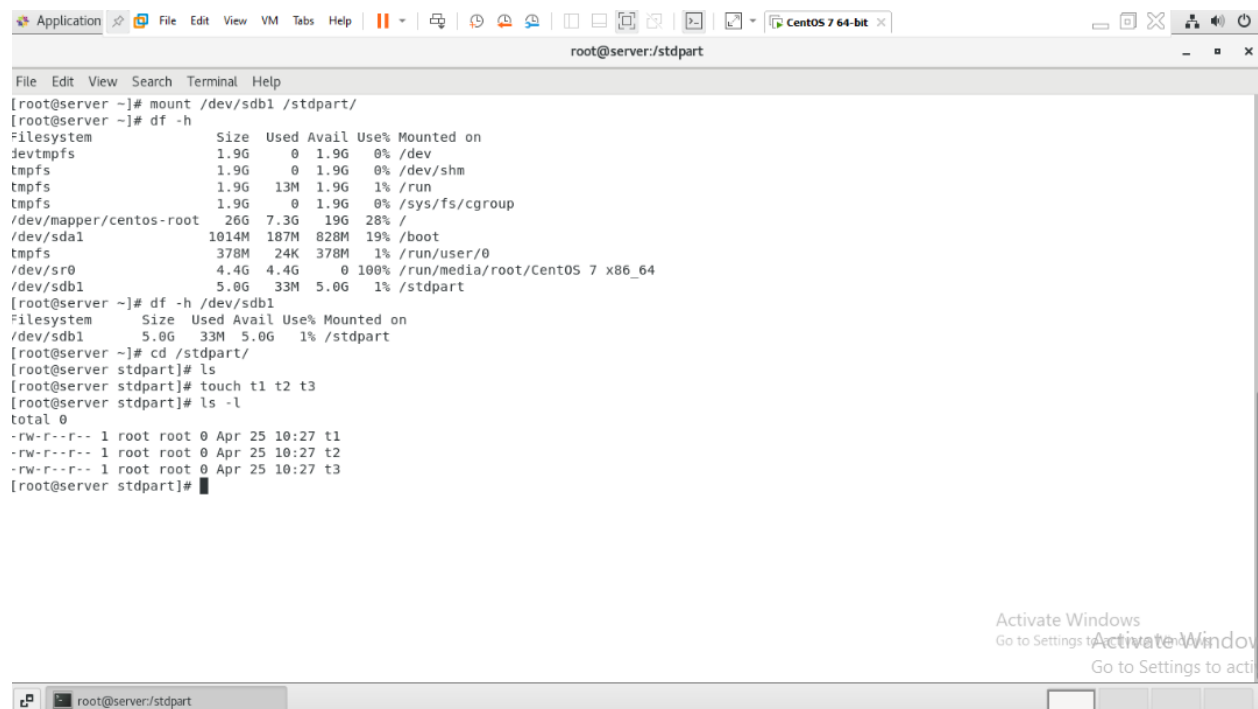
5) Mount the partition

2 ways to mount

1. Temporary

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

#mount /dev/sdb1 /stdpart

A screenshot of a terminal window titled 'root@server:/stdpart'. The terminal shows the following commands and output:

```
[root@server ~]# mount /dev/sdb1 /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
/dev/sdb1       5.0G   33M  5.0G   1% /stdpart
[root@server ~]# df -h /dev/sdb1
Filesystem      Size  Used Avail Use% Mounted on
/dev/sdb1       5.0G   33M  5.0G   1% /stdpart
[root@server ~]# cd /stdpart/
[root@server stdpart]# ls
[root@server stdpart]# touch t1 t2 t3
[root@server stdpart]# ls -l
total 0
-rw-r--r-- 1 root root 0 Apr 25 10:27 t1
-rw-r--r-- 1 root root 0 Apr 25 10:27 t2
-rw-r--r-- 1 root root 0 Apr 25 10:27 t3
[root@server 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. Permanent mount

File is /etc/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
```

```
Application File Edit View VM Tabs Help root@server:~ CentOS 7 64-bit
File Edit View Search Terminal Help

#
# /etc/fstab
# Created by anaconda on Fri Apr 19 14:18:12 2024
#
# 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=f0a51dc5-86d7-41b8-b076-415a644c1202 /boot xfs defaults 0 0
/dev/mapper/centos-swap swap swap defaults 0 0
/dev/sdb1 /stdpart xfs defaults 0 0

-- REPLACE --

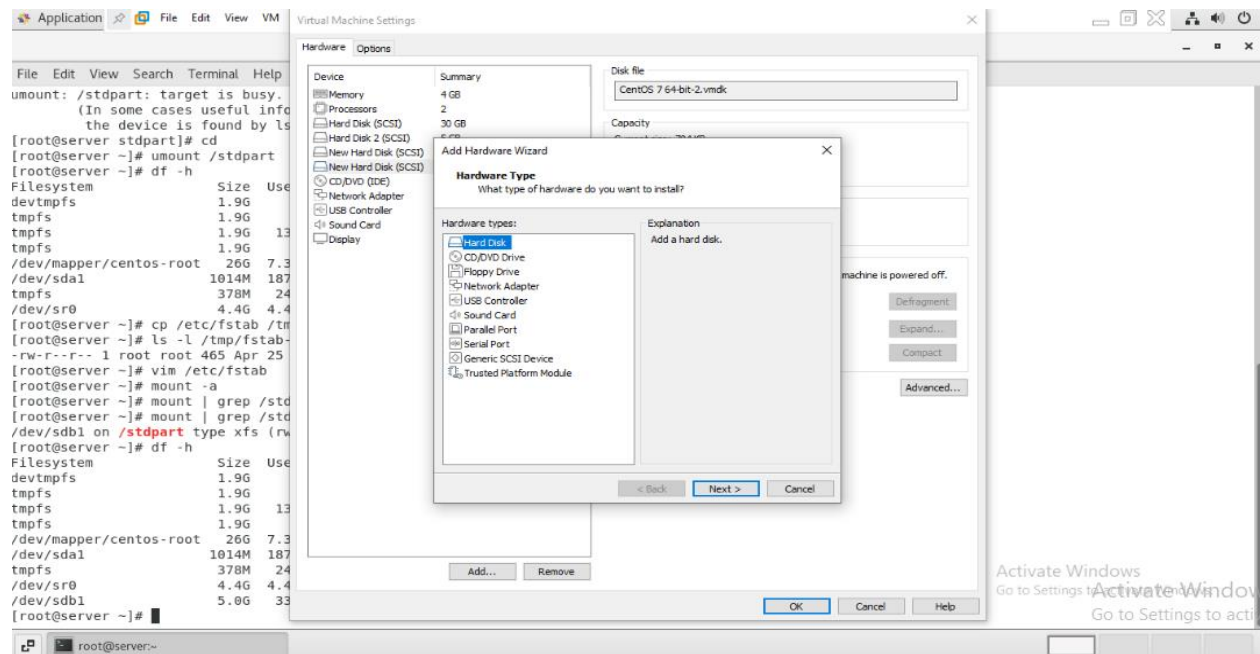
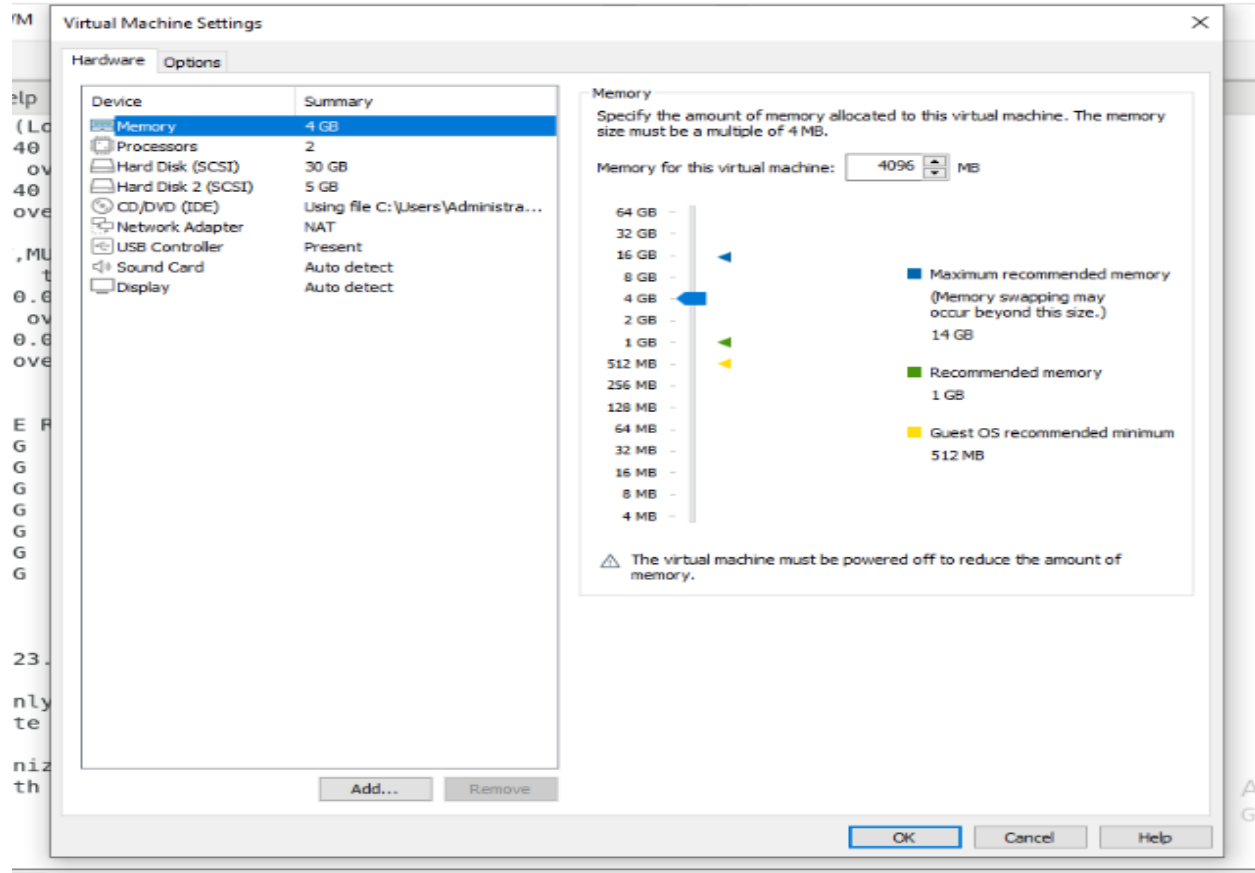
[root@server ~]# mount -a
[root@server ~]# mount | grep /stdpart/
[root@server ~]# mount | grep /stdpart
/dev/sdb1 on /stdpart type xfs (rw,relatime,attr2,inode64,noquota)
[root@server ~]# df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        1.9G   0    1.9G   0% /dev
tmpfs           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/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/sdb1       5.0G   33M   5.0G   1% /stdpart
[root@server ~]#
```

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



2) Make partition for those disk

```
Application File Edit View VM Tabs Help CentOS 7 64-bit
root@server:~

File Edit View Search Terminal Help
[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.

Device does not contain a recognized partition table
Building a new DOS disklabel with disk identifier 0x158a17b0.

Command (m for help): n
Partition type:
   p   primary (0 primary, 0 extended, 4 free)
   e   extended
Select (default p): p
Partition number (1-4, default 1):
First sector (2048-10485759, default 2048):
Using default value 2048
Last sector, +sectors or +size(K,M,G) (2048-10485759, default 10485759):
Using default value 10485759
Partition 1 of type Linux and of size 5 GiB is set

Command (m for help): l

 0 Empty                24 NEC DOS               81 Minix / old Lin  bf Solaris
 1 FAT12                 27 Hidden NTFS Win  82 Linux swap / So c1 DRDOS/sec (FAT-
 2 XENIX root            39 Plan 9             83 Linux            c4 DRDOS/sec (FAT-
 3 XENIX usr             3c PartitionMagic    84 OS/2 hidden C:   c6 DRDOS/sec (FAT-
 4 FAT16 <32M           40 Venix 80286       85 Linux extended  c7 Syrix
 5 Extended              41 PPC PReP Boot     86 NTFS volume set  da Non-FS data
 6 FAT16                 42 SFS               87 NTFS volume set  db CP/M / CTOS / .
 7 HPFS/NTFS/exFAT       4d QNX4.x            88 Linux plaintext  de Dell Utility
 8 AIX                   4e QNX4.x 2nd part  8e Linux LVM        df BootIt
 9 AIX bootable          4f QNX4.x 3rd part  93 Amoeba           e1 DOS access
a  OS/2 Boot Manag      50 OnTrack DM        94 Amoeba BBT       e3 DOS R/O
b  W95 FAT32            51 OnTrack DM6 Aux  9f BSD/OS           e4 SpeedStor

root@server:~
```

```
Application File Edit View VM Tabs Help CentOS 7 64-bit
root@server:~

File Edit View Search Terminal Help

Command (m for help): l

 0 Empty                24 NEC DOS               81 Minix / old Lin  bf Solaris
 1 FAT12                 27 Hidden NTFS Win  82 Linux swap / So c1 DRDOS/sec (FAT-
 2 XENIX root            39 Plan 9             83 Linux            c4 DRDOS/sec (FAT-
 3 XENIX usr             3c PartitionMagic    84 OS/2 hidden C:   c6 DRDOS/sec (FAT-
 4 FAT16 <32M           40 Venix 80286       85 Linux extended  c7 Syrix
 5 Extended              41 PPC PReP Boot     86 NTFS volume set  da Non-FS data
 6 FAT16                 42 SFS               87 NTFS volume set  db CP/M / CTOS / .
 7 HPFS/NTFS/exFAT       4d QNX4.x            88 Linux plaintext  de Dell Utility
 8 AIX                   4e QNX4.x 2nd part  8e Linux LVM        df BootIt
 9 AIX bootable          4f QNX4.x 3rd part  93 Amoeba           e1 DOS access
a  OS/2 Boot Manag      50 OnTrack DM        94 Amoeba BBT       e3 DOS R/O
b  W95 FAT32            51 OnTrack DM6 Aux  9f BSD/OS           e4 SpeedStor
c  W95 FAT32 (LBA)      52 CP/M              a0 IBM Thinkpad hi eb BeOS fs
e  W95 FAT16 (LBA)      53 OnTrack DM6 Aux  a5 FreeBSD         ee GPT
f  W95 Ext'd (LBA)      54 OnTrackDM6        a6 OpenBSD          ef EFI (FAT-12/16/
10 OPUS                 55 EZ-Drive          a7 NeXTSTEP         f0 Linux/PA-RISC b
11 Hidden FAT12         56 Golden Bow        a8 Darwin UFS       f1 SpeedStor
12 Compaq diagnost     5c Priam Edisk       a9 NetBSD           f4 SpeedStor
14 Hidden FAT16 <3      61 SpeedStor         ab Darwin boot      f2 DOS secondary
16 Hidden FAT16         63 GNU HURD or Sys  af HFS / HFS+       fb VMware VMFS
17 Hidden HPFS/NTF      64 Novell Netware    b7 BSDI fs          fc VMware VMKCORE
18 AST SmartSleep       65 Novell Netware    b8 BSDI swap        fd Linux raid auto
1b Hidden W95 FAT3      70 DiskSecure Mult  bb Boot Wizard hid fe LANstep
1c Hidden W95 FAT3      75 PC/IX             be Solaris boot     ff BBT
1e Hidden W95 FAT1      80 Old Minix

Command (m for help): t
selected partition 1
hex code (type L to list all codes): 8e
changed type of partition 'Linux' to 'Linux LVM'

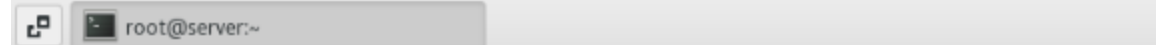
Command (m for help):

root@server:~
```

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

Calling ioctl() to re-read partition table.
Syncing disks.

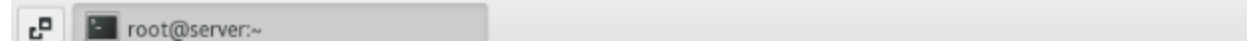
```
[root@server ~]# lsblk
NAME                MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
sda                  8:0    0   30G  0 disk
├─sda1                8:1    0    1G  0 part /boot
├─sda2                8:2    0   29G  0 part
│   └─centos-root    253:0    0   26G  0 lvm  /
│       └─centos-swap 253:1    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 ~]#
```



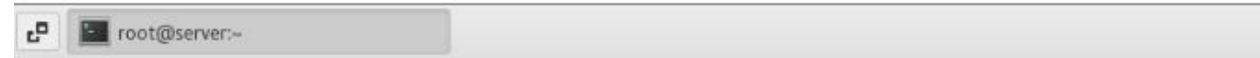
Do these for sdd and sde

Calling ioctl() to re-read partition table.
Syncing disks.

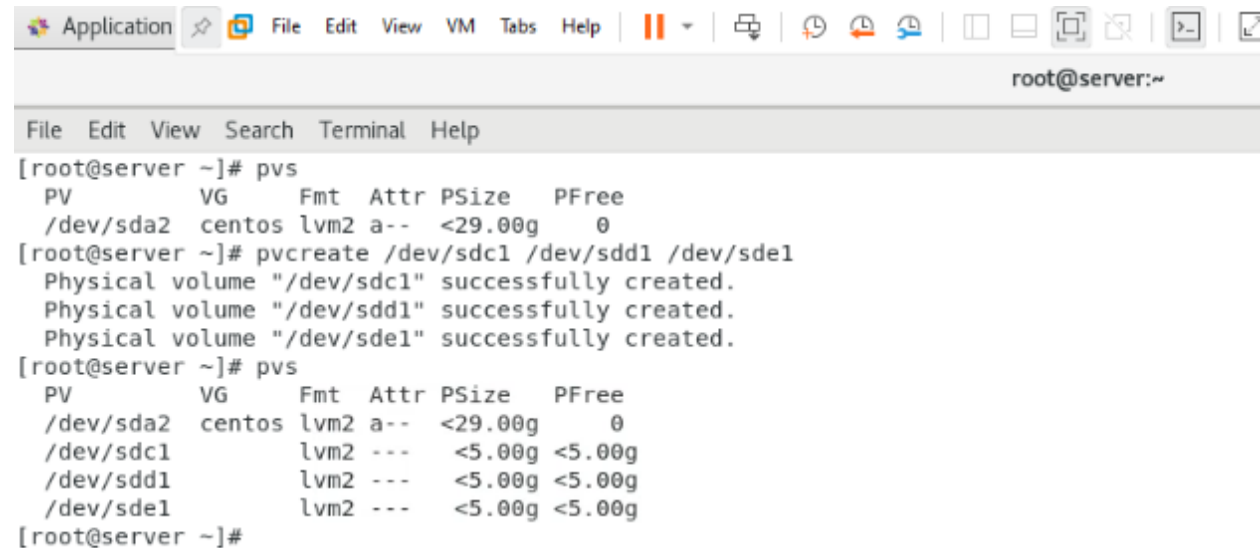
```
[root@server ~]# lsblk
NAME                MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
sda                  8:0    0   30G  0 disk
├─sda1                8:1    0    1G  0 part /boot
├─sda2                8:2    0   29G  0 part
│   └─centos-root    253:0    0   26G  0 lvm  /
│       └─centos-swap 253:1    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 ~]# 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



Create Volume Group

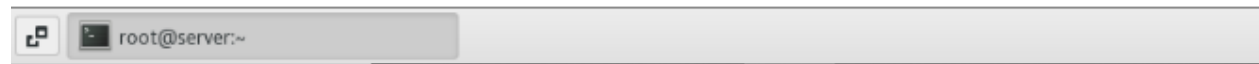
```
[root@server ~]# vgcreate vg1 /dev/sdc1 /dev/sdd1 /dev/sde1
Volume group "vg1" successfully created
[root@server ~]# vgs
VG      #PV #LV #SN Attr   VSize   VFree
centos   1   2   0 wz--n- <29.00g    0
vg1      3   0   0 wz--n- <14.99g <14.99g
[root@server ~]# vgdisplay
--- Volume group ---
VG Name                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

```
realtime =none  
[root@server ~]# mkdir /lvm  
[root@server ~]#
```



And edit /etc/fstab file

```
# vim /etc/fstab
```

Add the below line

```
/dev/vg1/lv1          /lvm          xfs          defaults      0 0
```

Then type

```
#mount -a
```

Completed .!

To verify, type # df -h

TASK – Delete LVM Partitioning

1. Unmount the partition
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 harddisk

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

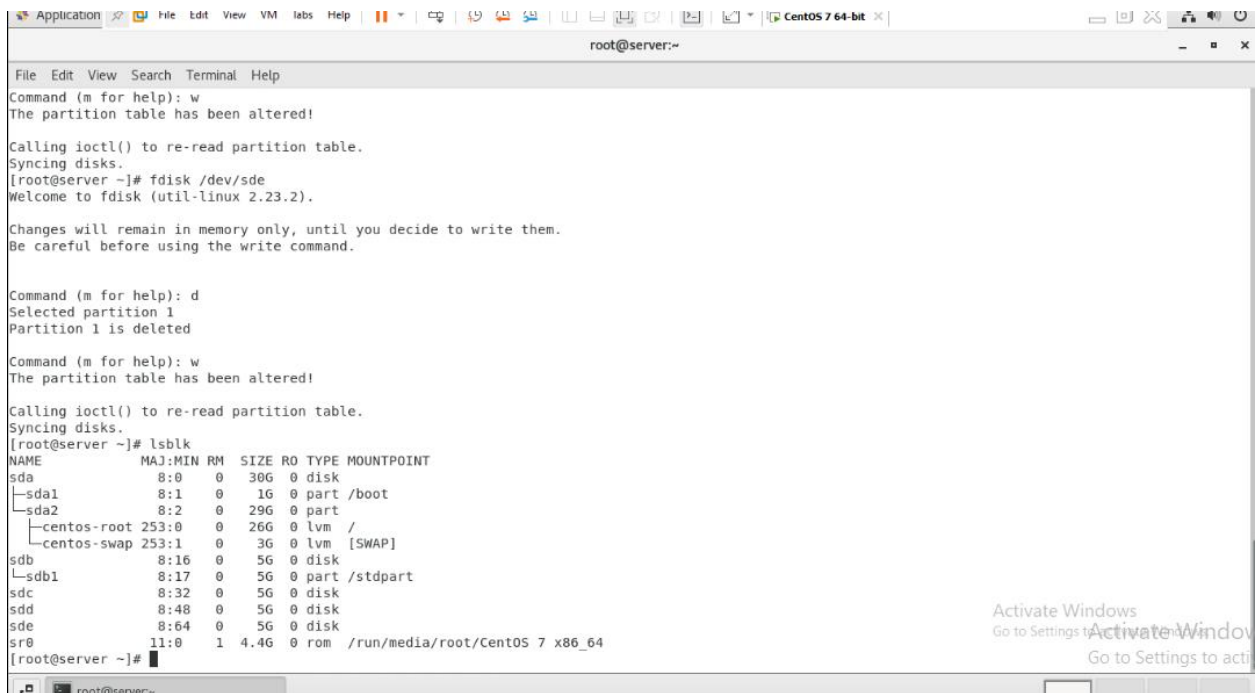
```
[root@server ~]# vgremove vg1  
Volume group "vg1" successfully removed  
[root@server ~]# lvremove lv1
```

```
[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!
```



The screenshot shows a terminal window titled "root@server:~" with the following content:

```
File Edit View Search Terminal Help
Command (m for help): w
The partition table has been altered!

Calling ioctl() to re-read partition table.
Syncing disks.
[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

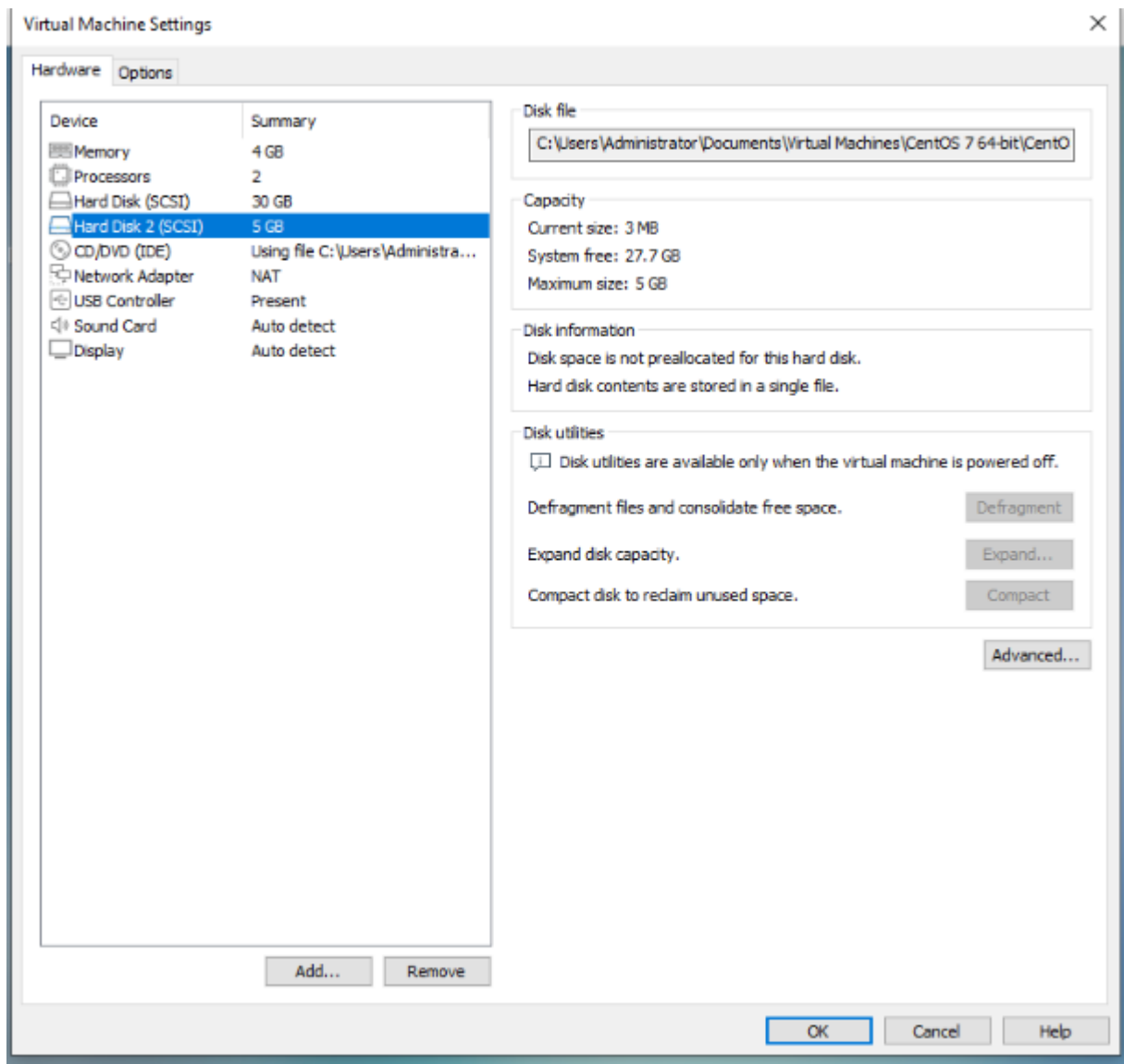
Command (m for help): w
The partition table has been altered!

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	
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 ~]#
```

On the right side of the terminal window, there are three "Activate Windows" watermarks with the text "Go to Settings to activate Windows."



Here did every steps .