

**GETTING STARTED
WITH
MOUNTING FILE SYSTEMS**

➤ MOUNTING FILE SYSTEMS:

- After formatting a partition, we cannot add the data into the partition. In order to add the data in the partition it is required to be mounted.
- On Linux, UNIX, and similar operating systems, file systems on different partitions and removable devices (CDs, DVDs, or USB flash drives for example) can be attached to a certain point (the mount point) in the directory tree, and then detached again.
- Mounting is a procedure where we attach a directory to the file system.
- When mounting, you can identify the device by:
 - **Universally unique identifier (UUID):** UUID=34795a28-ca6d-4fd8....
 - **Volume label:** for example, LABEL=home
 - **Full path to a non-persistent block device:** /dev/nvme0n1p5

MOUNTING A FILE SYSTEM:

SYNTAX: #mount [options] [Device] [mount_point]

OPTIONS: -r : Mounts Read only
 -w : Mount as read/write (By default)

→ **To list currently mounted file systems:**

#findmnt (or) #mount

→ **To limit the listed file systems only to a certain file system type:**

#findmnt --types xfs

→ **To list the UUID and Label attributes, use the lsblk utility:**

#lsblk --fs /dev/nvme0n1p5

→ **Mounting a file system with mount command:**

#mkdir /cloud-data

#mount /dev/nvme0n1p5 /cloud-data

(or)

→ **To mount a local XFS file system identified by UUID:**

#mount UUID=ea74bbec-536d-490c-b8d9-5b40b /cloud-data

#findmnt |grep -i /cloud-data

→ Displays the amount of disk space available on the file system:
#df -h

PERSISTENTLY MOUNTING FILE SYSTEMS:

- **/etc/fstab** configuration file to control persistent mount points file systems.
- Each line in the **/etc/fstab** file defines a mount point of a file system.
- It includes six fields separated by white space:

Block device	Mount point	File system	Options	Backup	Check
UUID=ea74bbec-536d-490c-b8d9-5b40bbd7545b	/boot	xfs	default ts	0	0

1. The block device ID or a Path it the **/dev** directory.
2. The directory where the device will be mounted.
3. The file system on the device.
4. Mount options for the file system.
5. **Backup** option for the **Dump** utility.
6. Check order for the **fsck** utility.

→ Regenerate mount units so that your system registers the new configuration:

```
#systemctl daemon-reload
```

```
#mount /cloud-data
```

UNMOUNTING A FILE SYSTEM:

- Unmounting means, to detach a previously mounted file system.

SYNTAX: #umount [options] <mount_point / Device_name>

```
#umount -f /cloud-data
```

```
#df -h
```

NOTE: When unmounting a file system: /cloud-data: target is busy.

- You can use the “**fuser or lsof**” commands to check for open files and users that are currently using files on a file system:

→ **To list the users who are currently using file systems:**

```
#lsof /cloud-data
```

(or)

```
#fuser -cu /cloud-data
```

→ **To kill open connections:**

```
#kill -9 PID
```

(or)

```
#fuser -ck /cloud-data
```

Here: **-c** : Checks the mounted file systems
-u : User ID's
-k : Kills processes

MOUNTING A USB DRIVE:

- Older USB flash drives often use the FAT file system.
- Assuming that such drive uses the /dev/sdc1 device and that the **/media/flashdisk/** directory exists.

→ **To list USB ports:**

```
#lsusb
```

→ **To print USB Device Details:**

```
#usb-devices
```

→ **To List devices or volumes:**

```
#fdisk -l (or) #lsblk
```

```
#mount -t vfat /dev/sda1 /media/flashdisk
```

```
#df -h
```

NOTE: Add the entries in “/etc/fstab” file for permanent mount options.

```
/dev/sda1    /media/flashdisk    vfat    defaults    0 0
```

FILE SYSTEM LABEL:

- Labels enables you to determine a specific file system more easily with a common name, instead of device name.
- An added benefit is the systems being able to keep its label even if the underlying disk is switched with new one.

→ **Take your file system offline first:**

```
#umount -f /dev/nvme0n1p5
```

→ **To verify the label name:**

```
#xfs_admin -l /dev/nvme0n1p5
```

→ **To assign a label name as cloud:**

```
#xfs_admin -L "cloud" /dev/nvme0n1p5
```

→ **Now mount again your file system as online:**

```
#mount /dev/nvme0n1p5 /cloud-data
```

→ **To verify the label name:**

```
#xfs_admin -l /dev/nvme0n1p5
```

(or)

```
#mount -l |grep -i cloud
```

(or)

```
# findfs LABEL=cloud
```

→ **To make file system permanently with label name:**

```
#vim /etc/fstab
```

```
LABEL="cloud" /cloud-data xfs defaults 0 0
```

```
#systemctl daemon-reload
```

```
#mount /cloud-data
```

```
#df -h
```

USING BLOCKID'S:

- The **blkid** command allows you to display information about available block devices.

→ **To list device block IDs:**

```
#blkid
```

→ **To display information about a particular device only, specify the device name:**

```
#blkid /dev/nvme0n1p5
```

→ **Now to update device ID's in “/etc/fstab” file:**

```
UUID=78d2440f-d595-46cb-9399 /cloud-data xfs defaults 0 0
```

```
#systemctl daemon-reload
```

```
#mount -a [all are updated]
```

WORKING WITH AN ISO IMAGE:

- ISO image / .iso (**International Organization for Standardization**) file is an archive file that contains a disk image called ISO9660 file system format.
- It is specially used with CD/DVD ROMs.
- Download either the Binary DVD or Boot ISO image from the Portal.

→ **Mounting the download image (Just assume image in /opt):**

```
#mkdir /rhel9-iso-data
```

→ **Mount an image as a loop device:**

```
#mount -t iso9660 -o loop /opt/rhel9.4-x86_64.iso /rhel9-iso-data
```

```
#df -h
```

→ **Update “/etc/fstab” file for permanent mounting solution:**

```
/opt/rhel9.4-x86_64.iso /rhel9-iso-data iso9660 defaults 0 0
```

```
#systemctl-daemon reload
```

```
#mount /rhel9-iso-data #df -h
```