

# COMPUTERS MADE EASY

SIMPLE GUIDES TO GET THE BEST FROM YOUR COMPUTER

## *The absolute basics- what is Hardware ?*

*This is a simple guide to your computer and what it is made up of. This is not a technical, in depth or difficult to understand guide, more a quick run down. If you understand just this much, you'll be better able to use your computer and avoid problems.*

HARDWARE is the name for the physical components that make up your computer. You already know that your system is comprised of the computer unit itself, and a monitor (screen).

## The Motherboard

Inside that computer box or laptop, you'll find surprisingly little. The main component is the Motherboard (also known as a "System board"). This is a circuit board with lots of connectors. Everything else in the computer box plugs into it, hence its name.

The largest component is the Power Supply. This is merely a transformer that converts mains electricity into the much lower voltages the computer needs. The Power Supply (PSU- power supply unit) often has a fan or two on it, to keep it cool. It has several different leads which are plugged into the Motherboard, and also things like Hard Drives, CD-ROMs etc.

The Motherboard also has spare connectors to attach extra components, such as Hard Drives or extra Memory.

The Motherboard often incorporates many other components, especially in Laptops: the Graphics adapter, the Network socket, modems, USB ports, Wireless adapters etc. The Motherboard is where the "Brain" of the computer sits, usually with a fan on top.

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*A Motherboard*

## The CPU

The Central Processing Unit (CPU) is a small, thin square. This is the brain of the computer. You will have heard of Intel Pentium or Core Duo, i3 or Celeron, or the AMD processors. These are all makes (Intel and AMD having a veritable stranglehold on this market), and the “Athlon” or “Pentium” part is the model.

All CPUs are rated by “Clock Speed”, this is, essentially, processing power, usually expressed in Mhz (Megahertz) or GHz (Gigahert). Put simply, the higher the number, the faster the CPU, although there are other considerations.

Most modern CPUs are also at least dual core. That means, they incorporate two brains, but share memory. It's almost like having two CPUs, and such CPUs are not so much faster outright, but have much better ability to do more than one thing at once. They excel at anything processor intensive.



*A CPU*

## Memory

Memory, more correctly known as “RAM” (Random Access Memory) should not be confused with hard drives. Memory is simply “workspace”. Just as humans do not need to think about everything they know all the time, so computers store data they are not using on the Hard Drive and only load it into Memory when they need to. Memory is usually expandable: more can be added. A computer that is low on memory runs poorly.



*Memory (RAM)*

## The Hard Drive

This is where the Operating System (see “Software”) is stored. It is also where programs (see “Software”) are kept, and where your files (documents, photos, music etc) are kept.

Hard Drives are what one might call semi-permanent storage space, like a bookshelf. You can add books, or take some out. Hard drives are rated according to size, in Gb (Gigabytes).



*A Hard Drive*



How big is a Gb?

A floppy Disk is 1.38 Mb- this is roughly 70 sheets of A4 plain text.

A CD-ROM can hold 700 Mb.

A Gb is 1024 Mb.

A single sided DVD can hold 4.7 Gb

Hard Drives these days range from (very small) 40 Gb to an amazing 2 Tb . A Tb (Terabyte) is technically 1024 Gb, although most Hard Drive manufacturers round it off to 1,000 Gb. Hard Drives are growing in “size” (Storage capability) all the time. A desktop PC can have more than one Hard Drive, and there are portable Hard Drives on the market.

## The Graphics Card

The GRAPHICS CARD is often built into the Motherboard, but for higher performance, a separate Graphics card can be used in Desktop PCs, not usually in laptops. These extra cards are used primarily for 3D games or for creating videos, although they're not essential for the latter. The graphics card simply sends pictures to the monitor.

## The Sound Card

Computers almost always have a Sound Card (often built in to the Motherboard), this is to hear audio output, such as music. However, most can also be used as a recording device, too.

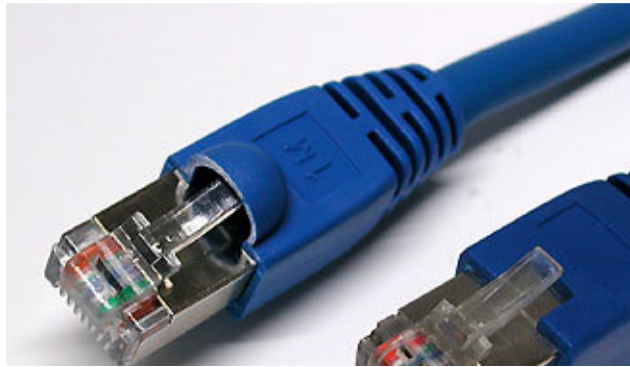


*A Sound Card's connectors*

## Wireless and Ethernet adapters

To connect to the Internet, your computer will almost certainly have a Network socket, more correctly known as an Ethernet adapter. This looks like the larger version of a telephone socket, at the phone end.

Laptops almost always have a Wireless Adapter, this does the same thing, but wirelessly. It is not usual for Desktop PCs to have wireless, but most can be made wireless by adding this capability.



*An Ethernet (Network) cable*

## Other Connections



*A USB Port and connector*

On the front of the computer case, or around the back where the cables are, or, for laptops, anywhere on the back, sides or front are small, flat rectangular sockets called USB Ports.

USB is a very adaptable and convenient, multipurpose way to connect all kinds of devices (See “Peripherals”), like printers, memory sticks, webcams or printers.

At the back of the your computer, you will also see the connector for the monitor. You may also see some vaguely oval shaped connectors with pins sticking out: these are old fashioned COM ports, and are not much in use these days, and also a long, thin connector, often coloured purple. This is a Parallel port, an older way to connect printers.

Some laptops also have IEEE 1394 connectors, called “Firewire” by Apple and “I-Link” by Sony. This is most commonly used to connect digital camcorders. Ordinary Desktop PCs can have this ability added.

Some modern computers may also have HDMI connectors. These are for High Definition Video (Movies) and Audio.

So, now you know what Hardware is and roughly what it does. You should also know what all those connectors at the rear of the PC are!

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