Normal Partition

Step -1

First we need to add a hard disk to the virtual machine to perform the Partition

Steps to add a hard disk to the virtual machine

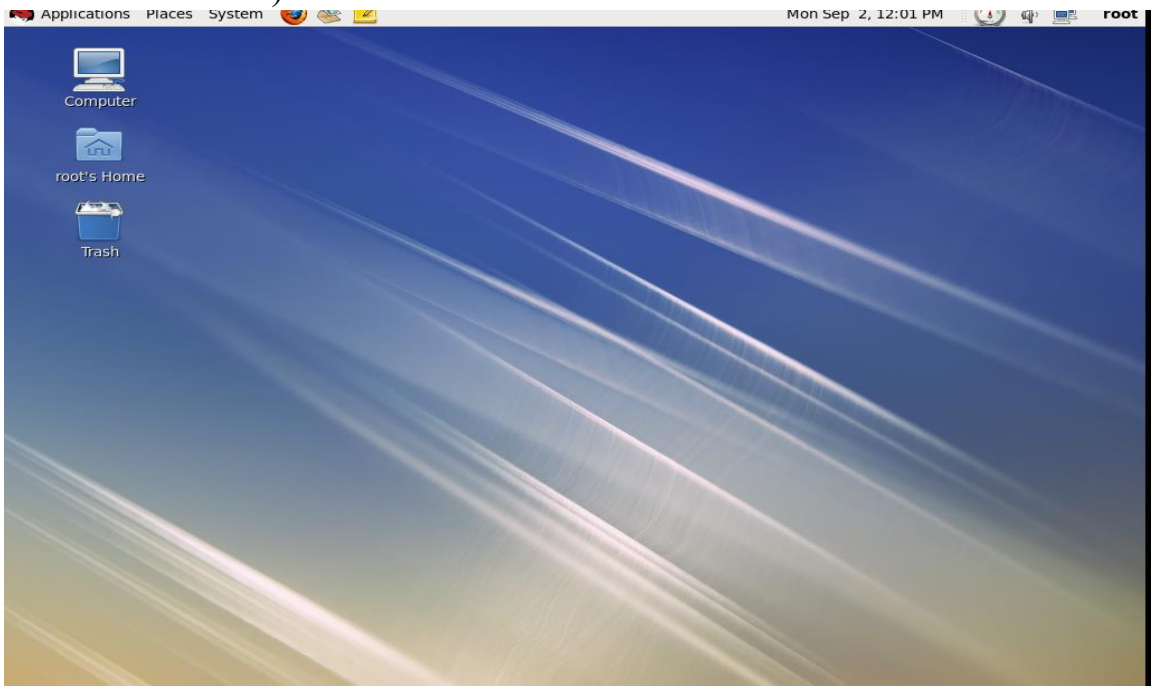
First We need to check how many hard Disk are there in my server.

Command: fdisk -l

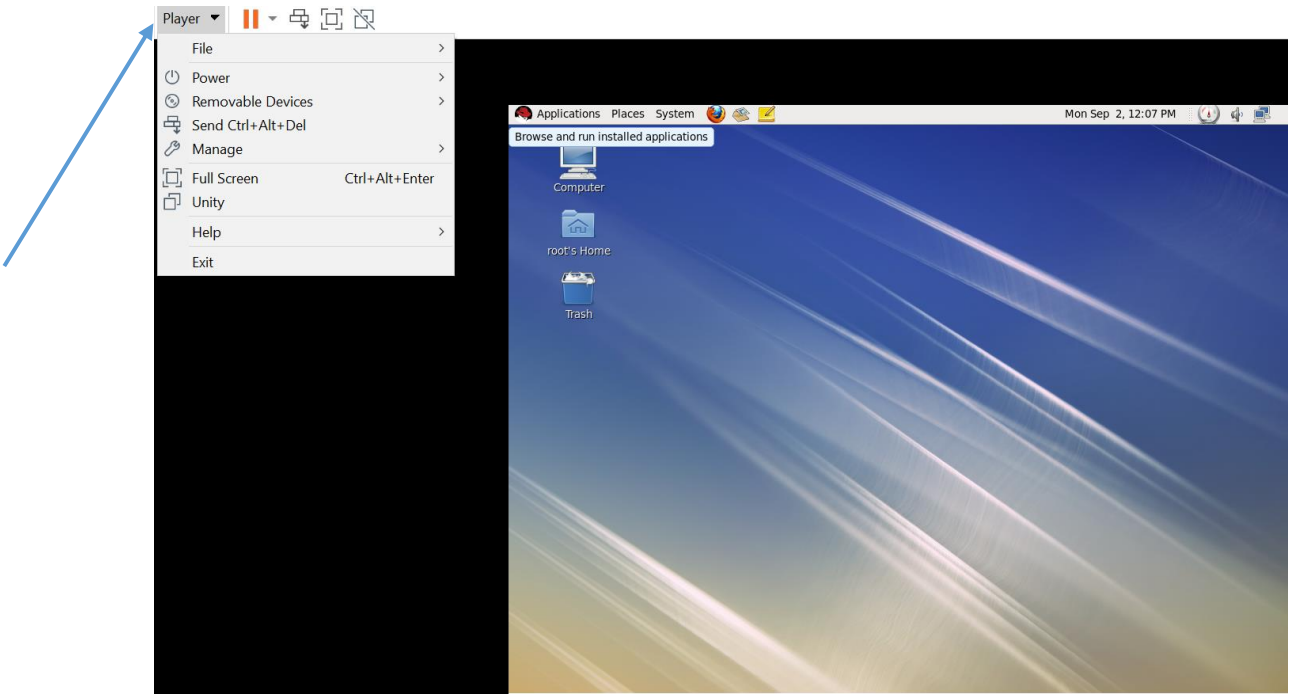
```
[root@ajaydasharath ~]# fdisk -l

Disk /dev/sda: 21.5 GB, 21474836480 bytes
255 heads, 63 sectors/track, 2610 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk identifier: 0x00085189

   Device Boot      Start         End      Blocks   Id  System
/dev/sda1   *           1          39      307200   83  Linux
Partition 1 does not end on cylinder boundary.
/dev/sda2              39         549     4096000   82  Linux swap / Solaris
Partition 2 does not end on cylinder boundary.
/dev/sda3             549        2611    16567296   83  Linux
[root@ajaydasharath ~]#
```

In this figure you can observe that only root partition is present so we are creating a new partition

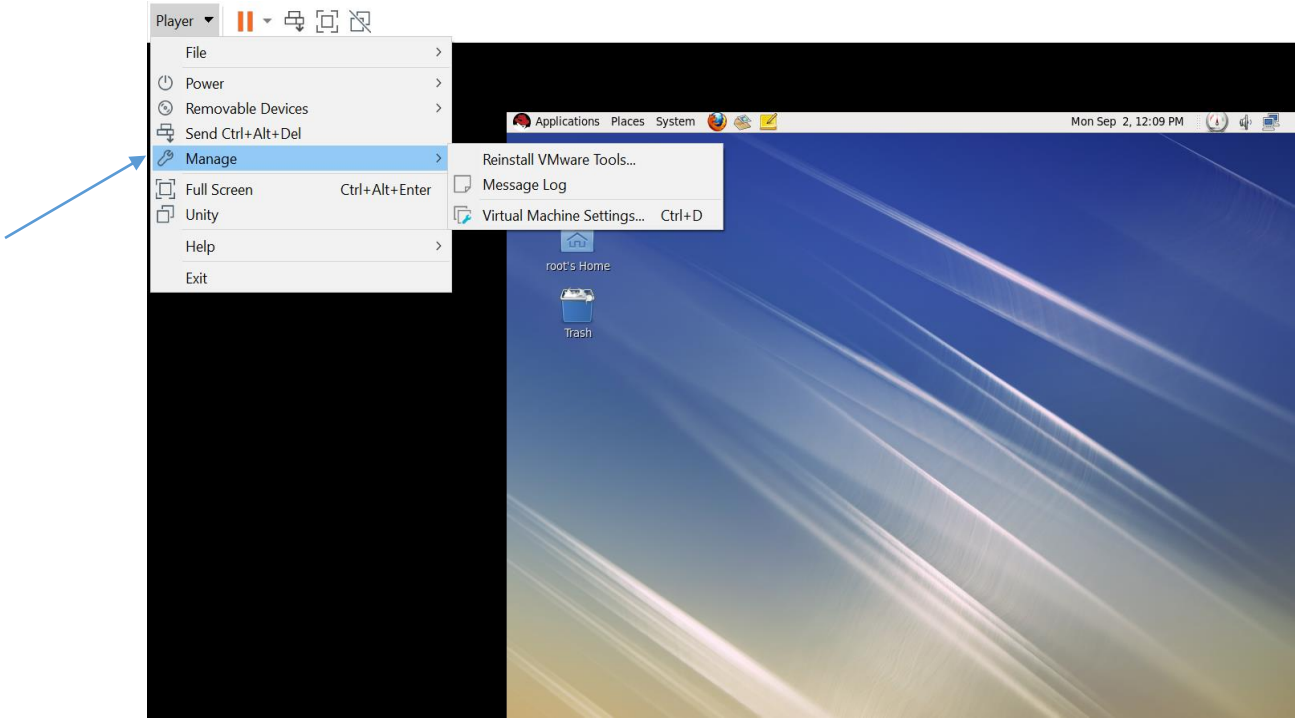
1) Go for the VM Ware Work Station



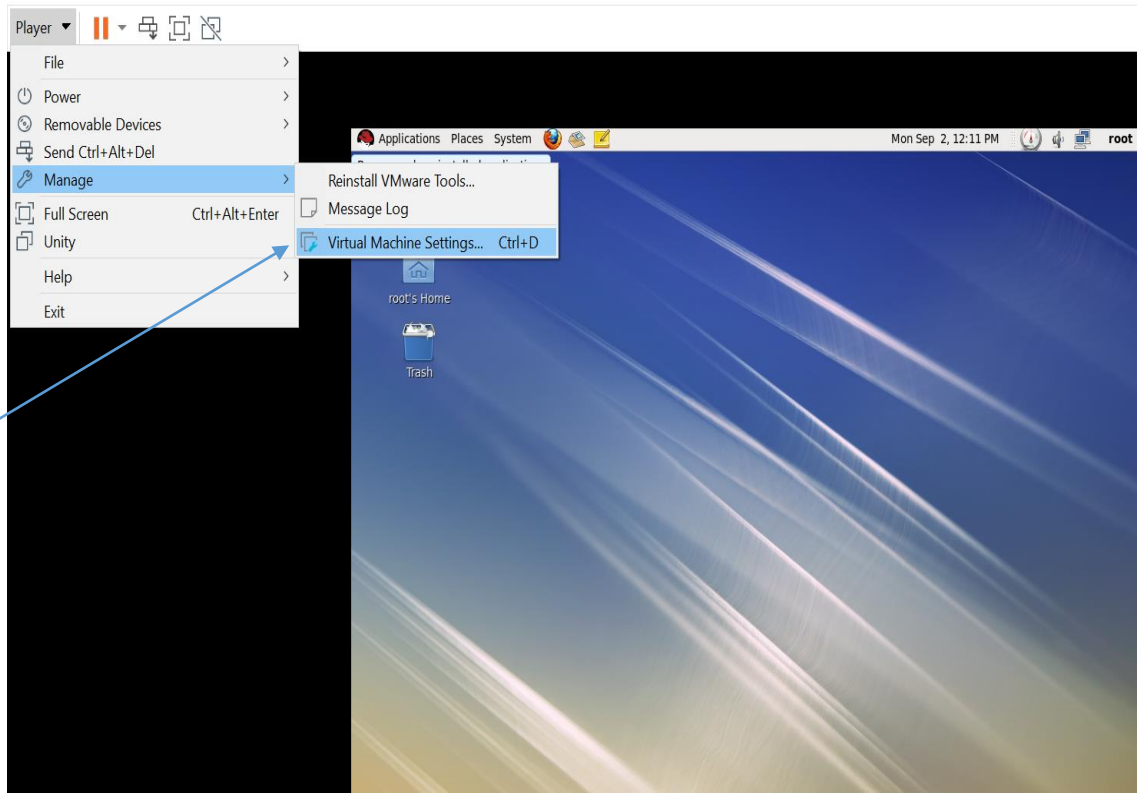
2) Click on the Player



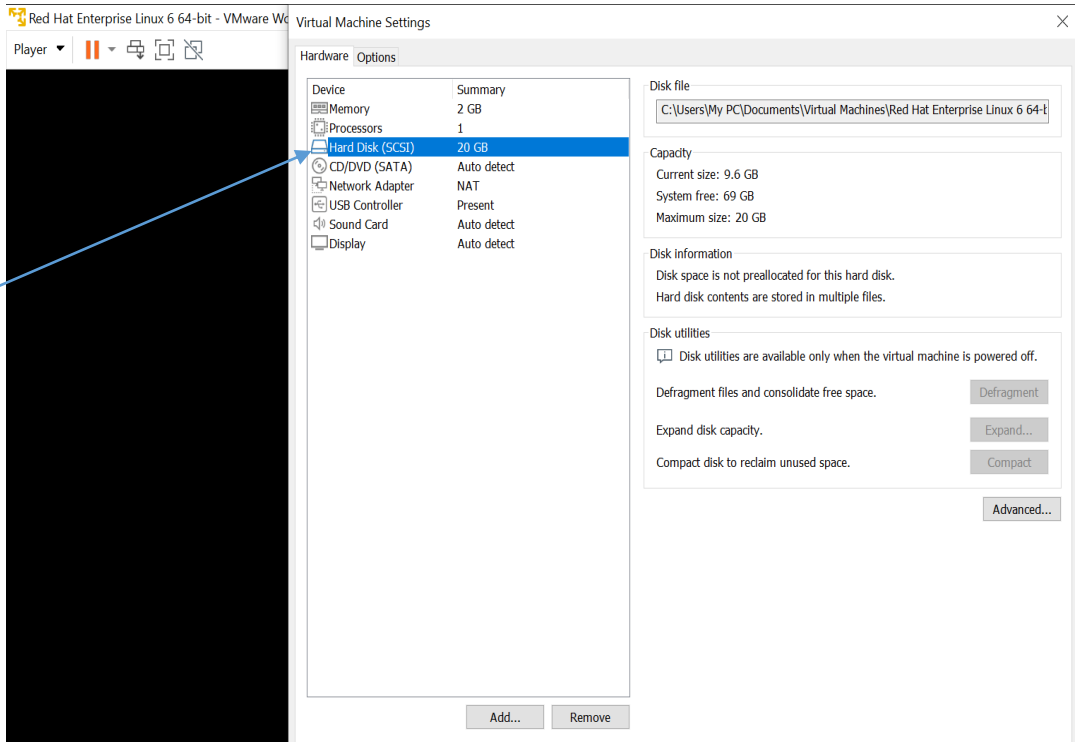
3) Click on Manage



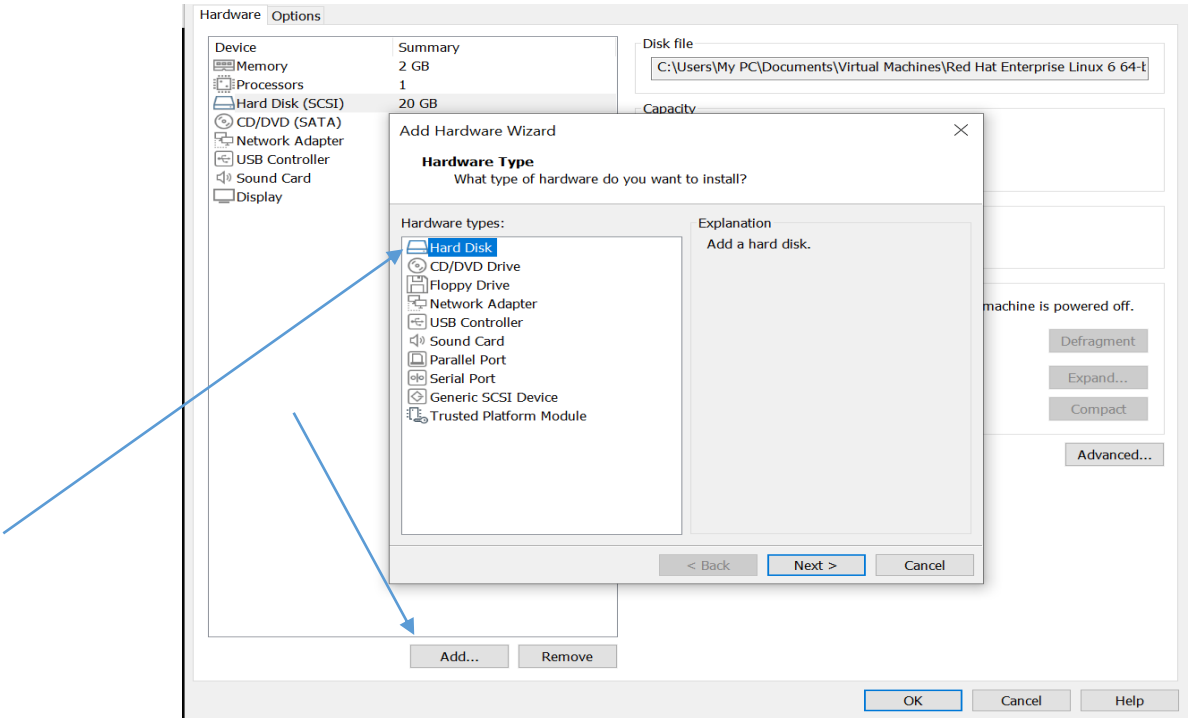
4) Click on virtual machine settings



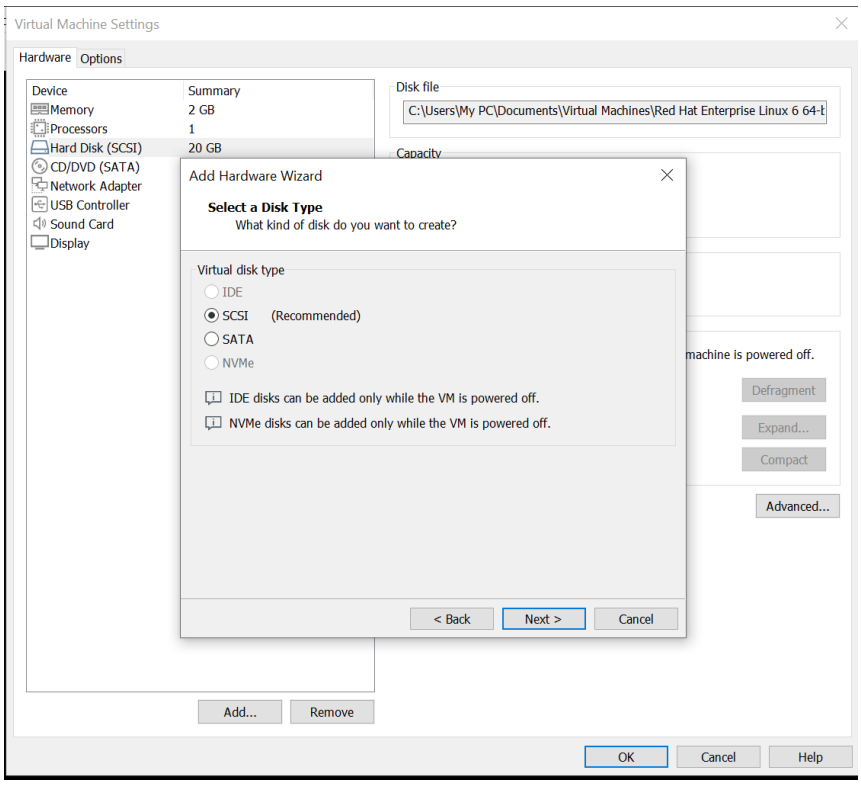
5) Click on hard disk



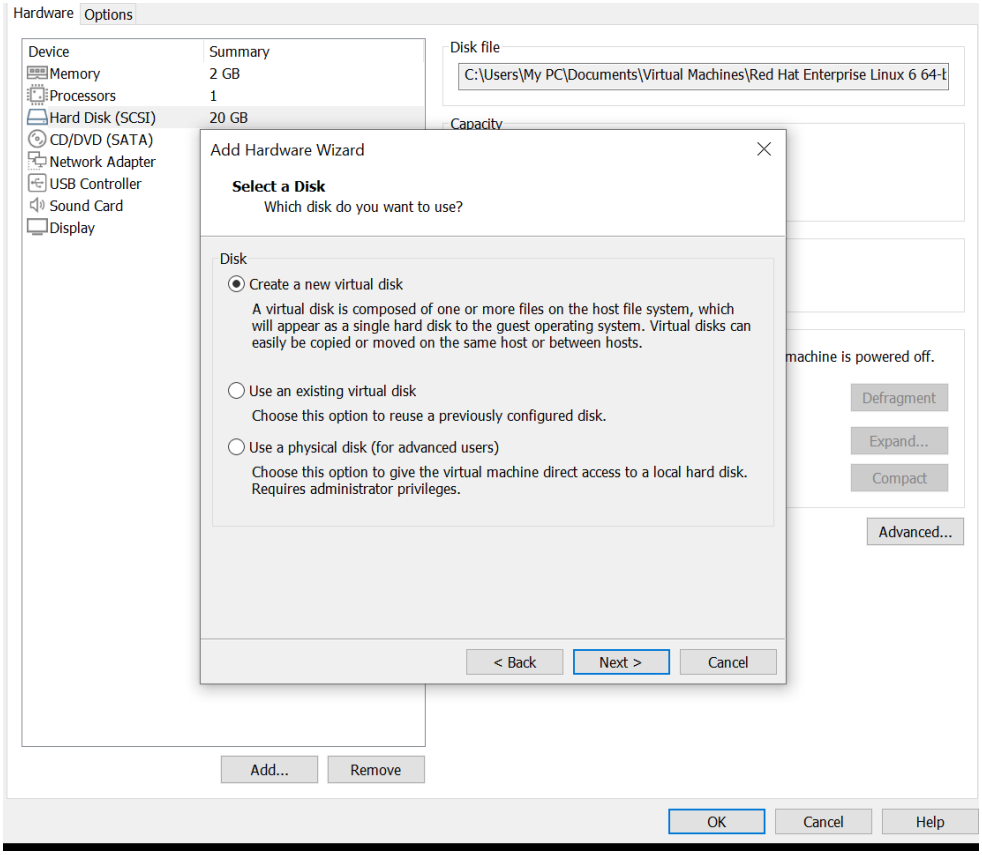
6) Select the hard disk Click on add button in the down section click on next



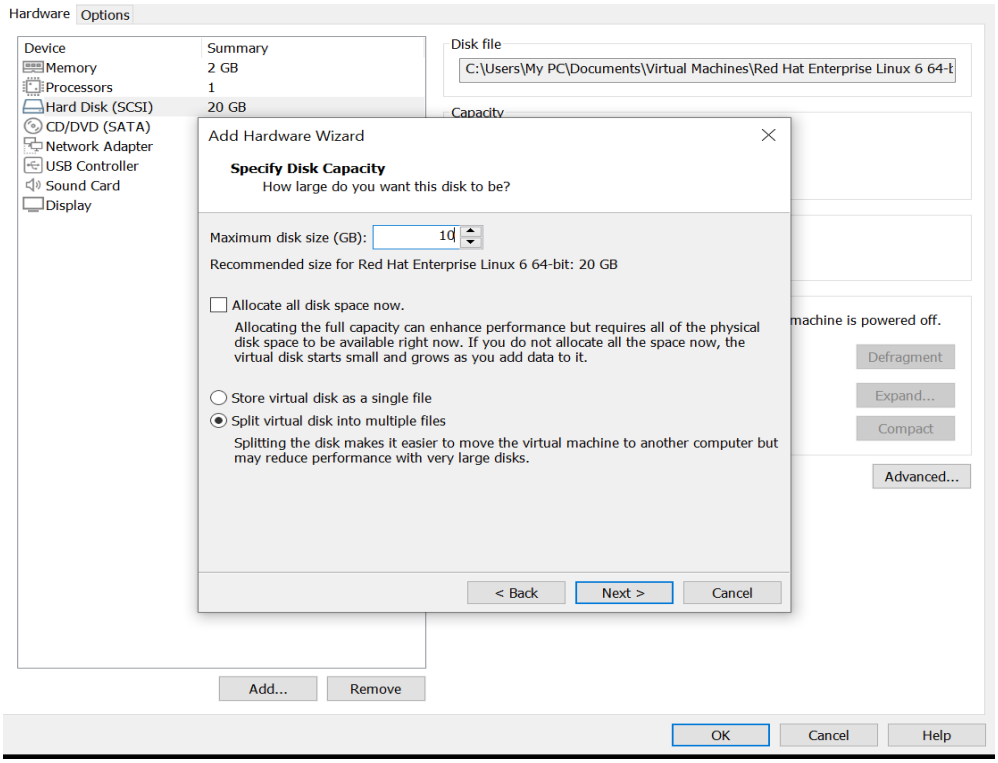
7) You will get a pop up message you can click on next SCSI is recommended



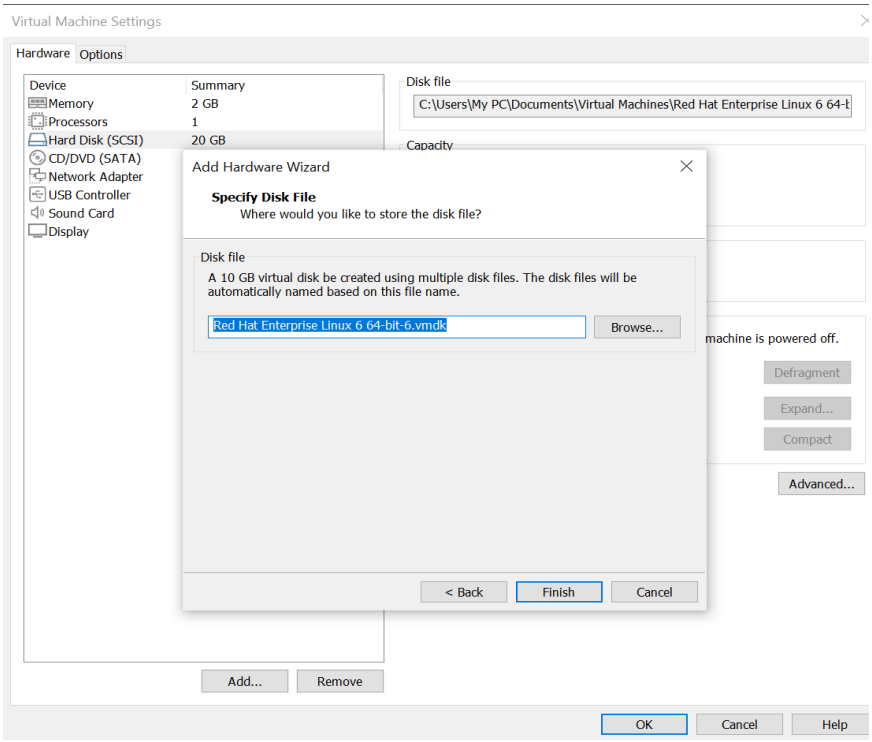
8) Click on Next



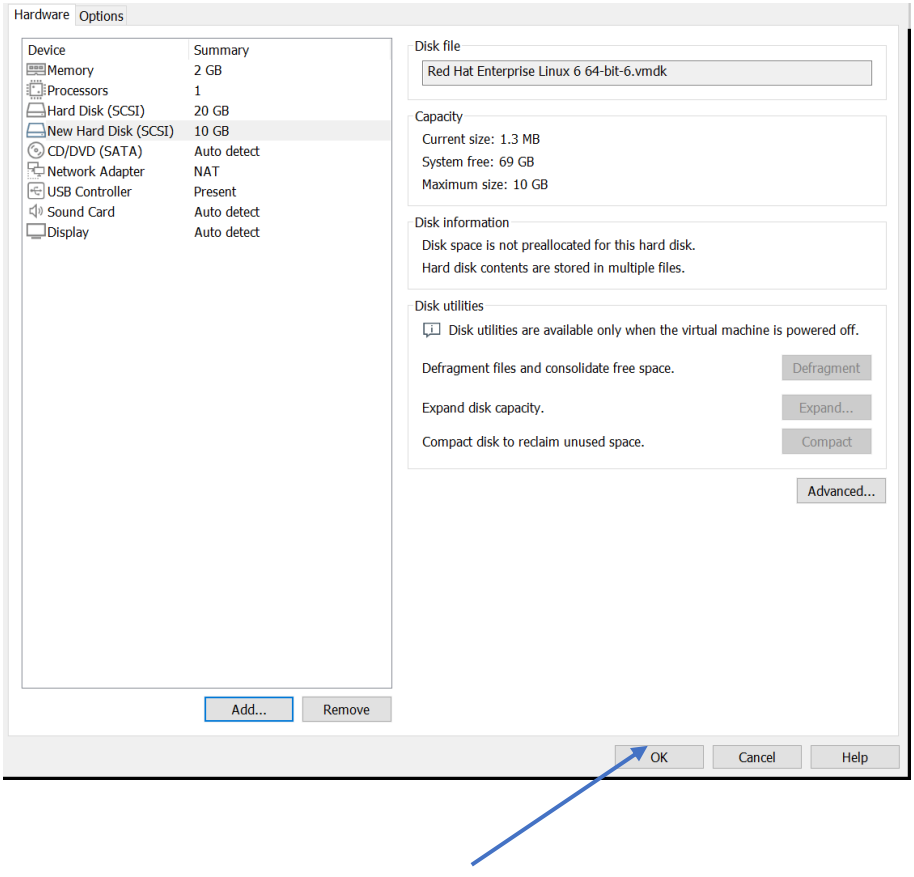
9) Allocate the Disk Size as 10 GB and proceed for next step.



10 You will get the pop up message called as a finish and click on finish



11 Click on ok in the down section



- After adding the hard disk of 10 GB the new hard disk will not recognize to see new hard disk is added or not type **fdisk -l** and type **lsblk** in the Server.

```
[root@ajaydasharath ~]# fdisk -l

Disk /dev/sda: 21.5 GB, 21474836480 bytes
255 heads, 63 sectors/track, 2610 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk identifier: 0x00085189

   Device Boot      Start         End      Blocks   Id  System
/dev/sda1   *           1          39      307200   83  Linux
Partition 1 does not end on cylinder boundary.
/dev/sda2              39         549     4096000   82  Linux swap / Solaris
Partition 2 does not end on cylinder boundary.
/dev/sda3             549        2611    16567296   83  Linux
[root@ajaydasharath ~]# lsblk
NAME   MAJ:MIN RM   SIZE RO TYPE MOUNTPOINT
sda      8:0    0    20G  0 disk
├─sda1   8:1    0   300M  0 part /boot
├─sda2   8:2    0   3.9G  0 part [SWAP]
└─sda3   8:3    0  15.8G  0 part /
sr0     11:0    1  1024M  0 rom
[root@ajaydasharath ~]#
```

Note: One Option is Reboot. If we Reboot the Server the New Hard Disk will be got Recognized. If we done the Reboot there will be no use. Without Rebooting the Server we are going to Add a New Hard Disk to the Server.

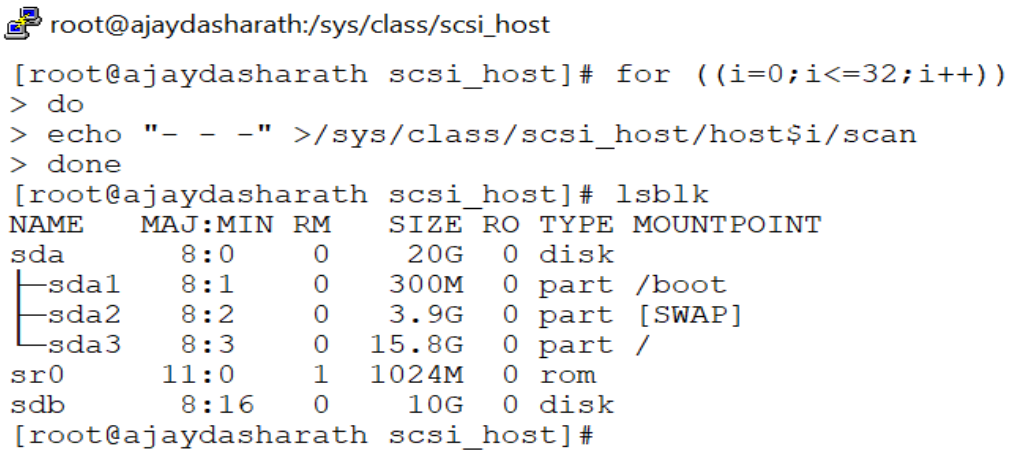
Go for this path

- cd / sys/class/scsi_host
- ls -ltr
- we can see the lot entry will be present here from host0, host1…. host32,
- we need scan each segment to identify new hard disk form host0 to host32
- So we writing a **shell script** here. To scan all the segments to identify the

root@ajaydasharath:/sys/class/scsi_host

```
[root@ajaydasharath scsi_host]# for ((i=0;i<=32;i++))
> do
> echo "- - -" >/sys/class/scsi_host/host$i/scan
> done
[root@ajaydasharath scsi_host]#
```

- Now type the **lsblk** in the server the new hard Disk will got recognize without rebooting the server



- The new hard disk of 10GB got recognized which we added to the sever sdb is the Second hard disk.

Step -2

Creating a partition on hard disk

- You should be in the same directory **cd /sys/class/scsi_host**
- Type the command: **fdisk /dev/sdb**

Fdisk is used for for creating a new partition

- You need to provide the details for creating the 1st Partition as the below image

```
[root@ajaydasharath scsi_host]# fdisk /dev/sdb

WARNING: DOS-compatible mode is deprecated. It's strongly recommended to
         switch off the mode (command 'c') and change display units to
         sectors (command 'u').

Command (m for help): n
Command action
   e   extended
   p   primary partition (1-4)
p
Partition number (1-4): 1
First cylinder (1-1305, default 1):
Using default value 1
Last cylinder, +cylinders or +size{K,M,G} (1-1305, default 1305): +2G

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

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

- The 1st partition has been created to verify the 1st partition is there or not type **lsblk**
-

root@ajaydasharath:/sys/class/scsi_host

```
[root@ajaydasharath scsi_host]# lsblk
NAME   MAJ:MIN RM   SIZE RO TYPE MOUNTPOINT
sda      8:0    0    20G  0 disk
├─sda1   8:1    0   300M  0 part /boot
├─sda2   8:2    0   3.9G  0 part [SWAP]
└─sda3   8:3    0  15.8G  0 part /
sr0     11:0    1  1024M  0 rom
sdb      8:16   0    10G  0 disk
└─sdb1   8:17   0     2G  0 part
[root@ajaydasharath scsi_host]#
```

- **Sdb** is the **Hard Disk** **sdb1** is the **partition**

- After creating a partition table the kernel does not aware about the partition table to re-read the partition table we use the command. **Kpartx /dev/sdb**

```
[root@ajaydasharath scsi_host]# kpartx /dev/sdb
sdb1 : 0 4208967 /dev/sdb 63
[root@ajaydasharath scsi_host]#
```

Step – 3

- After creating a partition table we cannot add the files and folders directly because it is a hardware part we need to create a file system.

- **What is file system?**

  Once the filesystem got created on any hardware it can be pendrive hard disk then only we can write the data into it.

- For creating a file system we use the command **mkfs.ext4 /dev/sdb1**

```
[root@ajaydasharath scsi_host]# mkfs.ext4 /dev/sdb1
mke2fs 1.41.12 (17-May-2010)
Filesystem label=
OS type: Linux
Block size=4096 (log=2)
Fragment size=4096 (log=2)
Stride=0 blocks, Stripe width=0 blocks
131648 inodes, 526120 blocks
26306 blocks (5.00%) reserved for the super user
First data block=0
Maximum filesystem blocks=541065216
17 block groups
32768 blocks per group, 32768 fragments per group
7744 inodes per group
Superblock backups stored on blocks:
        32768, 98304, 163840, 229376, 294912

Writing inode tables: done
Creating journal (16384 blocks): done
Writing superblocks and filesystem accounting information: done

This filesystem will be automatically checked every 36 mounts or
180 days, whichever comes first.  Use tune2fs -c or -i to override.
[root@ajaydasharath scsi_host]#
```

- How to verify the file system is created or not we use the command **blkid /dev/sdb1**

```
[root@ajaydasharath scsi_host]# blkid /dev/sdb1
/dev/sdb1: UUID="de9c8c6b-896e-4bd3-8a4b-203effe1ee85" TYPE="ext4"
[root@ajaydasharath scsi_host]#
```

- After creating a file system we cannot directly create a files and folders inside the partition 1 sdb1 we need to create a directory we need to mount that directory we need to go inside the directory then only we can create the files and folders inside it.

- Creating a directory mkdir /var/dasharath

root@ajaydasharath:/sys/class/scsi_host

```
[root@ajaydasharath scsi_host]# mkdir /var/dasharath
[root@ajaydasharath scsi_host]#
```

- Mount the directory

root@ajaydasharath:/sys/class/scsi_host

```
[root@ajaydasharath scsi_host]# mkdir /var/dasharath
[root@ajaydasharath scsi_host]# mount /dev/sdb1 /var/dasharath/
[root@ajaydasharath scsi_host]#
```

- Go inside the directory

root@ajaydasharath:/var/dasharath

```
[root@ajaydasharath scsi_host]# mkdir /var/dasharath
[root@ajaydasharath scsi_host]# mount /dev/sdb1 /var/dasharath/
[root@ajaydasharath scsi_host]# cd /var/dasharath/
[root@ajaydasharath dasharath]#
```

- Create a files and folders inside the directory

```
[root@ajaydasharath scsi_host]# mkdir /var/dasharath
[root@ajaydasharath scsi_host]# mount /dev/sdb1 /var/dasharath/
[root@ajaydasharath scsi_host]# cd /var/dasharath/
[root@ajaydasharath dasharath]# touch k{1..10}
[root@ajaydasharath dasharath]# ls -ltr
total 16
drwx------. 2 root root 16384 Sep  6 04:17 lost+found
-rw-r--r--. 1 root root     0 Sep  6 04:26 k4
-rw-r--r--. 1 root root     0 Sep  6 04:26 k3
-rw-r--r--. 1 root root     0 Sep  6 04:26 k2
-rw-r--r--. 1 root root     0 Sep  6 04:26 k1
-rw-r--r--. 1 root root     0 Sep  6 04:26 k9
-rw-r--r--. 1 root root     0 Sep  6 04:26 k8
-rw-r--r--. 1 root root     0 Sep  6 04:26 k7
-rw-r--r--. 1 root root     0 Sep  6 04:26 k6
-rw-r--r--. 1 root root     0 Sep  6 04:26 k5
-rw-r--r--. 1 root root     0 Sep  6 04:26 k10
[root@ajaydasharath dasharath]#
```

- How to verify the normal directory and mounted directory.

  lost + found is a **mounted directory**.

  My friend will tell you have created the wrong directory that is dasharath create a new directory as ram

  Come out of the mounted directory cd ..

- We need to umount the directory command is <u>umount /var/dasharath</u>

root@ajaydasharath:/

```
[root@ajaydasharath /]# umount /var/dasharath
[root@ajaydasharath /]#
```

- We need to create a new directory in the /var path

root@ajaydasharath:/

```
[root@ajaydasharath /]# mkdir /var/rahul
[root@ajaydasharath /]#
```

- We need to mount the directory we need to go inside the directory we need to verify the files are present.

```
[root@ajaydasharath /]# mkdir /var/rahul
[root@ajaydasharath /]# mount /dev/sdb1 /var/rahul
[root@ajaydasharath /]# cd /var/rahul/
[root@ajaydasharath rahul]# ls -ltr
total 16
drwx------. 2 root root 16384 Sep  6 04:17 lost+found
-rw-r--r--. 1 root root     0 Sep  6 04:26 k4
-rw-r--r--. 1 root root     0 Sep  6 04:26 k3
-rw-r--r--. 1 root root     0 Sep  6 04:26 k2
-rw-r--r--. 1 root root     0 Sep  6 04:26 k1
-rw-r--r--. 1 root root     0 Sep  6 04:26 k9
-rw-r--r--. 1 root root     0 Sep  6 04:26 k8
-rw-r--r--. 1 root root     0 Sep  6 04:26 k7
-rw-r--r--. 1 root root     0 Sep  6 04:26 k6
-rw-r--r--. 1 root root     0 Sep  6 04:26 k5
-rw-r--r--. 1 root root     0 Sep  6 04:26 k10
[root@ajaydasharath rahul]#
```

Note: If we reboot the server the mount details will go automatically partition details will go away.

- How to mount the partition permanently

  vim /etc/fstab = fstab is the file responsible for mounting

- <partition> <directory> <filesystem> defaults 0 0
- /dev/sdb1 /var/rahul ext4 defaults 0 0
- ESC+SHIFT : wq!
- reboot
- df -h