

Experiment 13 : Disk Partitioning

Creating disk partitions enables you to split your hard drive into multiple sections that act independently.

In Linux, users must structure storage devices (USB and hard drives) before using them. Partitioning is also useful when you are installing multiple operating systems on a single machine.

Prerequisites

- A system running Linux
- A user account with **sudo** or **root** privileges
- Access to a terminal window / command line (**Activities** > **Search** > **Terminal**)

Step 1: List Partitions

Before making a partition, list available storage devices and partitions. This action helps identify the storage device you want to partition.

Run the following command with **sudo** to list storage devices and partitions:

```
sudo parted -l
```

The terminal prints out available storage devices with information about:

- **Model** – Model of the storage device.
- **Disk** – Name and size of the disk.
- **Sector size** – Logical and physical size of the memory. Not to be confused with [available disk space](#).
- **Partition Table** – Partition table type (msdos, gpt, aix, amiga, bsd, dvh, mac, pc98, sun, and loop).
- **Disk Flags** – Partitions with information on size, type, file system, and flags.

Partitions types can be:

- **Primary** – Holds the operating system files. Only four primary partitions can be created.
- **Extended** – Special type of partition in which more than the four primary partitions can be created.
- **Logical** – Partition that has been created inside of an extended partition.

In our example, there are two storage devices (**/dev/sda** and **/dev/sdb**):

```

nevena@nevena-VirtualBox:~$ sudo parted -l
[sudo] password for nevena:
Model: ATA VBOX HARDDISK (scsi)
Disk /dev/sda: 33,3GB
Sector size (logical/physical): 512B/512B
Partition Table: msdos
Disk Flags:

Number   Start    End      Size    Type     File system  Flags
  1       1049kB   538MB    537MB   primary  fat32         boot
  2       539MB   33,3GB   32,8GB   extended
  5       539MB   33,3GB   32,8GB   logical  ext4

Model: ATA VBOX HARDDISK (scsi)
Disk /dev/sdb: 10,6GB
Sector size (logical/physical): 512B/512B
Partition Table: gpt
Disk Flags:

Number   Start    End      Size    File system  Name      Flags
  1       17,4kB   1396MB   1396MB                   primary

```

Step 2: Open Storage Disk

Open the storage disk that you intend to partition by running the following command:

```
sudo parted /dev/sdb
```

```

nevena@nevena-VirtualBox:~$ sudo parted /dev/sdb
GNU Parted 3.3
Using /dev/sdb
Welcome to GNU Parted! Type 'help' to view a list of commands.
(parted) █

```

Always specify the storage device. If you don't specify a disk name, the disk is randomly selected. To change the disk to `dev/sdb` run:

```
select /dev/sdb
```

The `dev/sdb` disk is open:

```
nevena@nevena-VirtualBox:~$ sudo parted
GNU Parted 3.3
Using /dev/sda
Welcome to GNU Parted! Type 'help' to view a list of commands.
(parted) select /dev/sdb
Using /dev/sdb
(parted) █
```

Step 3: Make a Partition Table

Create a partition table before partitioning the disk. A partition table is located at the start of a hard drive and it stores data about the size and location of each partition.

Partition table types are: **aix**, **amiga**, **bsd**, **dhv**, **gpt**, **mac**, **ms-dos**, **pc98**, **sun**, and **loop**.

To create a partition table, enter the following:

```
mklabel [partition_table_type]
```

For example, to create a **gpt** partition table, run the following command:

```
mklabel gpt
```

Type **Yes** to execute:

```
(parted) mklabel gpt
Warning: The existing disk label on /dev/sdb will be destroyed and all data on this
disk will be lost. Do you want to continue?
Yes/No? █
```

Step 4: Check Table

Run the **print** command to review the partition table. The output displays information about the storage device:

```
(parted) print
Model: ATA VBOX HARDDISK (scsi)
Disk /dev/sdb: 10,6GB
Sector size (logical/physical): 512B/512B
Partition Table: gpt
Disk Flags:

Number  Start  End  Size  File system  Name  Flags
(parted) █
```

Step 5: Create Partition

Let's make a new 1854MB-partition using the ext4 file system. The assigned disk start shall be 1MB and the disk end is at 1855MB.

To create a new partition, enter the following:

```
mkpart primary ext4 1MB 1855MB
```

After that, run the `print` command to review information on the newly created partition. The information is displayed under the *Disk Flags* section:

```
(parted) mkpart primary ext4 1MB 1855MB
(parted) PRINT
Model: ATA VBOX HARDDISK (scsi)
Disk /dev/sdb: 10,6GB
Sector size (logical/physical): 512B/512B
Partition Table: gpt
Disk Flags:

Number  Start   End     Size    File system  Name  Flags
  1      1049kB  1855MB  1854MB  ext4         primary
```

In a gpt partition table, the partition type is the mandatory partition name. In our example, **primary** is the name of the partition, not the partition type.

To save your actions and quit, enter the `quit` command. Changes are saved automatically with this command.

```
(parted) quit
Information: You may need to update /etc/fstab.

nevena@nevena-VirtualBox:~$
```