

# Format and mount USB in Linux

You have a USB and don't know how to format and mount it in Linux. This article will guide you to do that.

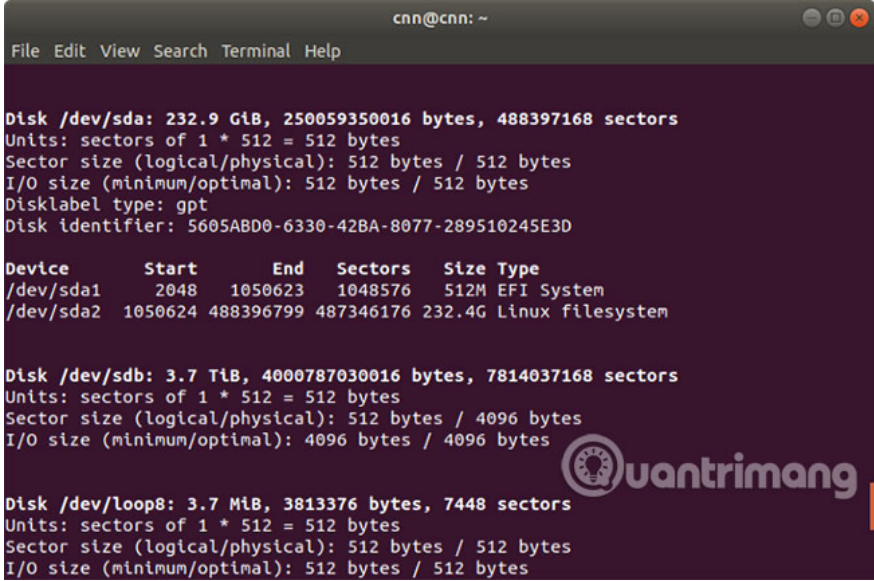
Suppose you have a completely new 4TB hard drive recently and want to add it to your computer. You need to mount it in Linux. To do this, you need to take the following steps:

1. A. Partitioning the hard drive in Linux
2. B. Format USB in Linux
3. C. Mount USB in Linux (including auto mount after reboot)
4. D. Check if the hard drive is mounted

## A. Partitioning the hard drive in Linux

**Step 1 :** First, after connecting the hard drive to the computer with a SATA cable and power cable, you can test the new 4TB hard drive with the command:

```
sudo fdisk -l
```



```
cnn@cnn: ~
File Edit View Search Terminal Help

Disk /dev/sda: 232.9 GiB, 250059350016 bytes, 488397168 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
Disklabel type: gpt
Disk identifier: 5605ABD0-6330-42BA-8077-289510245E3D

Device      Start      End      Sectors  Size Type
/dev/sda1   2048     1050623   1048576   512M EFI System
/dev/sda2  1050624  488396799 487346176 232.4G Linux filesystem

Disk /dev/sdb: 3.7 TiB, 4000787030016 bytes, 7814037168 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 4096 bytes
I/O size (minimum/optimal): 4096 bytes / 4096 bytes

Disk /dev/loop8: 3.7 MiB, 3813376 bytes, 7448 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
```

**Step 2 :** But you cannot mount it now, if you mount it immediately, an error will appear. You need to partition it first:

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

```
cnn@cnn: ~
File Edit View Search Terminal Help
cnn@cnn:~$ sudo fdisk /dev/sdb
[sudo] password for cnn:

Welcome to fdisk (util-linux 2.31.1).
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.
The size of this disk is 3.7 TiB (4000787030016 bytes). DOS partition table form
at cannot be used on drives for volumes larger than 2199023255040 bytes for 512-
byte sectors. Use GUID partition table format (GPT).

Created a new DOS disklabel with disk identifier 0x17227a34.

Command (m for help):
```



**Step 3 :** If you enter m for help, you can see the command list.

```
cnn@cnn: ~
File Edit View Search Terminal Help
Help:

DOS (MBR)
a toggle a bootable flag
b edit nested BSD disklabel
c toggle the dos compatibility flag

Generic
d delete a partition
F list free unpartitioned space
l list known partition types
n add a new partition
p print the partition table
t change a partition type
v verify the partition table
i print information about a partition

Misc
m print this menu
u change display/entry units
x extra functionality (experts only)

Script
I load disk layout from sfdisk script file
```



```
cnn@cnn: ~
File Edit View Search Terminal Help
cnn@cnn:~$ sudo fdisk /dev/sdb
[sudo] password for cnn:

Welcome to fdisk (util-linux 2.31.1).
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.
The size of this disk is 3.7 TiB (4000787030016 bytes). DOS partition table form
at cannot be used on drives for volumes larger than 2199023255040 bytes for 512-
byte sectors. Use GUID partition table format (GPT).

Created a new DOS disklabel with disk identifier 0x17227a34.

Command (m for help):
```



**Step 4 :** To check the partition table, enter p .

```
cnn@cnn: ~
File Edit View Search Terminal Help
Script
I load disk layout from sfdisk script file
O dump disk layout to sfdisk script file

Save & Exit
w write table to disk and exit
q quit without saving changes

Create a new label
g create a new empty GPT partition table
G create a new empty SGI (IRIX) partition table
o create a new empty DOS partition table
s create a new empty Sun partition table

Command (m for help): p
Disk /dev/sdb: 3.7 TiB, 4000787030016 bytes, 7814037168 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 4096 bytes
I/O size (minimum/optimal): 4096 bytes / 4096 bytes
Disklabel type: dos
Disk identifier: 0x17227a34

Command (m for help):
```



**Step 5 :** To partition, enter n . For example then simply select the primary partition by entering p and entering 1 for only some partitions.

```
cnn@cnn: ~
File Edit View Search Terminal Help
s create a new empty Sun partition table

Command (m for help): p
Disk /dev/sdb: 3.7 TiB, 4000787030016 bytes, 7814037168 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 4096 bytes
I/O size (minimum/optimal): 4096 bytes / 4096 bytes
Disklabel type: dos
Disk identifier: 0x17227a34

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 (2048-4294967295, default 2048):
Last sector, +sectors or +size{K,M,G,T,P} (2048-4294967294, default 4294967294):

Created a new partition 1 of type 'Linux' and of size 2 TiB.

Command (m for help):
```

**Step 6** : Enter w to write the partition table to the drive.

```
cnn@cnn: ~
File Edit View Search Terminal Help
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 4096 bytes
I/O size (minimum/optimal): 4096 bytes / 4096 bytes
Disklabel type: dos
Disk identifier: 0x17227a34

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 (2048-4294967295, default 2048):
Last sector, +sectors or +size{K,M,G,T,P} (2048-4294967294, default 4294967294):

Created a new partition 1 of type 'Linux' and of size 2 TiB.

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

cnn@cnn:~$
```

## B. Format USB in Linux

The USB format in Ubuntu with the Terminal command is much easier than in Windows. But some Ubuntu users are not familiar with Terminal commands. This tutorial will help Ubuntu users (Linux) take simple steps to format USB.

```
File Edit View Search Terminal Help
cnn@cnn:~$ sudo mkfs.ext4 /dev/sdb
mke2fs 1.44.1 (24-Mar-2018)
Found a dos partition table in /dev/sdb
Proceed anyway? (y,N) y
Creating filesystem with 976754646 4k blocks and 244195328 inodes
Filesystem UUID: bd62e33e-d38c-41b7-94f1-a5b7c9d6e791
Superblock backups stored on blocks:
    32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632, 2654208,
    4096000, 7962624, 11239424, 20480000, 23887872, 71663616, 78675968,
    102400000, 214990848, 512000000, 550731776, 644972544

Allocating group tables: done
Writing inode tables: done
Creating journal (262144 blocks): done
Writing superblocks and filesystem accounting information: done

cnn@cnn:~$
```



### Step 1 : Insert the USB and determine the volume

Insert the USB into the system and determine the correct USB drive. This is a step you need to take care of, because you can format the drive incorrectly if your drive is not correctly identified.

```
$ df -h Filesystem Size Used Avail Use% Mounted on /dev/sda1 28G 24G 2.3G 92% /
```

Now, the example has determined the drive / dev / sdc1 is a 16GB USB attached.

### Step 2 : Format USB in Linux

Whenever you mount USB in Ubuntu, it will automatically mount to the system. You cannot format any drive on mounted Linux systems. So first unmount the USB drive / **dev / sdc1** on the system.

```
sudo umount /dev/sdc1
```

Now, use one of the following commands on the file system you want. To format USB, most users prefer VFAT and NTFS file systems because they can be easily used on Windows operating systems.

1. Format with vFat file system:

```
sudo mkfs.vfat /dev/sdc1
```

1. Format with NTFS file system:

```
sudo mkfs.ntfs /dev/sdc1
```

1. Format with EXT4 file system:

```
sudo mkfs.ext4 /dev/sdc1
```

Similarly, you can format the USB flash drive with any required file system.

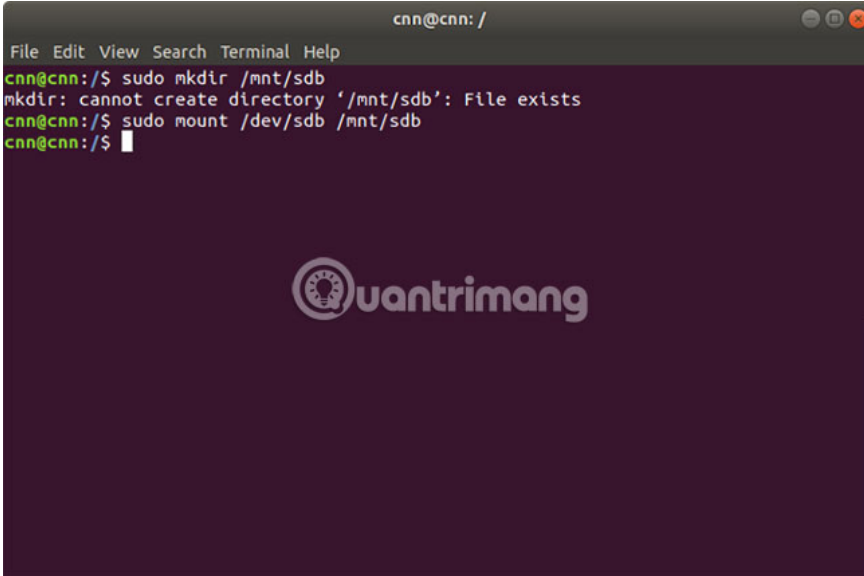
## C. Mount USB in Linux (including auto mount after reboot)

**Step 1** : Normally, the hard drive is mounted in `/mnt/`. Create a new folder in `/mnt/` first.

```
sudo mkdir /mnt/sdb
```

**Step 2** : After that, you can mount it with the command:

```
sudo mount /dev/sdb /mnt/sdb
```

A terminal window titled 'cnn@cnn: /' with a menu bar (File, Edit, View, Search, Terminal, Help). The terminal shows the following commands and output:

```
cnn@cnn:/$ sudo mkdir /mnt/sdb
mkdir: cannot create directory '/mnt/sdb': File exists
cnn@cnn:/$ sudo mount /dev/sdb /mnt/sdb
cnn@cnn:/$
```

The terminal background is dark purple with a 'uantrimang' logo in the center.

**Step 3** : But you need to mount it every time you reboot. To automatically mount after every reboot, we will use nano to modify the `/etc/fstab` file:

```
nano /etc/fstab
```

**Step 4** : Enter the following command at the end of the file:

```
/dev/sdb /mnt/sdb ext4 defaults 0 0
```

```
cnn@cnn: /mnt
File Edit View Search Terminal Help
GNU nano 2.9.3 /etc/fstab Modified
# /etc/fstab: static file system information.
#
# Use 'blkid' to print the universally unique identifier for a
# 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/sda2 during installation
UUID=583abf18-d34a-484d-ae8e-4cb5dd832953 / ext4 errors=remoun$
# /boot/efi was on /dev/sda1 during installation
UUID=3F93-343F /boot/efi vfat umask=0077 0 1
/swapfile none swap sw 0
/dev/sdb /mnt/sdb ext4 defaults 0 0
```

The first item is the path for the hard drive. The second is the destination of the mounted drive (where you want to mount the drive). The third is the format. The fourth to sixth items remain the same by default of 0 and 0 .

## D. Check if the hard drive is mounted

There are 3 methods to test. All three methods can find the sdb mounted hard drive.

### 1. mount

```
mount | grep sdb
```

### 2. lsblk

```
lsblk
```

```
File Edit View Search Terminal Help
cnn@cnn: ~
cnn@cnn:~$ df
Filesystem      1K-blocks    Used Available Use% Mounted on
udev            32875524      0  32875524   0% /dev
tmpfs           6581876     2056   6579820   1% /run
/dev/sda2      238798492 8438868 218159588   4% /
tmpfs          32909364      0  32909364   0% /dev/shm
tmpfs           5120         4     5116     1% /run/lock
tmpfs          32909364      0  32909364   0% /sys/fs/cgroup
/dev/loop1      3456         3456      0 100% /snap/gnome-system-monitor/36
/dev/loop3      12544        12544      0 100% /snap/gnome-characters/69
/dev/loop0     143488       143488      0 100% /snap/gnome-3-26-1604/59
/dev/loop4      1664         1664      0 100% /snap/gnome-calculator/154
/dev/loop5     21504        21504      0 100% /snap/gnome-logs/25
/dev/loop2     88704        88704      0 100% /snap/core/4486
/dev/loop7     89088        89088      0 100% /snap/core/4917
/dev/loop8    142848       142848      0 100% /snap/gnome-3-26-1604/64
/dev/loop6     89088        89088      0 100% /snap/core/4830
/dev/loop10    3840         3840      0 100% /snap/gnome-system-monitor/45
/dev/loop9     2432         2432      0 100% /snap/gnome-calculator/178
/dev/loop12   14848        14848      0 100% /snap/gnome-logs/37
/dev/loop11    13312        13312      0 100% /snap/gnome-characters/101
/dev/sda1      523248       4744     518504   1% /boot/efl
/dev/sdb      3844641608  90140 3649184156 1% /mnt/sdb
tmpfs          6581872     12     6581860   1% /run/user/120
```

### 3. df

df

```
File Edit View Search Terminal Help
cnn@cnn: ~
cnn@cnn:~$ df
Filesystem      1K-blocks    Used Available Use% Mounted on
udev            32875524      0  32875524   0% /dev
tmpfs           6581876     2056   6579820   1% /run
/dev/sda2      238798492 8438868 218159588   4% /
tmpfs          32909364      0  32909364   0% /dev/shm
tmpfs           5120         4     5116     1% /run/lock
tmpfs          32909364      0  32909364   0% /sys/fs/cgroup
/dev/loop1      3456         3456      0 100% /snap/gnome-system-monitor/36
/dev/loop3      12544        12544      0 100% /snap/gnome-characters/69
/dev/loop0     143488       143488      0 100% /snap/gnome-3-26-1604/59
/dev/loop4      1664         1664      0 100% /snap/gnome-calculator/154
/dev/loop5     21504        21504      0 100% /snap/gnome-logs/25
/dev/loop2     88704        88704      0 100% /snap/core/4486
/dev/loop7     89088        89088      0 100% /snap/core/4917
/dev/loop8    142848       142848      0 100% /snap/gnome-3-26-1604/64
/dev/loop6     89088        89088      0 100% /snap/core/4830
/dev/loop10    3840         3840      0 100% /snap/gnome-system-monitor/45
/dev/loop9     2432         2432      0 100% /snap/gnome-calculator/178
/dev/loop12   14848        14848      0 100% /snap/gnome-logs/37
/dev/loop11    13312        13312      0 100% /snap/gnome-characters/101
/dev/sda1      523248       4744     518504   1% /boot/efl
/dev/sdb      3844641608  90140 3649184156 1% /mnt/sdb
tmpfs          6581872     12     6581860   1% /run/user/120
```

Hope you are succesful.

You finished reading the article "**Format and mount USB in Linux**" edited by the [TipsMake](#) team. We hope this article has provided you with many useful tech tips and tricks. You can search for similar articles on tips and guides. Thank you for reading and for following us regularly.