

# Computer Hardware

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# Hardware Components

Here are a few necessary components to every PC:

- CPU (Central Processing Unit)
- GPU (Graphics Processing Unit)
- HDD (Hard Disk Drive)
- RAM (Random Access Memory)

And a few more optional ones:

- ODD (Optical Disk Drive)
- LCD (Liquid Crystal Display)
- Wi-Fi (Wireless Fidelity)

# Central Processing Unit

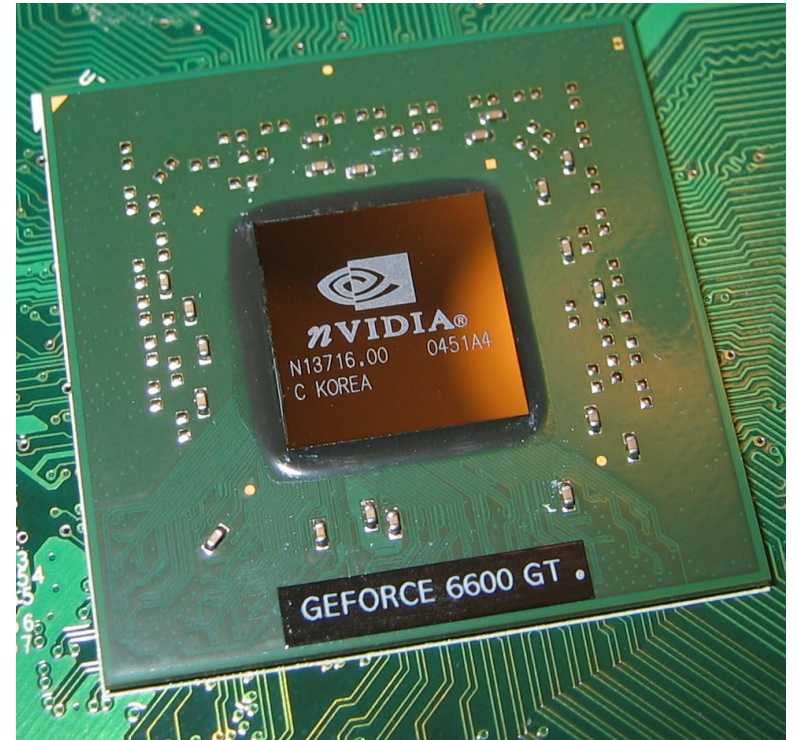
- The "brains of the computer."
- Commonly measured in GHZ (GigaHertz).
- Composed of transistors which are either on or off at any given instance.
- Produces large quantities of heat and thus requires cooling.
- Common manufacturers include Intel and AMD.



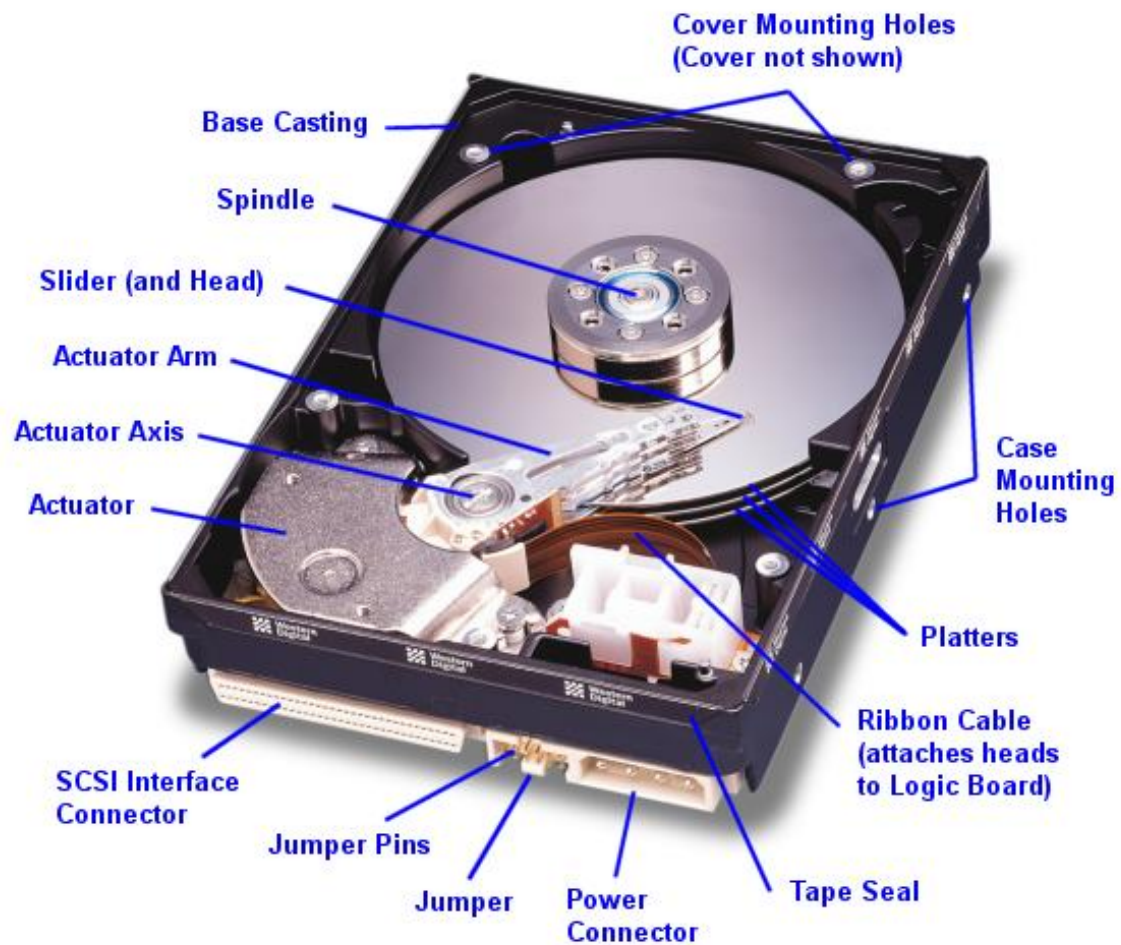
[http://www.thg.ru/mobile/20010202/images/open\\_cpu\\_socket.jpg](http://www.thg.ru/mobile/20010202/images/open_cpu_socket.jpg)

# Graphics Processing Unit

- Like the CPU for a GUI (Graphic User Interface).
- Also measured in MHZ (MegaHertz) or GHZ.
- Common manufacturers include Nvidia and ATI.
- Can be either *integrated* or *dedicated* with the former often slower but smaller, cheaper, and producing less heat.



[http://upload.wikimedia.org/wikipedia/commons/4/44/6600GT\\_GPU.jpg](http://upload.wikimedia.org/wikipedia/commons/4/44/6600GT_GPU.jpg)



Hard Disk Drive (left) - Solid State Drive (right)

# Hard Disk Drive/ Solid State Drive

- The long-term memory of the computer where files are stored permanently alongside an OS (Operating System).
- A HDD is composed of magnetic dipoles which can be read as either 1 or 0, thus storing bits of information.
- The difference between an HDD and an SSD is that the former utilizes a spinning platter with a needle and tends to be cheaper for larger storage sizes, while an SSD is more expensive it is made of numerous transistors, has no moving parts, and tends to be faster at random read speeds.
- Common manufacturers include Western Digital and Seagate.



# Random Access Memory

- Analogous to short-term memory.
- Composed of volatile (without power it loses its data) transistors.
- Designed to be *very* fast at reading and writing.
- Commonly measured in GB (Giga Bytes), with the more RAM you have the more you can multi-task.
- Common manufacturers include Crucial and PNY.



[How Stuff Works](#)

# Optical Disk Drive

- Used to transfer data between PCs.
- Two common types, CDs (Compact Disk) and DVDs (Digital Video Disk), with the later containing larger storage sizes.
- Similar to a HDD but external and with smaller storage sizes.
- Currently replacements include a BDD (Blu-Ray Disk Drive).
- Fairly slow read/ write speeds and inexpensive.



[ODD](#)



# Liquid Crystal Display

- Thin flat-panel display containing millions of liquid crystals representing pixels.
- LCs do not emit light thus an LCD display requires a back-light.
- Common manufacturers include LG and ViewSonic.

# The Jargon Continues...

- Wi-Fi (Wireless Fidelity) used for wireless networking.
- SATA/ eSATA (Serial Advanced Technology Attachment), PATA/ IDE (Integrated Drive Electronics), SCSI (Small Computer System Interface) are all used for HDD/ SSD data transfer.
- USB (Universal Serial Bus)/ FireWire for external transfer.
- VGA (Video Graphics Array), DVI (Digital Visual Interface), HDMI (High-Definition Multimedia Interface), are just a few interfaces used for graphical output.

# The Jargon Continues... (Continued)

- CMOS (Complementary metal–oxide–semiconductor) used to maintain state like time when power isn't available.
- PCI (Peripheral Component Interconnect) used to add various hardware capabilities like Bluetooth, Wi-Fi, and more.
- AGP (Accelerated Graphics Port), while somewhat outdated, it is still used for connecting dedicated GPUs.
- PSU (Power Supply Unit) which gives components power!
- ATX (Advanced Technology eXtended) and its many variants define motherboard form-factors which determine to a large extent the dimensions of a personal computer.

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