

### @@@LVM - LOGICAL VOLUME MANAGER

LVM is a method of allocating hard drive space in to logical volumes that can be easily resized instead of partitions with LVM, the hard drive (or) set of hard drives are allocated to one (or) more physical volumes.

The physical volumes are combined into volume groups such volume group is divided into logical volumes which are assigned mount points such as "/home", "/" etc.  
These logical volumes are formatted to the ext3 file system.

@@@@@ To Configure LVM we must follow the bellow sequence:

- 1) Physical volume                      2) Volume Group              3) Logical Volume

@@@@@ Physical Volume :

One (or) more physical hard disks which are initialized into the physical volumes are taken here.

@@@@@ Volume Group :

It is a collection of physical volumes and assign a name through which we can create logical valumes.

@@@@@ Logical Volume :

These are logical partitions which can resize, format, mount etc

@@@@@ Procedure

- 1) Create the physical volumes form the hard drives.
- 2) Create the volume groups form the physical volume
- 3) Create the logical volumes from volume group

@@@@@ Implement the LVM by using partitions :

#fdisk /dev/hda

if we want to change the tag of a partition.

(m for help) : t -- to change the partition tag

: 8 - Partition no. is 8

:8e - code of the lvm

in this way, we have to change tag of the partitions to 8e to supports LVM.

@@@@@ To update the kernel without restarting

#partprobe /dev/hda

@@@@@ Create the Physical Volume :

#pvcreate /dev/hda6 /dev/hda7 /dev/hda8

(or)

#pvcreate /dev/hda{ 6,7,8}

@@@@@ To see the physical volume details/information

#pvdisplay

(or)

#pvs

(or)

#pvscan

@@@@@ Cerate the Volume Group

#vgcreate vgoo /dev/hda6 /dev/hda7 /dev/hda8

(or)

vgcrate vgoo /dev/hda { 6,7,8 }

@@@@@ To See The Volume group info :

```
#vgdisplay /dev/vg00
(or)
#vgdisplay
(or)
#vgs
(or)
#vgscan
```

##### Create the logical volume :

```
#lvcreate -L 100m vg00 -n lv00
```

in the above example a logical volume with name lv00 is created with size 100mb from the volume group vg00.

-n means 'new', now onwards the logical name of the lv00 is represented as /dev/vg00/ lv00

##### To see the logical volume information

```
#lvdisplay /dev/vg00/lv00
```

(or)

```
#lvdisplay
```

(or)

```
#lvs
```

(or)

```
#lvscan
```

##### Format the logical volume

```
#mkfs.ext3 /dev/vg00/lv00
```

##### Create the mount point :

```
#mkdir /lvmnew
```

##### mount the logical volume :

```
#mount /dev/vg00/lv00 /lvmnew
```

##### To increase the Logical volume size 100mb

```
#lvresize -L + 100m /dev/vg00/lv00
```

##### To increase lvm size 2gb

```
#ivresize -L 2g /dev/vg00/lv00
```

##### To Decrease the Logical volume size

If we directly decrease (or) online decreasing of lvm causes data loss.

Hence we have to unmount the partition first and then we have to run the below command

```
#lvresize /dev/vg00/lv00 1 g
```

then we have to run fsck on it

```
#fsck -f /dev/vg00/lv00
```

To effect the lvm size to the df -h

```
#resize2fs /dev/vg00/lv00
```

##### To reduce the LV M size :

(unmount first)

```
#lvreduce -L 2g /dev/vg00/lv00
```

To check the data again mount the lvm

```
#mount /dev/vg00/lv00 /lvmnew
```

```
#cd /lvmnew
```

##### To increase the volume group size

```
#vgextend /dev/hda9
```

##### To decrease the volume group size

```
#vgreduce vgoo dev/hda8
```

```
@@@@@@ To manage the LVM in graphical mode  
system-config-lvm &
```

```
@@@@@@ To Remove the logical volume  
before removing logical volume first unmount it  
#umount /lvm  
#lvremove /dev/vgoo/lvoo
```

```
@@@@@@ To Remove the volume group  
#vgremove vgoo /dev/hda6 /dev/hda7 /dev/hda8
```

```
@@@@@@ To Remove the physical volume  
pvremove /dev/hda6 /dev/hda7 /dev/hda8
```