Computer Preparing (Formatting)

Formatting the HDD :

A **hard disk drive** (**HDD**) is a data storage device used for storing and retrieving digital information using rapidly rotating disks (platters) coated with magnetic material. An HDD retains its data even when powered off. To use the hard drive it must be formatted (after partitioning it). Formatting erases any existing files on a hard disk. If you format a hard disk that has files on it, the files will be deleted.

There are two types of Formatting:

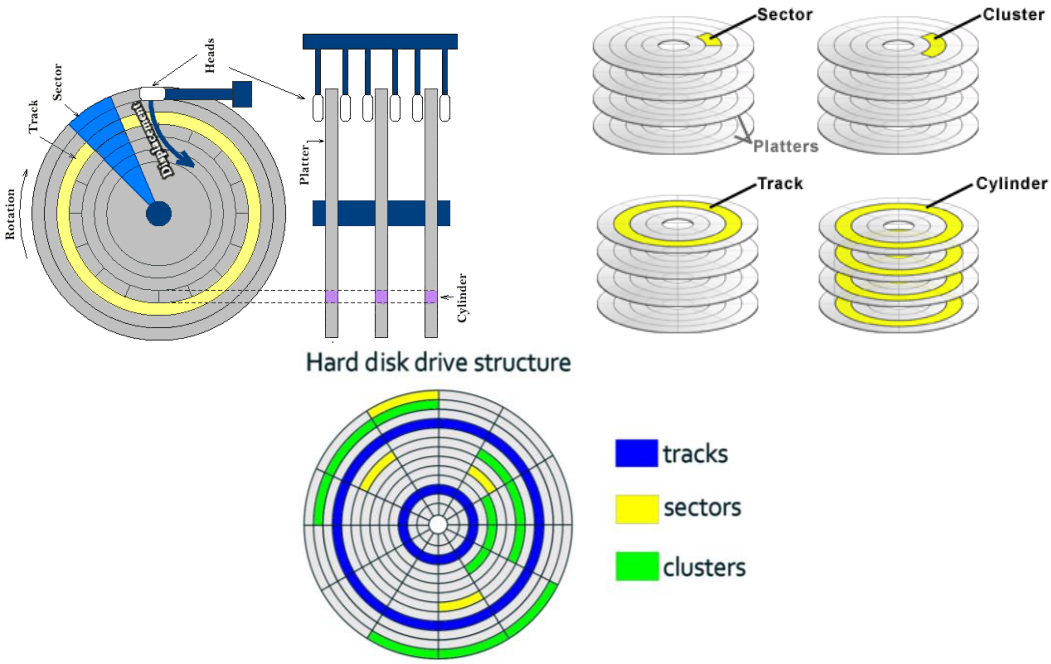
- **Physical Formatting,** also known as **low-level format.**
- **Logical Formatting** or what is known as creating **high level Formatting.**

➢ *Physical Formatting:*

A physical formatting must be done before the logical formatting of the hard disk, physical formatting of the hard disk (also called low-level format) is usually done after the company produces the hard disk directly.

The purpose of low-level formatting is to divide the disk surface into basic elements:

- Tracks : They are the concentric areas written on both sides of a platter.
- Sectors : tracks are divided into pieces called sectors.
- Cylinders : all the data located on the same track of different platters.



Hard disk drive structure

When you buy a hard drive, it has already passed in low-level formatting, so you do not need to perform low-level formatting.

- ***Logical Formatting:***

Logical formatting occurs after the low-level formatting. Even though hard drives can be very small, they still contain millions of bits and therefore need to be organized, so that information can be located. The **logical formatting creates a file system on hard disk, which allows the operating system to use the disk space to store and access files**.

When you format a hard drive, the operating system loses its ability to reference the data on the disk. Until the particular drive sectors are overwritten, there is still a chance to recover a formatted hard drive.

The files and data are still there, but just cannot be accessed by your operating system. The only thing that formatting accomplishes is to eliminate the pointers that exist that tell your operating system where the files are physically located. If you can recover those pointers then you can access your data again.

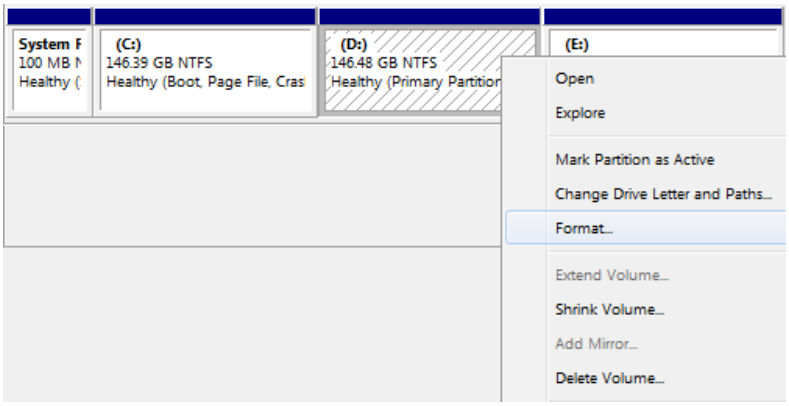
What do I need to do to format a hard disk?

Before formatting a hard disk, you must first create one or more partitions on it. After you've partitioned the hard disk, you can format each partition. You cannot format a disk or partition that is currently in use, including the partition that contains Windows. You can partition the hard disk so it contains a single volume or several volumes. Each volume is assigned its own drive letter.

To format an existing partition (volume)

Formatting a volume will destroy any data on the partition. Be sure to back up any data you want to save before you begin.

1. Open Computer Management. If you are prompted for an administrator password or confirmation, type the password or provide confirmation.
2. In the left pane, under Storage, click Disk Management.
3. Right-click the volume that you want to format, and then click Format.
   - To format the volume with the default settings, in the Format dialog box, click OK, and then click OK again.



When do I need to format a disk or drive?

Usually, only when adding additional storage to your computer. If you install a new hard disk on your computer, it must be formatted with a file system, such as NTFS, before Windows can store files on it.

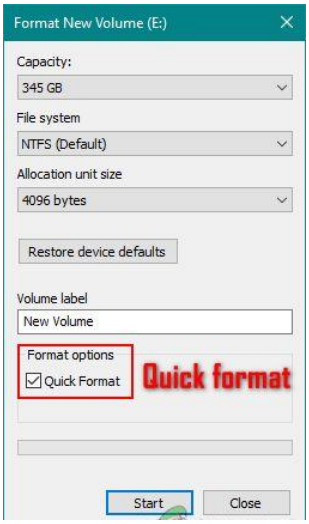
What file system should I use?

For Windows 7 and later versions, the best choice for hard disks is NTFS. Some previous versions of Windows required FAT32.

What's a full format and quick format?

The high-level formatting is specifically divided into two modes in the actual operations: quick format and full format (it is also called general or regular format).

Formatting can be done in Windows Explorer and Disk Management. When computer users format a partition, quick format is checked by default. If they uncheck quick format, full format mode is selected automatically.



Normal format (full)

- files are removed from the volume that you are formatting, but really, the files still exist and the volume could be re-built to gain access.

But full format is changed in Windows Vista and later Windows versions, it will erase original data, write zeros to the whole partition, and finally erase zeroes again to avoid the possibility of data recovery. So, full format does erase all data.

- runs an additional step that checks the hard drive for any bad sectors.

- The scan for bad sectors is the reason why the Full format takes twice as long as the Quick format.

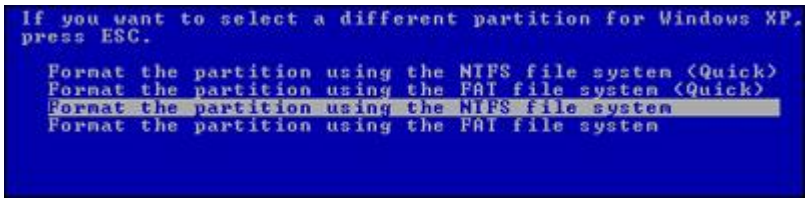
- rebuild all of its file structures (regenerates the file table on a hard disk).

- fully overwrite the table of files locations.

- makes format for addresses, sectors, and fully erases any existing data on the hard disk.

Quick format

- removes files from the partition, but anyone looking at the hard drive or storage device would not see any data and assume the drive is erased. But really, the files are actually still there and the volume could be re-built, to gain access to the files again.
- does not scan the disk for bad sectors and doesn't delete the data that's on there.
- A quick format is much faster and better than a normal format.
- creates a new file table on a hard disk (doesn't really rebuild the file system)
- does not fully overwrite file table or erase the disk.
- It makes format for addresses only, while the sectors remain contain the data, and the new data will be written on it.



If you are planning to re-use the drive and it's working, a quick format is adequate since you are still the owner. If you believe the drive has problems, a full format is a good option.

What does reformatting my hard disk do?

Reformatting refers to formatting a hard disk or partition that already has been formatted or that contains data. Reformatting a disk deletes all data on the disk.

Why do I get an error when I try to reformat my hard disk?

You can't reformat a disk or partition that is currently in use, including the partition that contains Windows. This is a *safety feature so that you can't delete Windows by accident*.

To reformat your computer's hard disk and reinstall Windows, restart your computer using the Windows installation disc (this is commonly known as booting from the installation disc). During the Setup process, you can repartition and reformat your hard disk and then reinstall Windows. The process will erase your files and programs, so be sure to back up your data and program files before you begin.

Formatting Disks or Removable media

Before a new disk can be used it must be formatted logically into addressable sectors. Disks such as Floppy, partitions of hard disks, CD/DVD and USB can be formatted, if required. Below is the picture to format a Removable disk (USB).