Storage & LVM

Types of Storage

- Local Storage
- SAN (Storage Area Network)
- NAS (Network Attached Storage)

Basic Commands

fdisk -l	disk partition utility (displays disk system n -l list disks
lsblk -f	list block devices (displays UUID) -f forest (tree) hierarchy
df -h	filesystem capacity (displays mounted disks -h human readable

Add a New Disk

insert a new 2GB disk	
fdisk /dev/sdb	enter fdisk utility for the new disk
n	new partition
enter (default)	new standalone disk
enter (default)	first sector 2048 last sector 67108863 (whole disk = 1 partition)
enter (default)	
w	write (apply)
mkfs.xfs /dev/sdb1	create xfs filesystem for the disk
mkdir /data	create directory to mount the disk to
lsblk -f	retrieve UUID
mount /dev/sdb1 /data	mount the disk to the directory
nano /etc/fstab	add the below line to mount during boot (sp ~~/dev/sdb1 /data xfs defaults 0 0~~ UUID=4461ddd4-6c2c-4078-ab90-d451436 xfs defaults 0 0
reboot	verify successful boot
umount /data	to unmount
mount -a	mount disks again according to /etc/fstab

LVM (Logical Volume Management)

- Allows disks to be combined together via software

- Volume groups can be extended by adding additional disks

Physical Volume	Volume Group	Logical Volume	Mounted On
Disk 1	rootvg	system	/
		home	/home
		swap	
Disk 2	datavg	data1	/data1
Disk 3		data2	/data2
Disk 4		data3	/data3
		data4	/data4

Add Disk and Create LVM Partition

File system	datafs		
Logical Volume(s)	datalv		
Volume Group	datavg		
Physical Volume	/dev/sda1	/dev/sdb1	/dev/sdc1
Partitions	/dev/sda1	/dev/sdb1	/dev/sdc1
Hard Disks	/dev/sda	/dev/sdb	/dev/sdc

Basic Commands

pvdisplay	display phsyical volumes
pvs	summary physical volumes
vgdisplay	display volume groups
vgs	summary volume groups
lvdisplay	display logical volumes
lvs	summary logical volumes

Creating this Structure

insert a new 1GB disk	
fdisk /dev/sdc	enter fdisk utility for the new disk
n	new partition
enter (default)	new standalone disk
enter (default)	first sector 2048 last sector 67108863 (whole disk = 1 partition)
enter (default)	
p	show partitions
t	change partition type
L	show LVM hex codes

8e	Linux LVM
w	write (apply)
pvcreate /dev/sdc1	create physical volume
vgcreate vg_app /dev/sdc1	create volume group
lvcreate -n lv_app --size 1020M vg_app	create logical volume (allowing overhead)
mkfs.xfs /dev/vg_app/lv_app	create filesystem
blkid /dec/vg_app/lv_app	retrieve UUID
mkdir app	create directory
mount /dev/vg_app/lv_app /app	mount
nano /etc/fstab	UUID=12345678-abcd-1234-efgh-1234567 defaults 0 0

Extending this Space (this can only be done with LVM)

insert a new 1GB disk	
fdisk /dev/sdd	enter fdisk utility for the new disk
n	new partition
enter (default)	new standalone disk
enter (default)	first sector 2048 last sector 67108863 (whole disk = 1 partition)
enter (default)	
p	show partitions
t	change partition type
8e	Linux LVM
w	write (apply)
pvcreate /dev/sdd1	create phsyical volume
vgextend vg_app /dev/sdd1	extend vg_app to new disk
lvextend -L+1020M /dev/mapper/vg_app-lv_app	extend by 1020MB lv_app
xfs_growfs /dev/mapper/vg_app-lv_app	extend filesystem for lv_app

Revision #1
Created 2026-07-05 06:24:13 UTC by Admin
Updated 2026-07-05 06:24:20 UTC by Admin