

# Storage Notes

Monday, October 28, 2024 9:58 PM

Create a Single Linux LVM Partition on Each New Drive:

Use fdisk on each new drive to create a partition that utilizes the entire available space and sets the type to Linux LVM.

***fdisk /dev/sdb***

create a new primary partition and set type to 8e (Linux LVM), then write changes.

do the same for sdc,sdd,sde

Create a Linux Software RAID Array Using Four Disks:

Set up a RAID array using mdadm with the four new LVM partitions created in step 1.

***yum install mdadm -y***

***mdadm --create --verbose /dev/md0 --level=5 --raid-devices=4 /dev/sdb1 /dev/sdc1 /dev/sdd1 /dev/sde1***

Create the Volume Group Named savg:

Use pvcreate to initialize the RAID device (or each disk if no RAID).

Then create a volume group named savg with this storage.

***pvcreate /dev/md0***

***vgcreate savg /dev/md0***

Create Logical Volumes for /tmp and /home:

Create a 1GB logical volume for /tmp and an 80% logical volume for /home in the savg volume group.

***lvcreate -L 1G -n tmp savg***

***lvcreate -l 80%FREE -n home savg***

Format the Logical Volumes:

Format /tmp as ext4 and /home as xfs.

***mkfs.ext4 /dev/savg/tmp***

***mkfs.xfs /dev/savg/home***

Before mounting the new logical volume on /home, copy the existing user data to a safe location

***mkdir /mnt/new\_home /mnt/new\_tmp***

Mount the New logical volumes temporarily:

***mount /dev/savg/home /mnt/new\_home***

***mount /dev/savg/tmp /mnt/new\_tmp***

Transfer Data Using rsync

***rsync -avz /home/ /mnt/new\_home/***

***rsync -avz /tmp/ /mnt/new\_tmp/***

To verify the data has been copied use the below command to check:

***ls -al /mnt/new\_home***

***ls -al /mnt/new\_tmp***

Unmount the temporary Mount Points:

```
umount /mnt/new_home
umount /mnt/new_tmp
```

Mount the filesystems in /etc/fstab:

```
/dev/savg/tmp /tmp ext4 defaults,nodev,nosuid,noexec 0 0
/dev/savg/home /home xfs defaults,nodev 0 2
```

To verify the Mounts:

Check with the help of lsblk command:

```
Last login: Mon Oct 28 21:15:28 2024 from 10.21.32.1
[root@machinee ~]# lsblk
NAME                                MAJ:MIN RM  SIZE RO TYPE  MOUNTPOINTS
sda                                  8:0    0   8G  0 disk
├─sda1                              8:1    0 600M  0 part  /boot/efi
├─sda2                              8:2    0   1G  0 part  /boot
├─sda3                              8:3    0  6.4G  0 part
│   └─almalinux-root                253:0    0  5.6G  0 lvm    /
│   └─almalinux-swap                253:1    0 820M  0 lvm    [SWAP]
sdb                                  8:16    0  5.7G  0 disk
├─sdb1                              8:17    0  5.7G  0 part
│   └─md0                          9:0    0 17.1G  0 raid5
│       ├── savg-tmp                 253:2    0   1G  0 lvm    /tmp
│       └── savg-home                253:3    0 12.9G  0 lvm    /home
sdc                                  8:32    0  5.7G  0 disk
├─sdc1                              8:33    0  5.7G  0 part
│   └─md0                          9:0    0 17.1G  0 raid5
│       ├── savg-tmp                 253:2    0   1G  0 lvm    /tmp
│       └── savg-home                253:3    0 12.9G  0 lvm    /home
sdd                                  8:48    0  5.7G  0 disk
├─sdd1                              8:49    0  5.7G  0 part
│   └─md0                          9:0    0 17.1G  0 raid5
│       ├── savg-tmp                 253:2    0   1G  0 lvm    /tmp
│       └── savg-home                253:3    0 12.9G  0 lvm    /home
sde                                  8:64    0  5.7G  0 disk
├─sde1                              8:65    0  5.7G  0 part
│   └─md0                          9:0    0 17.1G  0 raid5
│       ├── savg-tmp                 253:2    0   1G  0 lvm    /tmp
│       └── savg-home                253:3    0 12.9G  0 lvm    /home
sr0                                  11:0    1  1.7G  0 rom
[root@machinee ~]# |
```

Here I used Raid5:

I selected RAID 5 for this configuration because it offers a strong mix of performance, fault tolerance, and efficient storage use, making it ideal for a multi-user setup. RAID 5 distributes data and parity across multiple disks, ensuring that, in the event of a single disk failure, the system remains operational and data can be restored using the parity information. This setup improves read performance due to data striping and optimizes storage space, as only the equivalent of one disk is used for parity rather than full duplication, as seen in mirrored configurations. RAID 5 thus provides reliable uptime and data integrity,

delivering both redundancy and effective storage utilization at a reasonable cost.

It took me around 3 to 5 hours to complete the assignment