24 sept 2024

- **LVM(Logical Volume Management)**

Logical Volume Management (LVM) is a system in Linux that provides a flexible and efficient way of managing disk storage. It allows you to create, resize, and manage disk partitions more easily compared to traditional partitioning methods.

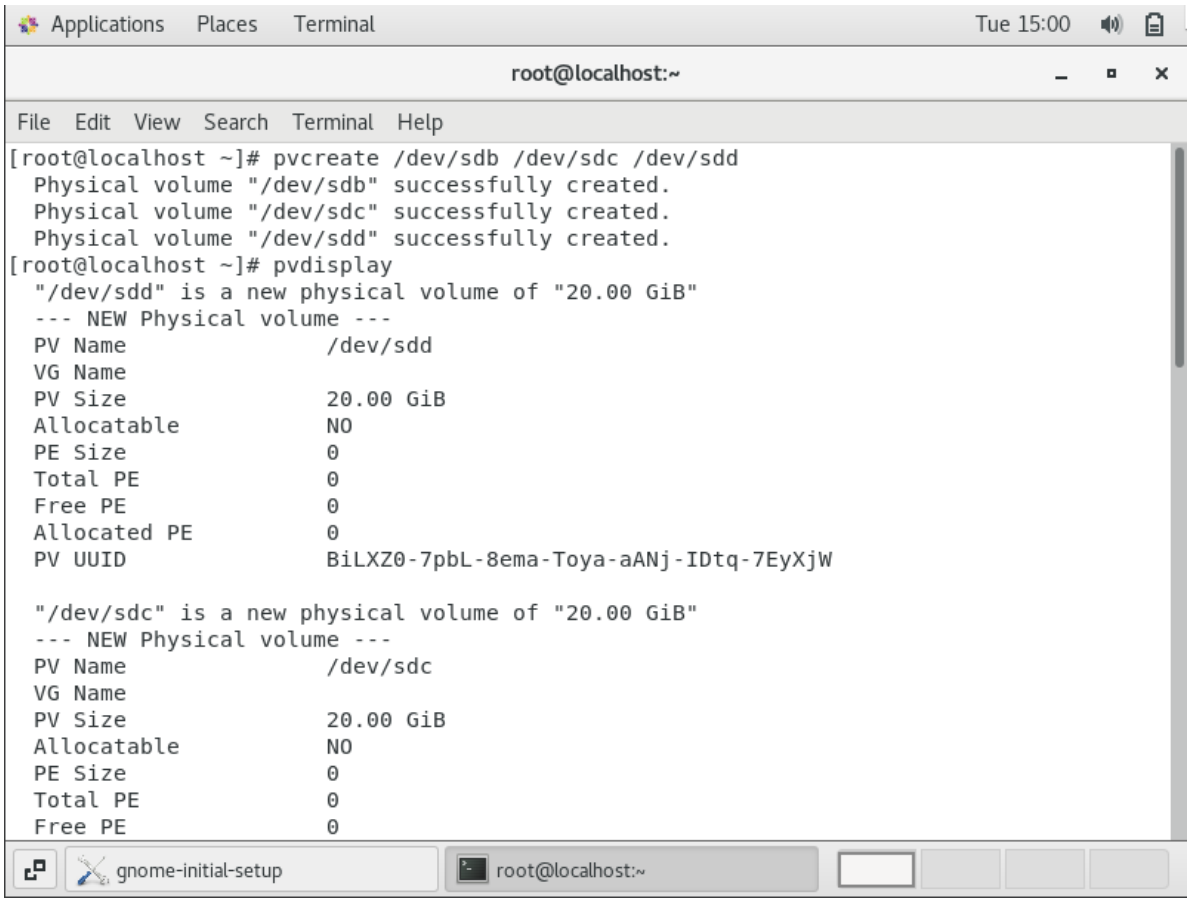
How to configure LVM:-

1)Create Physical Volume for each drive :-

- [root@localhost ~]# pvcreate /dev/sdb /dev/sdc /dev/sdd

2) To display Physical Volume:-

- [root@localhost ~]# pvdisplay

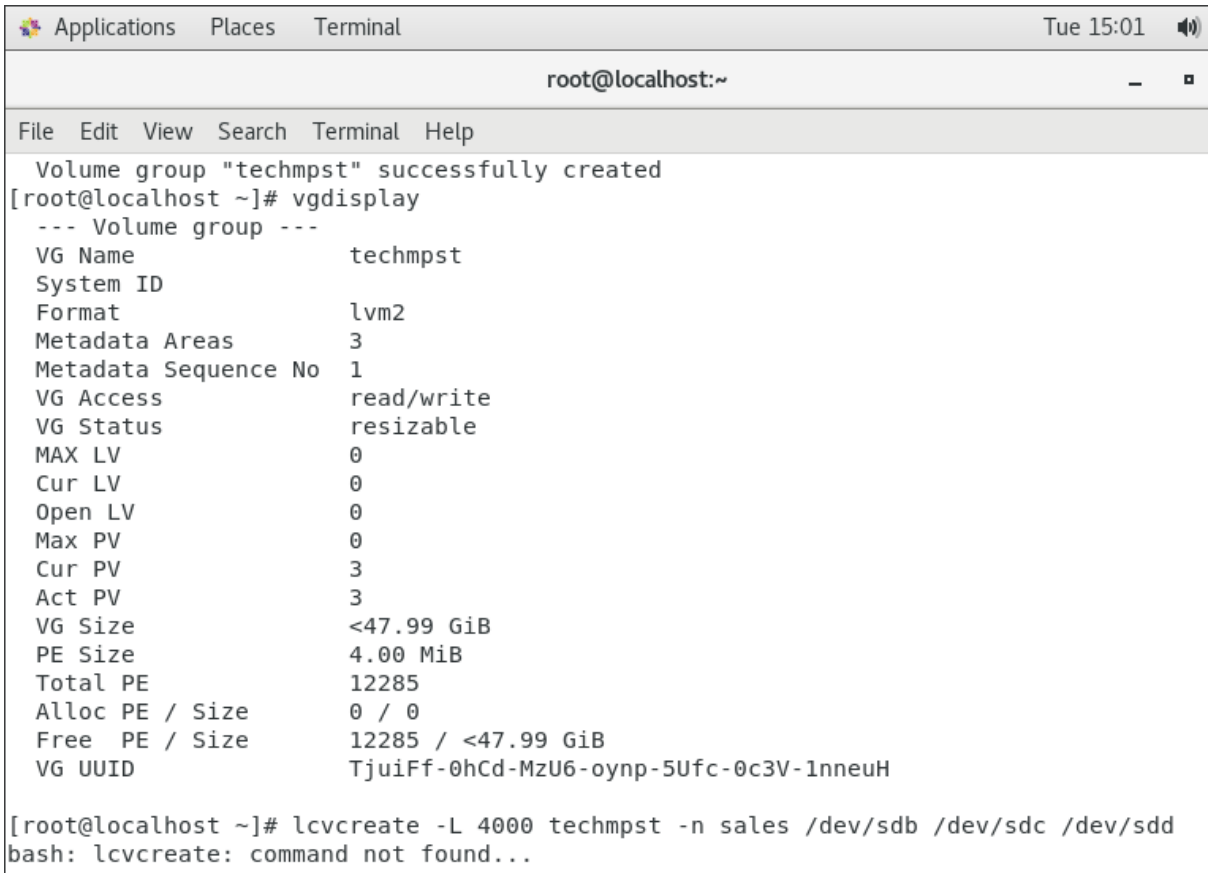


3)To Create vg name:-

- [root@localhost ~]# vgcreate techmpst /dev/sdb /dev/sdc /dev/sdd

4) To display:-

- [root@localhost ~]# vgdisplay



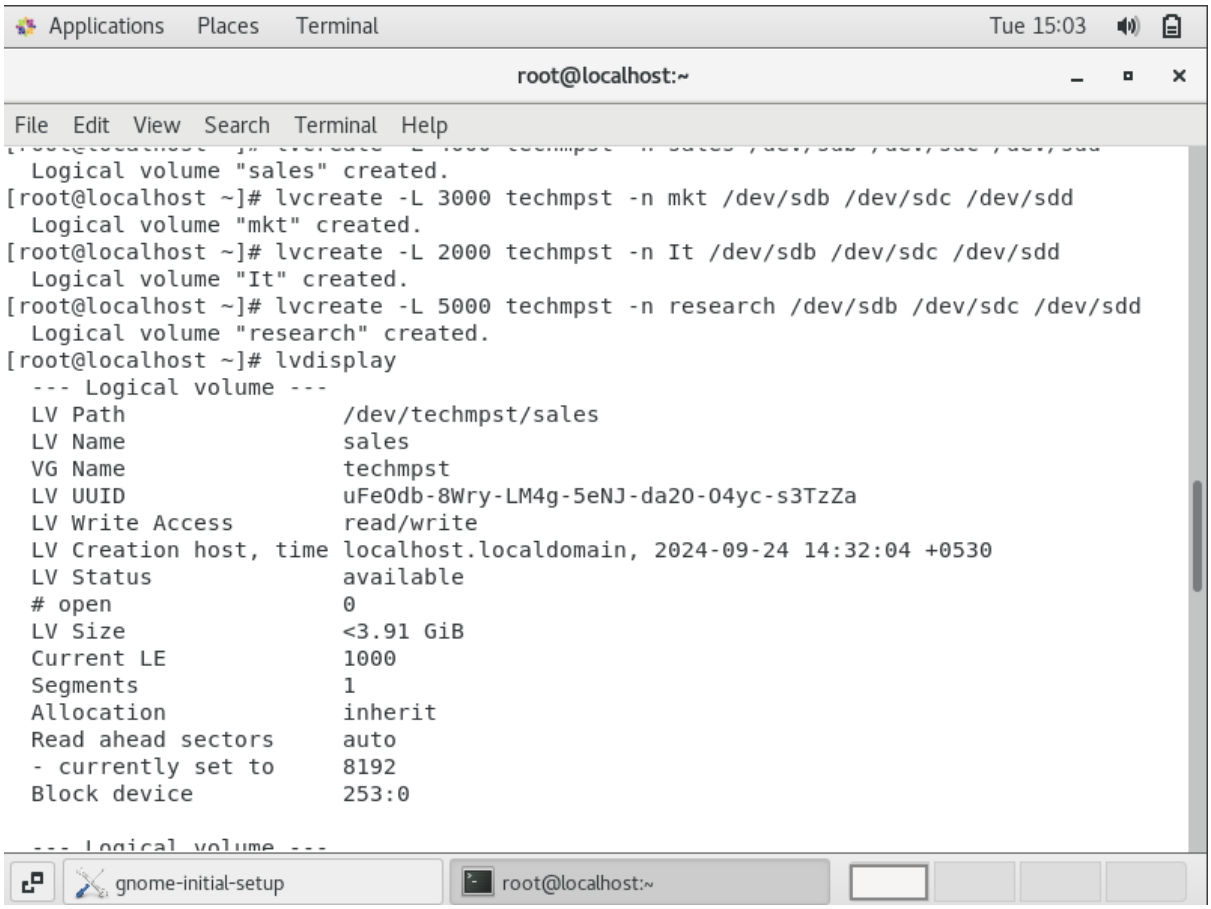
5)To Create Logical Volume:-

- [root@localhost ~]# lvcreate -L 3000 -n mkt /dev/sdb /dev/sdc /dev/sdd
- [root@localhost ~]# lvcreate -L 4000 -n sales /dev/sdb /dev/sdc /dev/sdd
- [root@localhost ~]# lvcreate -L 2000 -n It /dev/sdb /dev/sdc /dev/sdd

- [root@localhost ~]# lvcreate -L 5000 -n research /dev/sdb /dev/sdc /dev/sdd

6) To display:-

- [root@localhost ~]# lvdisplay

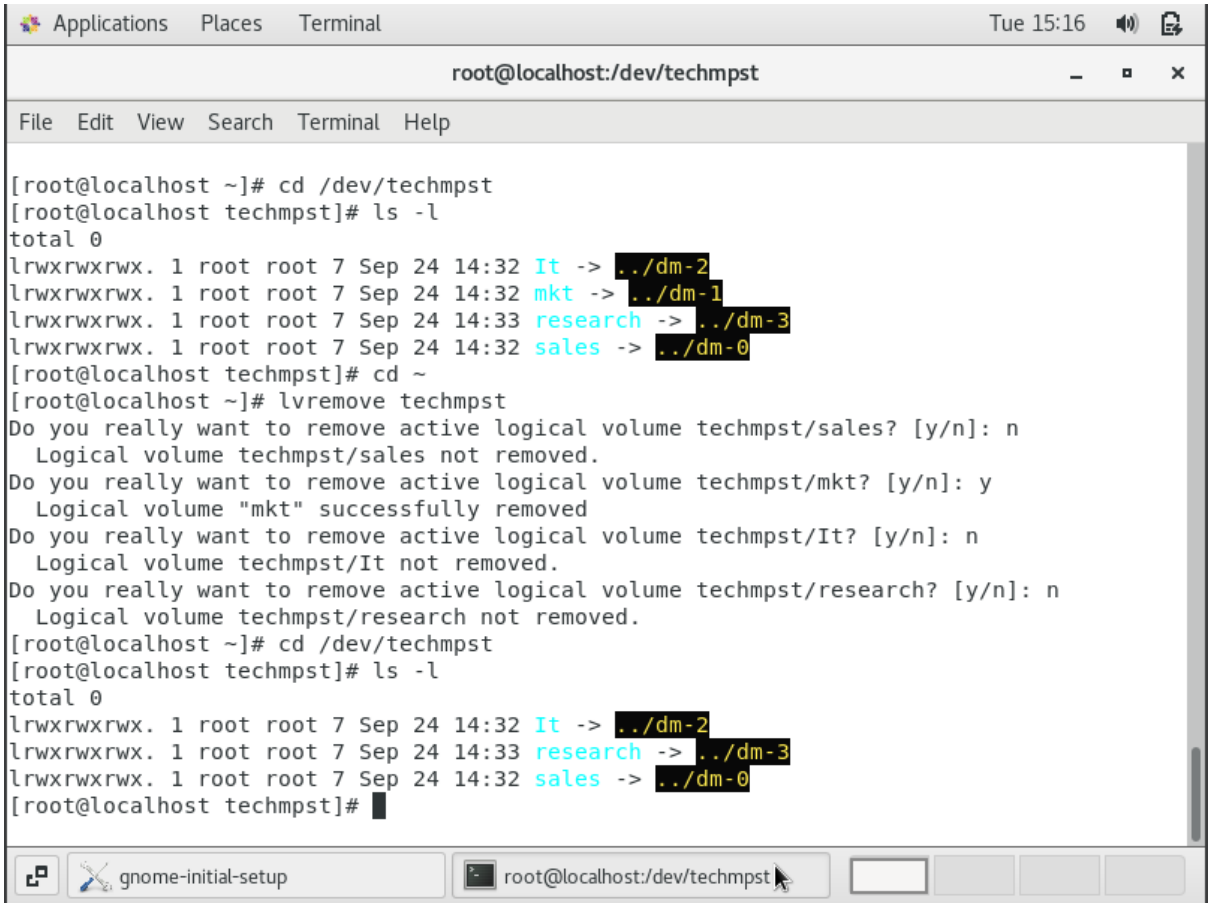


7)To display all departments:-

- [root@localhost ~]# cd /dev/techmpst
- [root@localhost techmpst]# ls -l

8)To remove one department from Logical Volume:-

- [root@localhost ~]# lvremove techmpst



RAID(Redundancy Array of Independent Disk)

RAID is a technology that combines multiple hard drives into a single logical unit to provide data redundancy, improve performance, or both.

Types of RAID:

1)RAID 0 (Striping):

- No redundancy.
- Increased performance.
- Data split across drives; failure of one drive causes total data loss.

2) RAID 1 (Mirroring):

- Full data redundancy.
- Data mirrored on multiple drives.
- Read speed improvement, no write performance gain

3) RAID 4 (in 3 points):

- Data is spread across multiple disks with one dedicated parity disk.
- Can recover from one disk failure using parity information.
- Fast reads but slower writes due to the parity disk.

4) **RAID 5 (Striping with Parity)**:

- Redundancy using parity.
- Can tolerate one drive failure.
- Balanced performance (good read, slower write due to parity).

5) RAID 6 (Striping with Double Parity):

- Redundancy with two parity blocks.
- Can withstand two drive failures.
- Slower write speeds than RAID 5, good for redundancy.

6) RAID 10 (1+0, Mirroring and Striping):

- Combines RAID 1 and RAID 0.
- High redundancy and performance.
- Requires a minimum of four drives.
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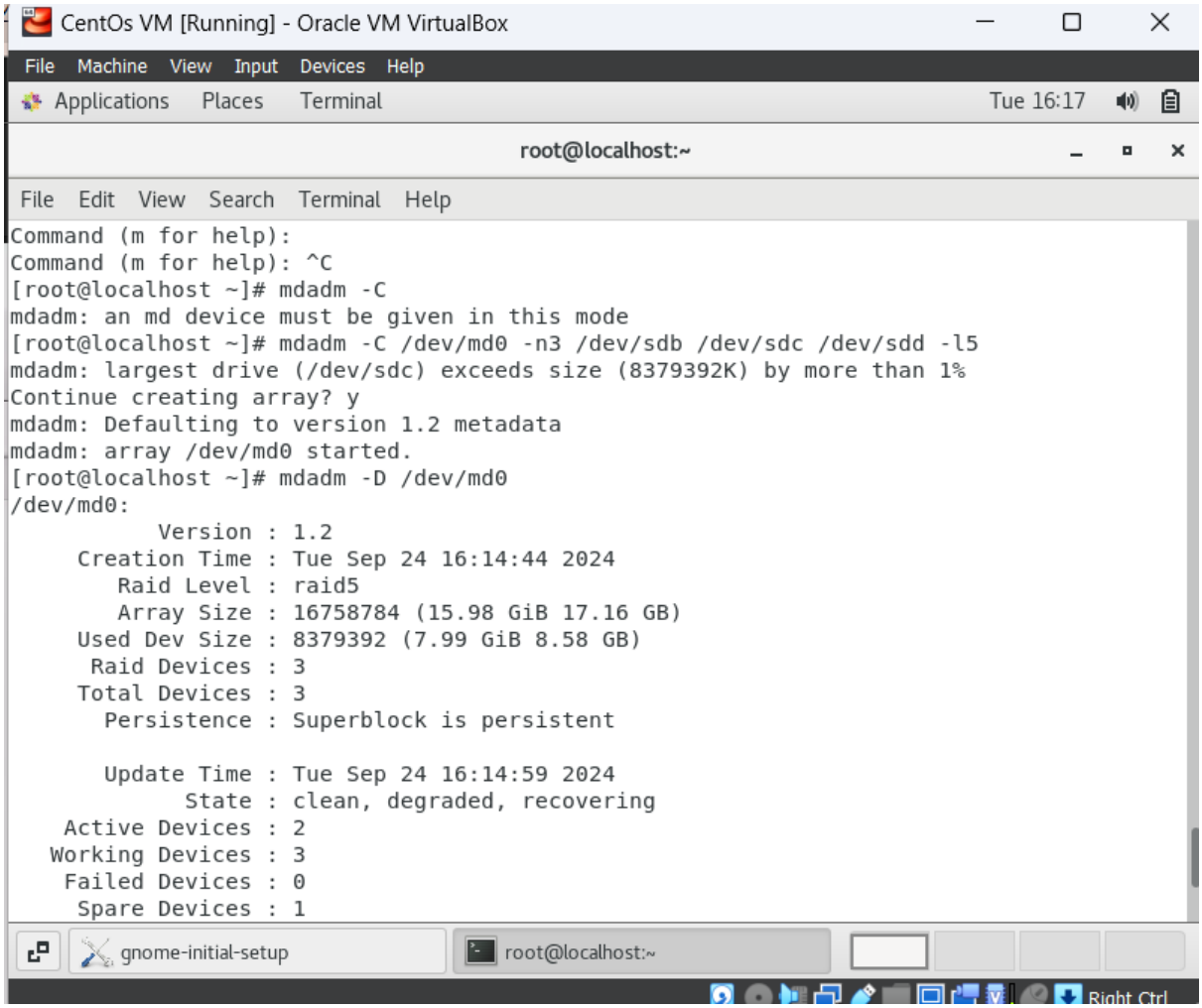
Command for Raid:

1)To create a configuration file for mdadm:

- [root@localhost ~]# mdadm -C

2) To create a new RAID array using mdadm:

- [root@localhost ~]# mdadm -C /dev/md0 -n3 /dev/sdb /dev/sdc /dev/sdd

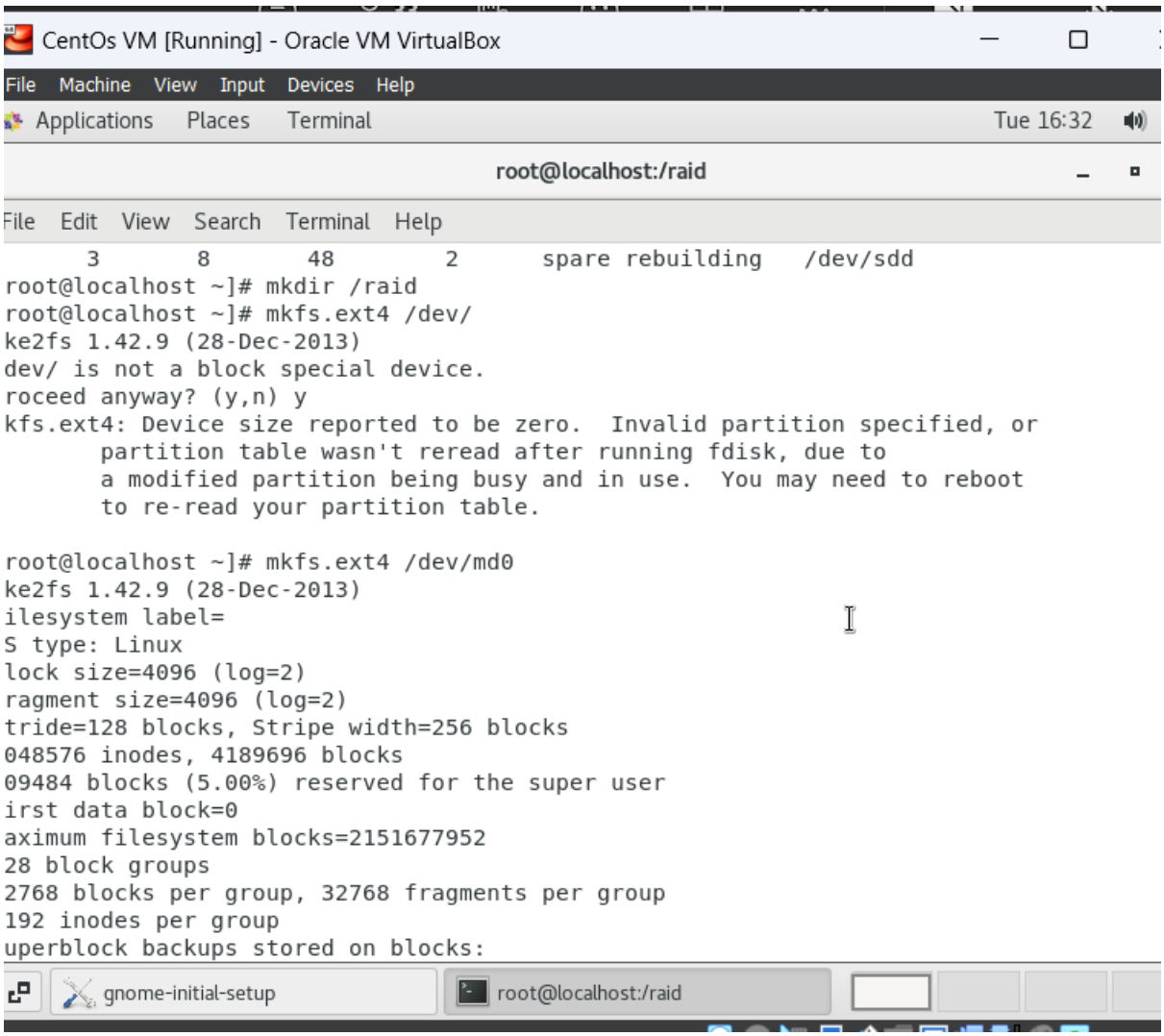
- 

3) **To display detailed information about the specified RAID array.**

- [root@localhost ~]# mdadm -D /dev/md0

4)To format RAID device:

- [root@localhost ~]# Mkfs.ext 4 /dev/md0



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5)To mount:

[root@localhost ~]# mount /dev/md0 /raid

[root@localhost ~]# cd /raid

[root@localhost ~]# touch t1 t2 t3

6)To remove HDD if disk is faulty:

[root@localhost ~]# mdadm -f /dev/md0 /dev/sdd

[root@localhost ~]# mdadm -r /dev/md0 /dev/sdd

7)To Add HDD:

[root@localhost ~]# mdadm -a /dev/md0 /dev/sdd

8)To stop Raid:

[root@localhost ~]# mdadm -s /dev/md0 /dev/sdd

9)To activate Raid:

[root@localhost ~]# mdadm -A /dev/md0 /dev/sdd