CREATING RAID 10(1+0) IN CENTOS 7

FIRST APPROACH

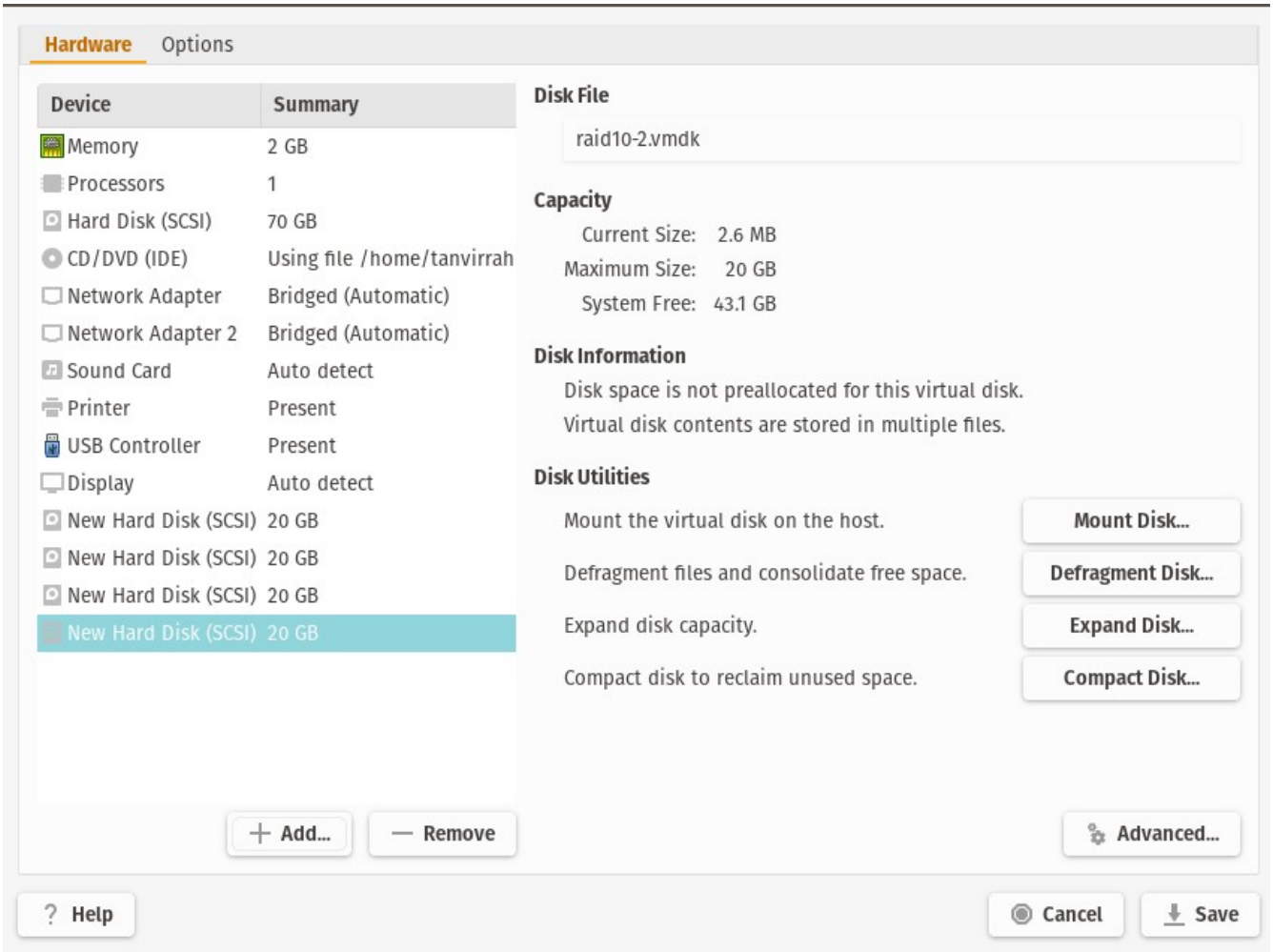
Setting up RAID 10(1+0) in Virtual Machine :

Requirements:

- → Virtual Machine
- → Four disk(minimum)
- → internet connection
- → a static ip address (in case you want to ssh the server)

STEP 1:

Adding four 20GB disk in the centos7 Virtual machine.



STEP2:

Boot the machine.

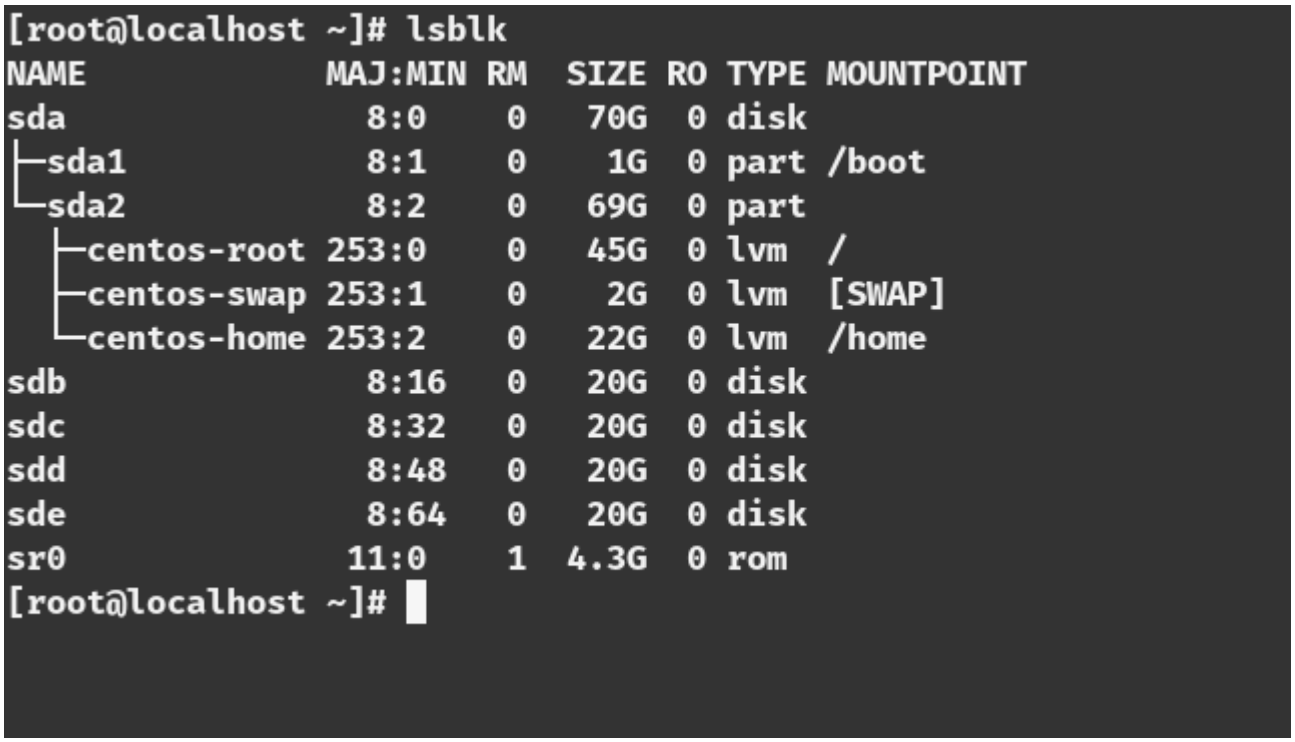
STEP3:

open Terminal .(or you just ssh the server from the server) [in this case I ssh to the server]

STEP4:

apply the ‘lsblk’ command to see the block devices

=>lsblk



There are three additional block devices name ‘sdb’ and ‘sdc’ and ‘sdd’ we use this three drive to make a raid 5.

STEP5:

install the **mdadm** package

=>yum update

=> yum install mdadm -y

STEP6:

check the version in the of the packages

=> mdadm –version

STEP7:

Examine the hard drive with mdadm

=> mdadm –examine /dev/sd[b-e]

STEP8:

Create partition for RAID

=>fdisk /dev/sdb

Follow below instructions for creating partitions.

1. Press ‘**n**‘ for creating new partition.
2. Then choose ‘**P**‘ for Primary partition.
3. Next select the partition number as **1**.
4. Give the default value by just pressing two times **Enter** key.
5. Next press ‘**P**‘ to print the defined partition.

Follow below instructions for creating Linux raid auto on partitions.

1. Press ‘**L**‘ to list all available types.
2. Type ‘**t**‘to choose the partitions.
3. Choose ‘**fd**‘ for Linux raid auto and press Enter to apply.
4. Then again use ‘**P**‘ to print the changes what we have made.
5. Use ‘**w**‘ to write the changes.

[creating partition]

```
[root@server2 ~]#
[root@server2 ~]# fdisk /dev/sdb
Welcome to fdisk (util-linux 2.23.2).

Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.

Device does not contain a recognized partition table
Building a new DOS disklabel with disk identifier 0xc4707f2b.

Command (m for help): n
Partition type:
   p   primary (0 primary, 0 extended, 4 free)
   e   extended
Select (default p): p
Partition number (1-4, default 1):
First sector (2048-41943039, default 2048):
Using default value 2048
Last sector, +sectors or +size{K,M,G} (2048-41943039, default 41943039):
Using default value 41943039
Partition 1 of type Linux and of size 20 GiB is set

Command (m for help): p

Disk /dev/sdb: 21.5 GB, 21474836480 bytes, 41943040 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk label type: dos
Disk identifier: 0xc4707f2b

   Device Boot      Start         End      Blocks   Id  System
/dev/sdb1            2048    41943039    20970496   83  Linux

Command (m for help):
```

[creating raid on that partition]

```
[root@server2 ~]# fdisk /dev/sdb
Welcome to fdisk (util-linux 2.23.2).

Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.


Command (m for help): t
Selected partition 1
Hex code (type L to list all codes): fd
Changed type of partition 'Linux' to 'Linux raid autodetect'

Command (m for help): P

Disk /dev/sdb: 21.5 GB, 21474836480 bytes, 41943040 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk label type: dos
Disk identifier: 0xc4707f2b

   Device Boot      Start         End      Blocks   Id  System
/dev/sdb1            2048    41943039    20970496   fd  Linux raid autodetect

Command (m for help): w
The partition table has been altered!

Calling ioctl() to re-read partition table.
Syncing disks.
[root@server2 ~]#
```

[see the block devices]

STEP9:

Do the step 8 for the ‘sdc’ ,‘sdd’,’sde’

=>fdisk /dev/sdc
=>fdisk /dev/sdd
=>fdisk /dev/sde

STEP10:

Examine with the ‘lsblk’

=>lsblk

```
[root@localhost ~]# lsblk
NAME            MAJ:MIN RM  SIZE RO TYPE   MOUNTPOINT
sda               8:0    0   70G  0 disk
├─sda1            8:1    0    1G  0 part   /boot
└─sda2            8:2    0   69G  0 part
  ├─centos-root 253:0    0   45G  0 lvm    /
  ├─centos-swap 253:1    0    2G  0 lvm    [SWAP]
  └─centos-home 253:2    0   22G  0 lvm    /home
sdb               8:16   0   20G  0 disk
└─sdb1            8:17   0   20G  0 part
  └─md0           9:0    0   40G  0 raid10
sdc               8:32   0   20G  0 disk
└─sdc1            8:33   0   20G  0 part
  └─md0           9:0    0   40G  0 raid10
sdd               8:48   0   20G  0 disk
└─sdd1            8:49   0   20G  0 part
  └─md0           9:0    0   40G  0 raid10
sde               8:64   0   20G  0 disk
└─sde1            8:65   0   20G  0 part
  └─md0           9:0    0   40G  0 raid10
sr0              11:0    1  4.3G  0 rom
[root@localhost ~]#
```

STEP11:

Examine with the ‘mdadm’
=>mdadm –examine /dev/sd[b-e]1

STEP12:

Create RAID md Devices (with miror)

=>mdadm --create /dev/md0 --level=10 --raid-devices=4 /dev/sd[b-e]1

```
[root@localhost ~]# mdadm --create /dev/md0 --level=10 --raid-devices=4 /dev/sd[
b-e]1
mdadm: Defaulting to version 1.2 metadata
mdadm: array /dev/md0 started.
[root@localhost ~]#
```

STEP13:

See the Details of the RAID 0 devices

=>mdadm –detail /dev/md0

```
[root@localhost ~]# mdadm --detail /dev/md0
/dev/md0:
           Version : 1.2
     Creation Time : Thu Sep  5 09:24:51 2019
        Raid Level : raid10
        Array Size : 41906176 (39.96 GiB 42.91 GB)
     Used Dev Size : 20953088 (19.98 GiB 21.46 GB)
      Raid Devices : 4
     Total Devices : 4
       Persistence : Superblock is persistent

       Update Time : Thu Sep  5 09:25:49 2019
             State : clean, resyncing
    Active Devices : 4
   Working Devices : 4
    Failed Devices : 0
     Spare Devices : 0

            Layout : near=2
        Chunk Size : 512K

Consistency Policy : resync

     Resync Status : 28% complete

              Name : localhost.localdomain:0  (local to host localhost.localdomain)
              UUID : 87cff83b:0213c1c1:bc932f37:1ae1b93d
            Events : 4

    Number   Major   Minor   RaidDevice State
       0       8       17        0      active sync set-A   /dev/sdb1
       1       8       33        1      active sync set-B   /dev/sdc1
       2       8       49        2      active sync set-A   /dev/sdd1
       3       8       65        3      active sync set-B   /dev/sde1
[root@localhost ~]#
```

STEP14:

Varify with this command

=>mdadm -E /dev/sd[b-d]1 | grep raid5

```
[root@localhost raid10]# mdadm -E /dev/sd[b-e]1 | grep raid10
     Raid Level : raid10
     Raid Level : raid10
     Raid Level : raid10
     Raid Level : raid10
[root@localhost raid10]#
```

STEP15:

Assigning File partition on the File system

=>mkfs.ext4 /dev/md0

STEP15:

mount the volume
=>mkdir /mnt/raid10
=>mount /dev/md0 /mnt/raid10

```
[root@localhost ~]# mkdir /mnt/raid10
[root@localhost ~]# mount /dev/md0 /mnt/raid10/
[root@localhost ~]# cd /mnt/raid10/
[root@localhost raid10]# ls
lost+found
[root@localhost raid10]#
```

STEP16:

check the mounted volume

=>df -h

```
[root@localhost raid10]# mdadm -E /dev/sd[b-e]1 | grep raid10
     Raid Level : raid10
     Raid Level : raid10
     Raid Level : raid10
     Raid Level : raid10
[root@localhost raid10]#
```

STEP17:
check the block devices with lsblk

=>lsblk

```
[root@localhost raid10]# lsblk
NAME            MAJ:MIN RM  SIZE RO TYPE   MOUNTPOINT
sda               8:0    0   70G  0 disk
├─sda1            8:1    0    1G  0 part   /boot
└─sda2            8:2    0   69G  0 part
  ├─centos-root 253:0    0   45G  0 lvm    /
  ├─centos-swap 253:1    0    2G  0 lvm    [SWAP]
  └─centos-home 253:2    0   22G  0 lvm    /home
sdb               8:16   0   20G  0 disk
└─sdb1            8:17   0   20G  0 part
  └─md0           9:0    0   40G  0 raid10 /mnt/raid10
sdc               8:32   0   20G  0 disk
└─sdc1            8:33   0   20G  0 part
  └─md0           9:0    0   40G  0 raid10 /mnt/raid10
sdd               8:48   0   20G  0 disk
└─sdd1            8:49   0   20G  0 part
  └─md0           9:0    0   40G  0 raid10 /mnt/raid10
sde               8:64   0   20G  0 disk
└─sde1            8:65   0   20G  0 part
  └─md0           9:0    0   40G  0 raid10 /mnt/raid10
sr0              11:0    1  4.3G  0 rom
[root@localhost raid10]#
```