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DAY - 9

CREATED BY : ARYAN M.P

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Managing Logical Volume Management (LVM) Storage

Logical Volume Management (LVM)

LVM make it easier to manage disk space. If a LVM hosted file system needs more space, it can be allocated from the free space

Why Use LVM

- **Flexible approach to working with storage**
    1. Volumes can consist of more than one disk.
    2. Easy resize operations.
    3. Easy replacement of failing disk.
    4. It supports snapshots.
    5. It is easy add new volumes.
    6. Easy to add many volumes, It supports 256 Logical Volumes where as MBR supports only 15 .

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Adding Disks, Partitions and File Systems to a Linux System

Create LVM

# fdisk /dev/sdb	['sdb' is the newly added hard-disk]
#m	[List Manu]
#p	[to display partition table]
#n	[to create new partition]
#p	[to create primary partition]
#1	[to create 1st primary partition]
#press enter	[to select first sector as default]
# +10G	[to create 10GB partition]
#p	[to create primary partition]
#t	[to change the partition type]
#1	[select the partition number, here I'm selecting 1st partition]
#l	[to display the partition type]
#8e	[select the Hex value, here I'm selecting 8e as 'LVM' partition]
#p	[to display partition table]
#w	[to write the changes]

To initiate the kernel to re-read the new partition

partprobe /dev/sdb

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To Create physical volume

```
# pvcreate  /dev/sdb1                    [Create a physical volume with sdb1]
# pvs                                    [To verify the physical volumes]
# vgcreate   vg-myvg  /dev/sdb1              [To create volume group]
Note:- vg-myvg = volume-group-name           [/dev/vg-myvg will be created]
# vgs                                    [To verify the volume group]
# lvcreate  -n  lv-mylv  -L  2G  vg-myvg     [To create new logical volume]
Note:- lv-mylv = logical volume-name         [/dev/vg-myvg/lv-mylv will be created]
# lvs                                    [To verify logical volumes]
# mkfs.xfs  /dev/vg-myvg/lv-mylv         [To format the logical volume with xfs file-system]
# mkdir  /backup
```

Then make an entry in /etc/fstab to mount the logical volume permanently

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

Type the following

```
/dev/vg-myvg/lv-mylv        /backup        xfs    defaults      1 2
```

Save and exit.

```
# mount  -a                              [To verify fstab entry]
```

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Adding Disks, Partitions and File Systems to a Linux System

To extend a volume group

pvcreate /dev/sdb2 [To create a new physical volume]
vgextend vg-myvg /dev/sdb2 [To extend newly created physical volume into VG]
vgdisplay vg-myvg [To verify volume group]

To extend a volume group

vgreduce vg-iant /dev/sdc1 [To create a new physical volume]
vgdisplay vg-iant [To verify volume group]

To extend a logical volume

lvextend -L +1G /dev/vg-myvg/lv-mylv [To extend existing logical volume]
lvdisplay [To verify logical volume size]
mount /dev/vg-myvg/lv-mylv /backup [To mount logical volume to '/backup' dir]
xfs_growfs /dev/vg-myvg/lv-mylv [To resize the existing volume]

Note: - If you use 'xfs' file system, then 'xfs_growfs' command will use, and if you use 'ext4' file system, then 'resize2fs' command will be used.

df –h /backup [To display the size of logical volume]

To reduce a logical volume

lvreduce -L -1G /dev/vg-myvg/lv-mylv [To reduce logical volume size]
xfs_growfs /dev/vg-myvg/lv-mylv [To resize the existing volume]
df –h /backup [To check mounted logical volume]

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Adding Disks, Partitions and File Systems to a Linux System

To delete LVM

vim /etc/fstab
remove the following line
/dev/vg-myvg/lv-mylv /backup xfs defaults 1 2
Save and exit.
umount /backup [to unmount the logical volume]
lvremove /dev/vg-myvg/lv-mylv [To remove the logical volume]
lvdisplay [To verify logical volume]
vgremove vg-myvg [To remove volume group]
vgdispaly [To verify volume group]
pvremove /dev/sdb1 [To remove physical volume]
pvdisplay [To verify physical volumes]

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THANK YOU

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