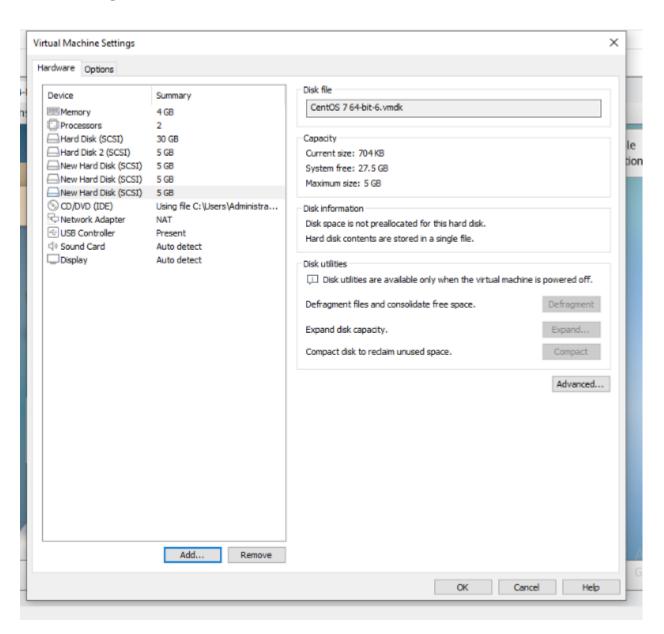
# **TASK**

Attach 3 disks of 5GB each, create 2 Lvms from these disks of 7gb(/lvm1) and 8gb (/lvm2) with xfs and ext4 file systems respectively. Add another hdd of 4gb and extend 2-2gb on both lvms.

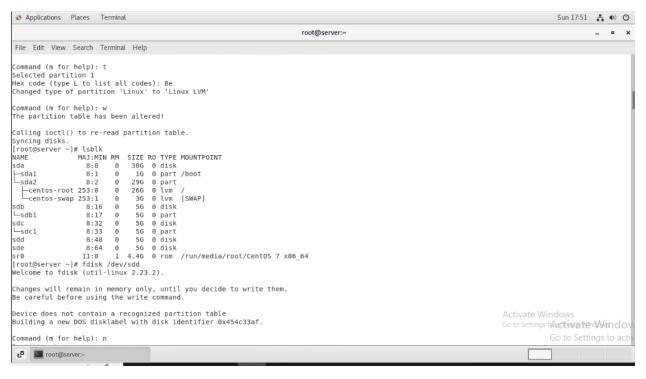
Step 1: Here adding three 5GB hdd



```
[root@server ~]# lsblk
            MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
             8:0 0 30G 0 disk
sda
—sda1
              8:1
                    Θ
                       1G 0 part /boot
                      29G 0 part
              8:2 0
-sda2
 -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
             8:32 0 5G 0 disk
5dc
sdd
             8:48 0 5G 0 disk
sde
             8:64 0 5G 0 disk
             11:0 1 4.4G 0 rom /run/media/root/CentOS 7 x86 64
```

### Step2: creating partition

```
Applications Places Terminal
                                                                   root@server:~
File Edit View Search Terminal Help
                 8:48 0 5G 0 disk
sdd
sde
                 8:64 0 5G 0 disk
sr0
                11:0
                     1 4.4G 0 rom /run/media/root/CentOS 7 x86 64
[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 0xefd577fd.
Command (m for help): n
Partition type:
  p primary (0 primary, 0 extended, 4 free)
     extended
   e
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): l
                  24 NEC DOS 81 Minix / old Lin bf Solaris
 0 Empty
                  27 Hidden NTFS Win 82 Linux swap / So cl DRDOS/sec (FAT-
 1 FAT12
                 39 Plan 9 83 Linux
 2 XENIX root
                                                      c4 DRDOS/sec (FAT-
 3 XENIX usr
                 3c PartitionMagic 84 OS/2 hidden C: c6 DRDOS/sec (FAT-
                 40 Venix 80286
41 PPC PReP Boot
                                     85 Linux extended c7 Syrinx
 4 FAT16 <32M
 5 Extended
                                     86 NTFS volume set da
                                                            Non-FS data
                  42 SFS
                                     87 NTFS volume set db CP/M / CTOS / .
 6 FAT16
 7 HPFS/NTFS/exFAT 4d QNX4.x
                                    88 Linux plaintext de Dell Utility
 root@server:~
                           ♯ № 
                                                                   1W
e to search
```





```
Applications Places Terminal
                                                                                                                                                                                                                             Sun 17:51 🛔 🐠 🕻
                                                                                                                     root@server:~
 File Edit View Search Terminal Help
16 Hidden FATI6 63 GNU HURD or Sys af HFS / HFS+ fb
17 Hidden HPFS/NTF 64 Novell Netware b7 BSDI fs fc
18 AST SmartSleep 65 Novell Netware b8 BSDI swap fd
1b Hidden W95 FAT3 70 DiskSecure Mult bb Boot Wizard hid fe
1c Hidden W95 FAT3 75 PC/IX be Solaris boot ff
1e Hidden W95 FAT1 80 Old Minix
                                                                                                           VMware VMFS
                                                                                                    fc VMware VMKCORE
fd Linux raid auto
                                                                                                           LANstep
Command (m for help): t
Selected partition 1
Hex code (type L to list all codes): Be
Changed type of partition 'Linux' to 'Linux LVM'
Command (m for help): w
The partition table has been altered!
Calling ioctl() to re-read partition table.
Syncing disks.
[root@server ~]# fdisk /dev/sde
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 0x58f1c5c9.
Command (m for help): l
                                 24 NEC DOS 81 Minix / old Lin bf Solaris
27 Hidden NTFS Win 82 Linux swap / So c1 DRDOS/sec (FAT-
 0 Empty
     FAT12
                                 39 Plan 9 83 Linux c4
3c PartitionMagic 84 05/2 hidden C: c6
40 Venix 80286 85 Linux extended c7
      XENIX root
                                                                                                          DRDOS/sec (FAT
      XENIX usr
                                                                                                          DRDOS/sec (FAT-
      FAT16 <32M
                                                                                                          Syrinx
                                                                                                                                                                                                       Go to Settings tectivated Windo
                                 41 PPC PReP Boot
42 SFS
                                                                  86 NTFS volume set da Non-FS data
87 NTFS volume set db CP/M / CTOS /
 5 Extended
6 FAT16
                                                                                                                                                                                                                         Go to Settings to act
```

### Step 3: Create physical Volume

```
[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 ~]# 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
va1 3 0 0 wz--n- <14.99a <14.99a
```

#### Step 4: Create logical volume

```
[root@server ~]# lvcreate -l 50%FREE -n lv1 vg1
Logical volume "lv1" created.
[root@server ~]# vgs
VG #PV #LV #SN Attr VSize VFree
centos 1 2 0 wz--n- <29.00g 0
vg1 3 1 0 wz--n- <14.99g <7.50g
[root@server ~]# lvcreate -l 100%FREE -n lv2 vg1
Logical volume "lv2" created.
[root@server ~]# vgs
VG #PV #LV #SN Attr VSize VFree
centos 1 2 0 wz--n- <29.00g 0
vg1 3 2 0 wz--n- <14.99g 0
```

### Step 5: create partiton for new logical volumes, lv1 and lv2

```
[root@server ~]# mkfs.xfs /dev/vg1/lv1
mkfs.xfs: /dev/vg1/lv1 appears to contain an existing filesystem (ext4).
mkfs.xfs: Use the -f option to force overwrite.
[root@server ~]# mkfs.xfs -f /dev/vg1/lv1
meta-data=/dev/vg1/lv1
                               isize=512
                                           agcount=4, agsize=491008 blks
                               sectsz=512 attr=2, projid32bit=1
                                           finobt=0, sparse=0
                               crc=1
                               bsize=4096
data
                                          blocks=1964032, imaxpct=25
                               sunit=0
                                           swidth=0 blks
naming
       =version 2
                               bsize=4096 ascii-ci=0 ftype=1
                               bsize=4096 blocks=2560, version=2
        =internal log
                               sectsz=512 sunit=0 blks, lazy-count=1
                               extsz=4096
realtime =none
                                          blocks=0, rtextents=0
[root@server ~]# mkfs.ext4 /dev/vg1/lv2
mke2fs 1.42.9 (28-Dec-2013)
Filesystem label=
OS type: Linux
Block size=4096 (log=2)
Fragment size=4096 (log=2)
Stride=0 blocks, Stripe width=0 blocks
491520 inodes, 1965056 blocks
98252 blocks (5.00%) reserved for the super user
First data block=0
Maximum filesystem blocks=2013265920
60 block groups
32768 blocks per group, 32768 fragments per group
8192 inodes per group
Superblock backups stored on blocks:
       32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632
Allocating group tables: done
Writing inode tables: done
     root@server:~
[root@server ~]# lsblk
               MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
NAME
sda
                            30G 0 disk
                 8:0 0
-sda1
                 8:1
                        Θ
                             1G 0 part /boot
—sda2
                 8:2
                      Θ
                             29G 0 part
                      Θ
  -centos-root 253:0
                             26G 0 lvm /
                             3G 0 lvm [SWAP]
  └centos-swap 253:1
                      Θ
sdb
                 8:16 0
                             5G 0 disk
∟sdb1
                 8:17 0
                             5G 0 part
                 8:32 0
                              5G 0 disk
∟sdc1
                 8:33 0
                              5G 0 part
  ∟vg1-lv1
               253:2
                        0 7.5G 0 lvm
sdd
                 8:48 0
                             5G 0 disk
                 8:49 0
                              5G 0 part
  -vq1-lv1
                        0 7.5G 0 lvm
               253:2
  ∟vg1-lv2
               253:3
                      0 7.5G 0 lvm
sde
                 8:64 0
                            5G 0 disk
—sde1
                 8:65 0
                             5G 0 part
  ∟vg1-lv2
               253:3
                        0 7.5G 0 lvm
```

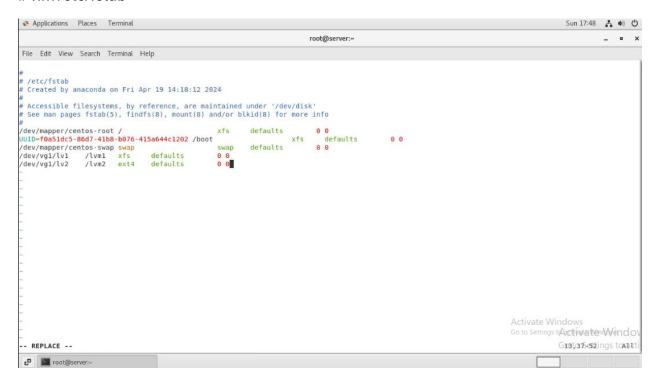
1 4.4G 0 rom /run/media/root/CentOS 7 x86 64

sr0

11:0

### Step 6: add both lvms in fstab file

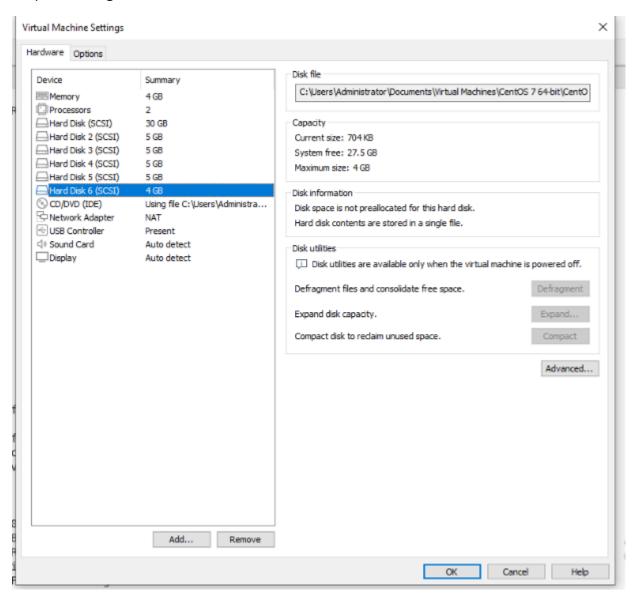
#### # vim /etc/fstab



Step 7: create a mount point for lv1 and lv2

```
[root@server ~]# mkdir /lvml
[root@server ~]# mkdir /lvm2
[root@server ~]# mount -a
[root@server ~]# mount | grep /lvml
/dev/mapper/vg1-lv1 on /lvml type xfs (rw,relatime,attr2,inode64,noquota)
[root@server ~]# mount | grep /lvm2
/dev/mapper/vg1-lv2 on /lvm2 type ext4 (rw,relatime,data=ordered)
[root@server ~]# df -h
Filesystem
                        Size Used Avail Use% Mounted on
devtmpfs
                        1.96
                                 0 1.9G 0% /dev
                        1.9G
                                 0 1.9G
                                          0% /dev/shm
tmpfs
tmpfs
                        1.9G
                             13M 1.9G 1% /run
tmpfs
                        1.9G
                                 0 1.9G 0% /sys/fs/cgroup
                       26G 7.4G
                                   19G 29% /
/dev/mapper/centos-root
/dev/sdal
                       1014M 187M 828M 19% /boot
tmpfs
                       378M
                              28K 378M
                                         1% /run/user/0
                        4.4G 4.4G
/dev/sr0
                                      0 100% /run/media/root/CentOS 7 x86 64
                                         1% /lvm1
/dev/mapper/vgl-lvl
                        7.5G
                              33M 7.5G
                                          1% /lvm2
/dev/mapper/vg1-lv2
                        7.36
                              34M 6.9G
[root@server ~]#
     root@server:~
```

Step 8: Add 4gb hdd



Step 9: Create partition for /dev/sdf (this was newly created 4gb hdd)

#fdisk/dev/sdf

# n

Enter and create partition

# t

# 8e (for linux lvm)

## Here below we can see partition created

Step 10 : create physical volume for sdf1 and Extend the volume group by #vgextend command

```
[root@server ~]# lsblk
           MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
sda
             8:0 0 30G 0 disk
—sda1
—sda2
              8:1 0 1G 0 part /boot
             11:0 1 4.4G 0 rom /run/media/root/CentOS 7 x86 64
sr0
[root@server ~]# pvcreate /dev/sgf1
 Device /dev/sgfl not found.
[root@server ~]# pvcreate /dev/sdf1
 Physical volume "/dev/sdf1" successfully created.
[root@server ~]# vgextend vg1 /dev/sdf1
 Volume group "vg1" successfully extended
[root@server ~]# vgs
 VG #PV #LV #SN Attr VSize VFree
 centos 1 2 0 wz--n- <29.00g
 vg1 4 2 0 wz--n- 18.98g <4.00g
```

### Step11: lvextend

```
File Edit View Search Terminal Help
[root@server ~]# lsblk
                          SIZE RO TYPE MOUNTPOINT
NAME
              MAJ:MIN RM
sda
                8:0
                       Θ
                           30G 0 disk
—sda1
                8:1
                       Θ
                            1G 0 part /boot
-sda2
                8:2
                           29G 0 part
                       Θ
  -centos-root 253:0
                       Θ
                           26G 0 lvm
  centos-swap 253:1
                       Θ
                            3G
                               0 lvm
                                      [SWAP]
sdb
                8:16
                       Θ
                            5G
                               0 disk
∟sdb1
                8:17
                       Θ
                            5G
                               0 part
sdc
                8:32
                       Θ
                            5G
                               0 disk
-sdc1
                8:33
                       Θ
                            5G 0 part
 ∟vg1-lv1
              253:2
                       0 9.5G 0 lvm
                                      /lvm1
sdd
                8:48
                       Θ
                            5G
                               0 disk
∟sdd1
                8:49
                       Θ
                            5G 0 part
  -vg1-lv1
               253:2
                       0 9.5G 0 lvm /lvm1
  ∟vg1-lv2
               253:3
                       0 9.5G 0 lvm /lvm2
sde
                8:64
                      Θ
                            5G 0 disk
∟sde1
                8:65
                       Θ
                            5G 0 part
                       0 9.5G 0 lvm /lvm2
  └vg1-lv2
               253:3
                8:80 0
                            4G 0 disk
sdf
∟sdf1
                       Θ
                8:81
                            4G 0 part
  -vg1-lv1
                       0 9.5G 0 lvm /lvm1
              253:2
  −vg1-lv2
                       0 9.5G 0 lvm /lvm2
               253:3
sr0
                       1 4.4G 0 rom /run/media/root/CentOS 7 x86_64
               11:0
```

```
File Edit View Search Terminal Help
[root@server ~]# lvdisplay /dev/vg1/lv1
--- Logical volume ---
  LV Path
LV Name
                                    /dev/vg1/lv1
                                    vg1
kk2JWM-8QGS-mnvK-qqrc-HV50-fcWt-MmqYwg
read/write
  VG Name
  LV UUID
LV Write Access
  LV Creation host, time server, 2024-04-28 17:40:11 +0530
LV Status available
   # open
LV Size
                                    9.49 GiB
   Current LE
Segments
                                    2430
                                    inherit
   Allocation
  Read ahead sectors
- currently set to
                                    auto
   Block device
                                    253:2
[root@server ~]# lvdisplay /dev/vg1/lv2
--- Logical volume ---
  LV Path
LV Name
                                    /dev/vg1/lv2
lv2
   VG Name
                                    va1
                                    blluxp-EXR2-fV8U-H0lP-0o4r-Qxwv-InSxkW read/write
   LV UUID
  LV UUID
LV Write Access read/write
LV Creation host, time server, 2024-04-28 17:40:27 +0530
LV Status available
   LV Status
# open
   LV Size
Current LE
Segments
                                    9.49 GiB
                                    2430
                                    inherit
   Allocation
  Read ahead sectors
- currently set to
                                     auto
                                                                                                                                                                              Go to Settings to Activitate de Mindo
                                    8192
   - currently s
Block device
                                    253:3
```

### Final step: Resize the file system to utilize the additional space

```
💸 Application 🔎 👩 File Edit View VM Tabs Help | 📙 🔻 😓 | 👂 🚇 🚇 | 🔲 🖂 🔯 | 💽 | 🗗 🗸 🔻 🕞 CentOS 7 64-bit 🗵
                                                                                                                                                                                         _ □ 💢 🛔 🐠 🖰
                                                                                                    root@server:~
 File Edit View Search Terminal Help
isize=512
sectsz=512
                                                                 attr=2, projid32bit=1
finobt=0 spinodes=0
blocks=1964032, imaxpct=25
swidth=0 blks
                                               crc=1
                                               bsize=4096
 data
                                               sunit=0
                                                                 ascii-ci=0 ftype=1
blocks=2560, version=2
sunit=0 blks, lazy-count=1
                                               bsize=4096
 naming
            =version 2
                                               bsize=4096
sectsz=512
 log
 realtime =none
                                               extsz=4096
                                                                 blocks=0, rtextents=0
realTime =none data blocks changed from 1964032 to 2488320 [root@server ~]# resizefs /dev/vgl/lv2 bash: resizefs: command not found... [root@server ~]# resize2fs /dev/vgl/lv2 resize2fs 1.42.9 (28-Dec-2013)
 Filesystem at /dev/vgl/lv2 is mounted on /lvm2; on-line resizing required old_desc_blocks = 1, new_desc_blocks = 2
The filesystem on /dev/vgl/lv2 is now 2488320 blocks long.
Go to Settings to Activitate Mindov
root@server:~
```

#### Completed !!!