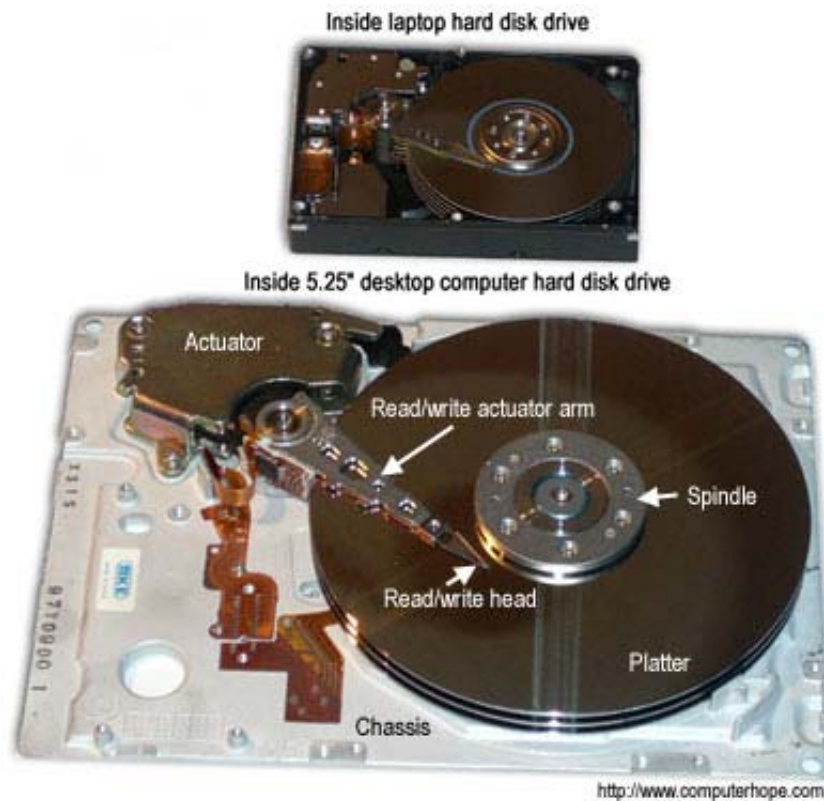


Hard drive

Alternatively referred to as a **hard disk drive** and abbreviated as **HD** or **HDD**, the **hard drive** is the computer's main storage media device that permanently stores all data on the computer. The hard drive was first introduced on September 13, 1956 and consists of one or more hard drive platters inside of air sealed casing. Most computer hard drives are in an internal drive bay at the front of the computer and connect to the **motherboard** using either ATA, **SCSI**, or a **SATA** cable and power cable. Below, is a picture of what the inside of a hard drive looks like for a desktop and laptop hard drive.



As can be seen in the above picture, the desktop hard drive has six components: the head actuator, read/write actuator arm, read/write head, spindle, and platter. On the back of a hard drive is a circuit board called the disk controller.

Tip: New users often confuse memory (RAM) with disk drive space. See our [memory definition](#) for a comparison between memory and storage.

How is data read and stored on a hard drive?

Data sent to and from the hard drive is interpreted by the disk controller, which tells the hard drive what to do and how to move the components within the drive. When the operating system needs to read or write information, it examines the hard drives File Allocation Table (FAT) to determine file location and available areas. Once this has been determined, the disk controller instructs the actuator to move the read/write arm and align the read/write head. Because files are often scattered throughout the platter, the head needs to move to different locations to access all information.

All information stored on a traditional hard drive, like the above example, is done magnetically. After completing the above steps, if the computer needs to read information from the hard drive it would read the magnetic polarities on the platter. One side of the magnetic polarity is 0 and the other is 1, reading this as binary data the computer can understand what the data is on the platter. For the computer to write information to the platter, the read/write head aligns the magnetic polarities, writing 0's and 1's that can be read later.

External and Internal hard drives

Although most hard drives are **internal hard drives**, many users also use **external hard drives** to backup data on their computer and expand the total amount of space available to them. External drives are often stored in an enclosure that helps protect the drive and allow it to interface with the computer, usually over USB or **eSATA**. A great example of a backup external device that supports multiple hard drives is the Drobo.

External hard drives come in many shapes and sizes. Some are large, about the size of a book while others are about the size of a cell phone. External hard drives can be very useful for backing up important data and taking with you on the go since they usually offer more than a jump drive and are still portable. The picture is an example of a laptop hard disk drive enclosure from Adaptec. With this enclosure, the user installs any size of laptop hard drive they desire into the enclosure and connect it to a USB port on the computer.

HDD being replaced by SSD

Solid State Drives (SSDs) are starting to replace hard disk drives (HDDs) in many computers because of the clear advantages these drives have over HDD. While SSD is becoming more and more popular, HDD will continue to be in desktop computers with SSD because of the available capacity HDD offers over SSD.

Adaptec Laptop HDD enclosure



<http://www.computerhope.com>

» Advantages of SSD over HDD.

Other help and related links

- » Determining available hard drive space.
- » Installing a PC IDE/EIDE hard drive.
- » Listing of computer hard drive manufacturers.
- » Computer hard drive help and support.