**Steps of LVM for adding new Space**

1. Install a new hard disk drive.
2. Make a partition to use it.
3. Designate physical volume (PV).
4. Manage Volume Group (VG).
5. Manage Logical Volume (LV).
6. Apply a filesystem.
7. Set a mount Point.

**Steps to Create a LVM in VMware (We will be creating 2 LV in this Example).**

1. Power off the machine.
2. Go to Edit Virtual machine settings.
3. Under Hardware Tab click on add.
4. Select Hard Disk, Click next.
5. Under Select a disk type Select SCSI.
6. Under Select a Disk Select Create a new virtual disk.
7. Now specify the size of the disk you want to add, in this case we will add 2GB (Enter 2 in Maximum Disk size), Click on Split disk into multiple files, Click next.
8. Under specify disk file Enter the name you want to specify for the new disk, in this case we will leave it as default.
9. Click Finish.
10. Now Power on the VM.
11. **Now we Completed Step 1 in “Steps of LVM for adding new Space”.**
12. Open the terminal.
13. Enter Super User by using $su command.
14. Type #fdisk -l to get a list of current attached disks.
15. Identify the new disk by looking at the size of the disk in our case it’s 2GB (/dev/sdd).
16. Now type fdisk /dev/sdd.
17. Now type n for creating a new partition using this disk.
18. Select partition type as p (primary).
19. Select partition number as 1 (default).
20. Select first and last sector as default (Click enter twice).
21. Now we need to change the partition type to LVM, type t to change the partition type.
22. Now type 8e to change the partition type to LVM.
23. Now our partition is created.
24. Type p to verify the newly created partition.
25. After verifying type w to write table to disk and exit.
26. **Now we Completed till Step 2 in “Steps of LVM for adding new Space”.**
27. Now we will designate a Physical Volume (PV).
28. Type pvcreate /dev/sdd1.
29. Use pvdisplay to display the newly created Physical volume.
30. **Now we Completed till Step 3 in “Steps of LVM for adding new Space”.**
31. Now we will Create a Volume Group of name == mandeepvg (VG).
32. Type vgcreate mandeepvg /dev/sdd1.
33. Type vgdisplay to verify the volume group.
34. **Now we Completed till Step 4 in “Steps of LVM for adding new Space”.**
35. Now we will add space (1GB each) in this LV from mandeepvg (volume group).
36. Type lvcreate -L 1000M -n mandeepdisk1-lv mandeepvg. (### this is our 1st LV and we want to create 2 LV of 1000MB each).
37. Type lvcreate -L 1000M -n mandeepdisk2-lv mandeepvg. (### this is our 2nd LV and we want to create 2 LV of 1000MB each).
38. Type lvdisplay to verify LV.
39. **Now we Completed till Step 5 in “Steps of LVM for adding new Space”.**
40. Now we have to apply a file system to LV.
41. Type mkfs.ext4 /dev/mandeepvg/mandeepdisk1-lv for assigning ext4 file system.
42. Type mkfs.ext4 /dev/mandeepvg/mandeepdisk2-lv for assigning ext4 file system.
43. **Now we Completed till Step 6 in “Steps of LVM for adding new Space”.**
44. Now we will mount the LV in a new directory.
45. Type mkdir /mandeep1.
46. Type mkdir /mandeep2.
47. Type mount /dev/mandeepvg/mandeepdisk1-lv /mandeep1.
48. Type mount /dev/mandeepvg/mandeepdisk2-lv /mandeep2.
49. Type df -Th for verification of mounting.
50. **Now we Completed till Step 7 in “Steps of LVM for adding new Space”.**
51. **Now we have to mount it permanently.**
52. Type cat /etc/mtab.
53. Copy last two lines, in our case its these two lines =>

/dev/mapper/mandeepvg-mandeepdisk1--lv /mandeep1 ext4 rw,seclabel,relatime,data=ordered 0 0

/dev/mapper/mandeepvg-mandeepdisk2--lv /mandeep2 ext4 rw,seclabel,relatime,data=ordered 0 0Type vi /etc/fstab.

1. Press i to enter insert mode in vi editor.
2. Now paste previously copied lines in step 51 at the end of the file and edit it properly, in our case it’ll be =>

/dev/mapper/mandeepvg-mandeepdisk1--lv /mandeep1 ext4 defaults 0 0

/dev/mapper/mandeepvg-mandeepdisk2--lv /mandeep2 ext4 defaults 0 0

1. Now save the file by exiting the insert mode in vi editor by pressing escape, then type :wq!
2. Now to verify the mounting entries type mount -av.

**Steps for Extending Disk space using LVM. (We will extend mandeep1 which is 1GB now, We will add 1GB more so in total it’ll be 2GB).**

1. Power off the machine.
2. Go to Edit Virtual machine settings.
3. Under Hardware Tab click on add.
4. Select Hard Disk, Click next.
5. Under Select a disk type Select SCSI.
6. Under Select a Disk Select Create a new virtual disk.
7. Now specify the size of the disk you want to add, in this case we will add 1GB (Enter 1 in Maximum Disk size), Click on Split disk into multiple files, Click next.
8. Under specify disk file Enter the name you want to specify for the new disk, in this case we will leave it as default.
9. Click Finish.
10. Now Power on the VM.
11. Open the terminal.
12. Enter Super User by using $su command.
13. Type #fdisk -l to get a list of current attached disks.
14. Identify the new disk by looking at the size of the disk in our case it’s 1GB (/dev/sde).
15. Now type fdisk /dev/sde.
16. Now type n for creating a new partition using this disk.
17. Select partition type as p (primary).
18. Select partition number as 1 (default).
19. Select first and last sector as default (Click enter twice).
20. Now we need to change the partition type to LVM, type t to change the partition type.
21. Now type 8e to change the partition type to LVM.
22. Now our partition is created.
23. Type p to verify the newly created partition.
24. After verifying type w to write table to disk and exit.
25. Now we will designate a Physical Volume (PV).
26. Type pvcreate /dev/sde1.
27. Use pvdisplay to display the newly created Physical volume.
28. **Now we don’t need to create a VG (Volume Group) because we already have a VG mandeepvg. We will extend mandeepvg.**
29. Type vgextend mandeepvg /dev/sde1 to extend mandeepvg using our newly created PV.
30. Now we need to add this space to LV.
31. Type lvextend -L +1000M /dev/mandeepvg/mandeepdisk1-lv
32. Now we need to resize this new space to make it available for the file system.
33. Type resize2fs /dev/mandeepvg/mandeepdisk1-lv 2000M.
34. Type df -h to verify, in our case it is =>

Filesystem Size Used Avail Use% Mounted on

/dev/mapper/mandeepvg-mandeepdisk1--lv 2.0G 3.0M 1.9G 1% /mandeep1

1. We have successfully extended mandeepdisk1-lv in /mandeep 1.