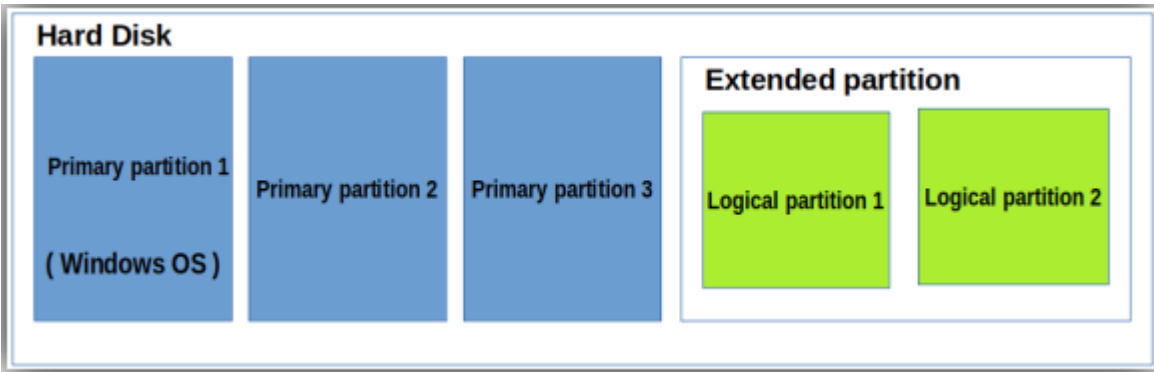


Linux partitions

In Linux, disk partitioning is the process of dividing a hard disk into multiple logical storage units . Each partition is a separate section of the hard drive that can be used to store files, data, and operating system files.



Why do we need partitions?

1. **Organize data:** By creating different partitions, you can organize your data into different categories, such as system files, user files, and application files. This can help make it easier to manage and maintain your files.
2. **Increase security:** You can also use partitions to increase security. For example, you could create a separate partition for sensitive data that requires extra protection
3. **Backup and recovery:** Finally, partitions can be useful for backup and recovery purposes. By creating separate partitions for your data, you can easily back up and restore important files without affecting other parts of your system.

What is a primary partition?

The primary partition is a type of hard disk partition that can contain both an operating system and user data. This is the only partition type that can be set active. The BIOS on a system can only detect this type of partition, and you can only boot from this primary partition.

For example, if you want to install Windows or another OS its boot files should be located on a primary partition otherwise it will not be able to boot.

In a hard disk maximum of 4 primary partitions can be created.

What is an extended partition?

An extended partition is a partition that can be divided into several partitions called logical partitions. You don't need to assign a drive letter and install a filesystem. It acts as a container to logical partitions on a system.

What is a logical partition?

Logical disk partitions are no different from other types in terms of use and function; however you can not boot an operating system from a logical partition. One or more logical partitions can be contained in an extended partition.

In this step-by-step tutorial, you will learn how to create a partition using the Linux fdisk command.f

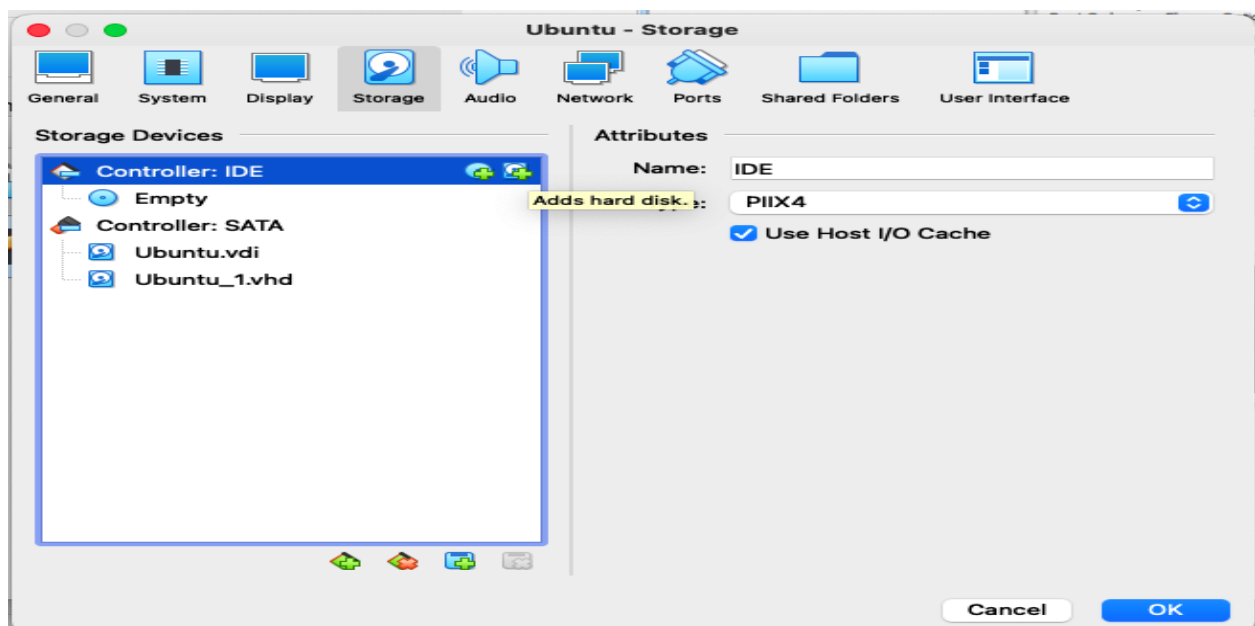
Step 1 :add a new hard disk

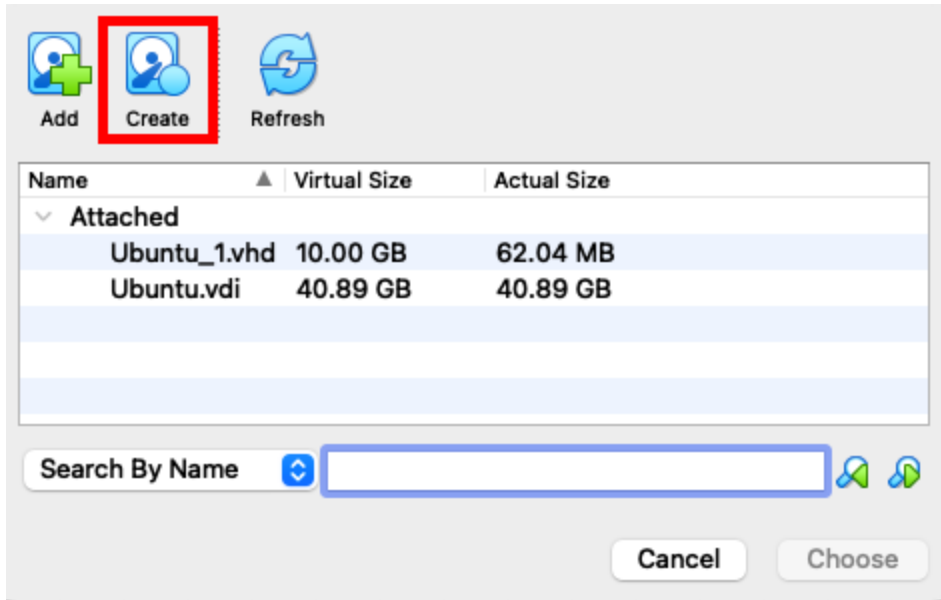
Follow the below screens

1)In the Oracle virtual box manager go to

settings>>storage

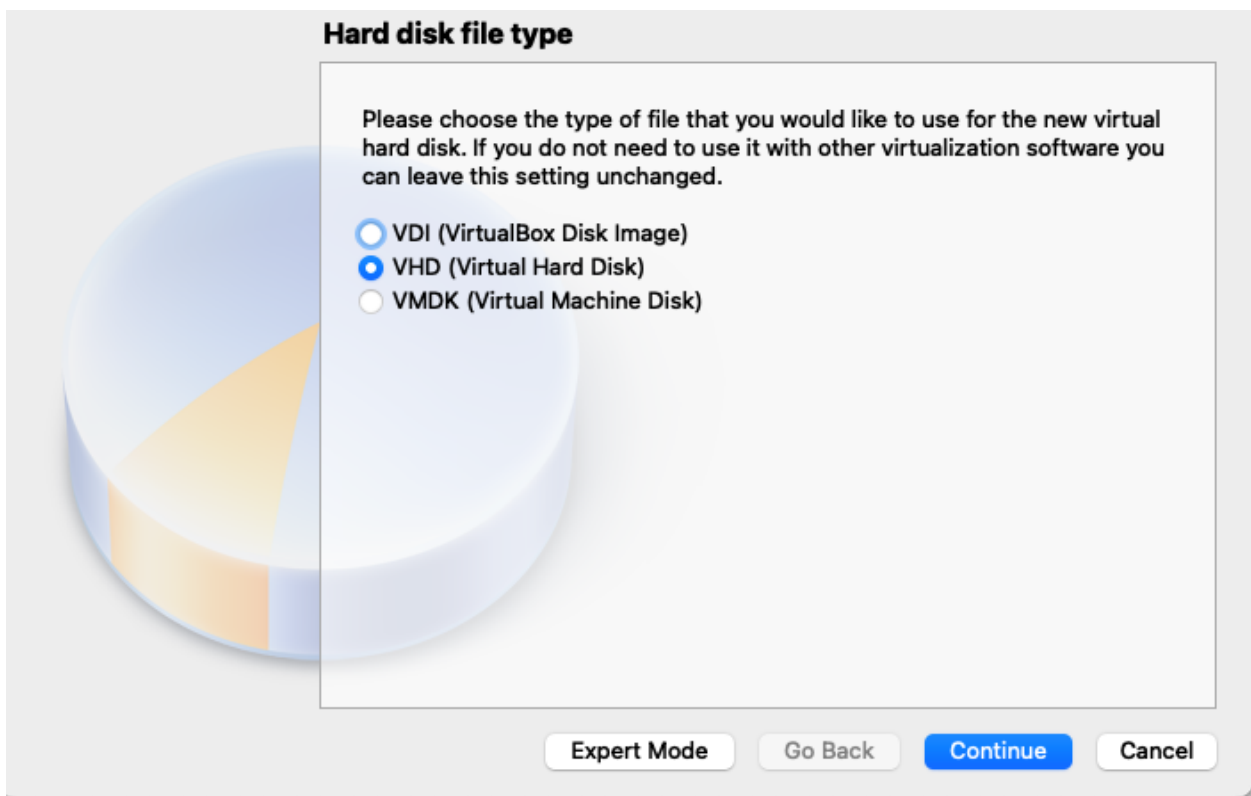
2)In the controller :SATA click **add hard disk**



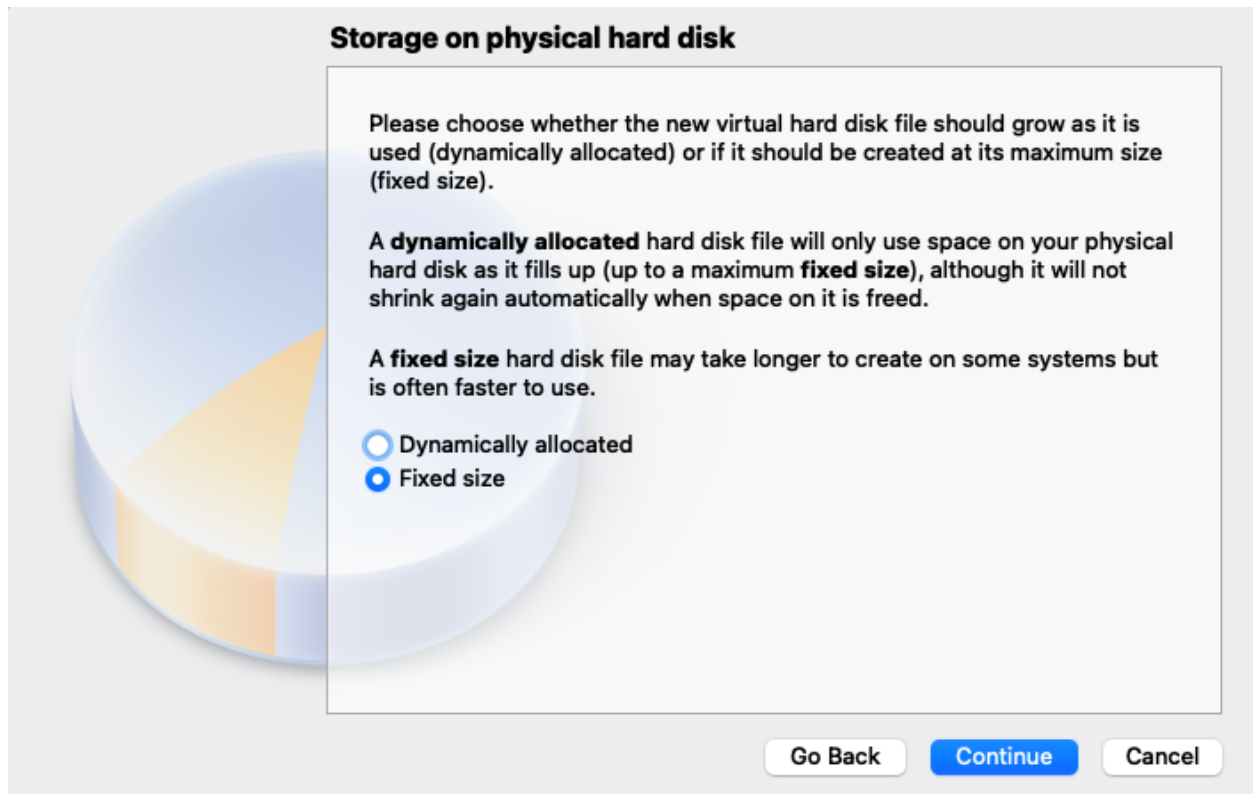


Click create to add new hard disk

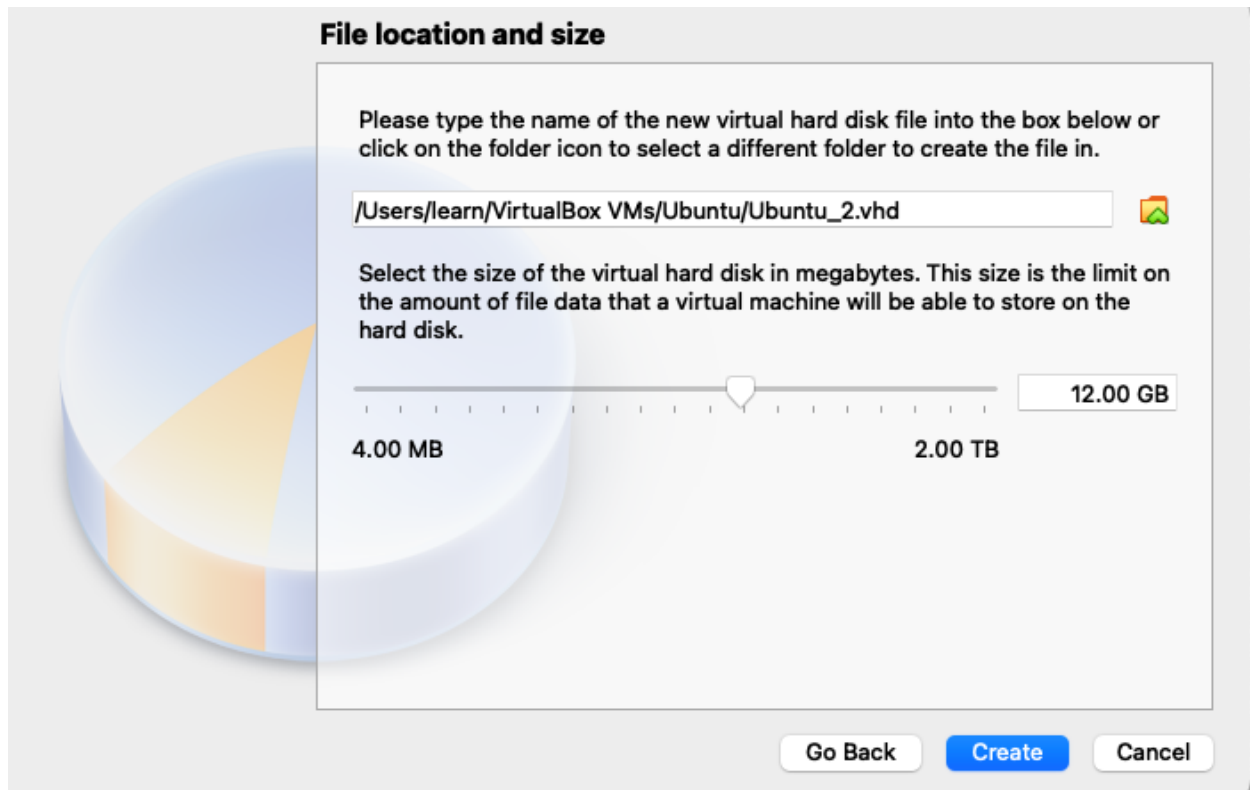
4)select VHD



5)select fixed size



6)and select the size of the new virtual hard disk



7)Click create and choose the newly created hard disk

Step 2: List Existing Partitions

Run the following command to list all existing partitions:

```
sudo fdisk -l
```

Step 2: Select Storage Disk

Select the storage disk you want to create partitions on by running the following command:

```
sudo fdisk /dev/sdb
```

Step 3: Create a New Partition

1. Run the `n` command to create a new partition.
2. Select if it is primary partition or extended partition
3. Select the partition number by typing the default number (2).
4. After that, you are asked for the starting and ending sector of your hard drive. It is best to type the default number in this section (3622912).
5. The last prompt is related to the size of the partition. You can choose to have several sectors or to set the size in megabytes or gigabytes. Type `+2GB` to set the size of the partition to 2GB.

A message appears confirming that the partition is created.

```
Command (m for help): n
Partition type
  p   primary (0 primary, 0 extended, 4 free)
  e   extended (container for logical partitions)
Select (default p): p
Partition number (1-4, default 1): 1
First sector (2048-20971519, default 2048):
Last sector, +/-sectors or +/-size{K,M,G,T,P} (2048-20971519, default 20971519): +2G
Created a new partition 1 of type 'Linux' and of size 2 GiB.
```

Step 4: Write on Disk

The system created the partition, but the changes are not written on the disk.

1. To write the changes on disk, run the `w` command:

```
Command (m for help): w
The partition table has been altered.
Calling ioctl() to re-read partition table.
Syncing disks.
```

2. Verify that the partition is created by running the following command:

```
sudo fdisk -l
```

As you can see, the partition /dev/sdb1 has been created.

Format the Partition

Once a partition has been created with the parted or fdisk command, format it before using it.

Format the partition by running the following command:

```
sudo mkfs -t ext4 /dev/sdb1
```

Mount the Partition

To begin interacting with the disk, create a mount point and mount the partition to it.

1. Create a mount point by running the following command:

```
sudo mkdir -p /mount/sdb1
```

2. After that, mount the partition by entering:

```
sudo mount /dev/sdb1 /mount/sdb1
```


The terminal does not print out an output if the commands are executed successfully.

3. Verify if partition is mounted by using the **lsblk** command:

Permanently mount the partition

Mounting a disk in any folder is being done by command “mount“, but such mounting is not permanent in nature. The mounted disk will automatically be unmounted after shutting down the system. When the system will reboot, the mounted disk will be disappeared. The disk must again be mounted for use or access. To avoid such process of mounting a disk again and again with every system boot, we have to mount the disk permanently.

To make stable the mounting, **fstab** option should be used with some statement entry in “fstab” file is required.

To do this

1)open the /etc/fstab file

Sudo vim /etc/fstab

2)Insert below line in the file

/dev/sdb1 /mount/sdb1 ext4 defaults 0 0

```
# device; this may be used with UUID= as a more robust way to name devices
# that works even if disks are added and removed. See fstab(5).
#
# <file system> <mount point> <type> <options> <dump> <pass>
# / was on /dev/ubuntuv/ubuntuv during curtin installation
/dev/disk/by-id/dm-uuid-LVM-azhVzMxUYzB8VEN7czcDGrbjudMtEVRV0qLBhm0GJJNlfuTe6F0VSnSG0wabrEiK / ext4
defaults 0 1
# /boot was on /dev/sda2 during curtin installation
/dev/disk/by-uuid/ed0894d1-6d8c-44ae-894d-6e2ebaafc177 /boot ext4 defaults 0 1
/swap.img none swap sw 0 0
/dev/sdb1 /mount/sdb1 ext4 defaults 0 0
```

When you reboot the machine the mount point will be there.

top-It displays system resource usage, including CPU usage, memory usage, and system load averages, and it updates this information continuously, allowing you to monitor the system's performance and identify resource-intensive processes.

df-command in Linux is used to display information about the file system disk free space .

df command displays file system sizes in 1 kilobyte (1024 bytes) blocks. However, you can use the -h option to display sizes in a human-readable format, such as "GB" or "MB".

df-h

du - command in Linux is used to estimate the space used by files and directories. By default, du shows the space used by each file and directory in bytes. However, you can use the -h option to display sizes in a human-readable format, such as "GB" or "MB".

du -h.