

## Factsheet: RAM

**Stands for:** Random Access Memory

**What it looks like:** Long green circuit boards with memory chips and gold contacts.

**Typical size:** Between 1GB and 8GB in most PCs. Much more in powerful servers.

**Purpose:** Storing programs and data that are currently being used.

**Access time:** RAM can be accessed quickly because there are no moving parts and the data can travel quickly through the motherboard.

**Interesting facts:** RAM is **volatile**. This means that if you turn the power off, the contents of RAM are lost. Any files that are open in RAM when your computer shuts down will be lost - unless you have saved them first.



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## Factsheet: ROM

**Stands for:** Read Only Memory

**What it looks like:** Small chip, usually found as a fixed part of the motherboard.

**Typical size:** Between 1MB and 16MB.

**Purpose:** Storing startup instructions to tell the computer how to display simple messages to the screen, how to look for a hard drive and operating system.

**Access time:** ROM can be accessed quickly because there are no moving parts and the data can travel quickly through the motherboard.

**Interesting facts:** ROM is **non-volatile**. This means that if you turn the power off, the contents of ROM are safe. This is important because you don't want to lose your startup instructions every time you shut the computer down.



## Factsheet: Virtual Memory

**What it looks like:** Virtual Memory uses part of the computer's hard disk drive (HDD).

**How it works:** Acts as an extension to the physical RAM by using space on the HDD.

**Typical size:** Very large - potentially many GB. The limit is really the size of the HDD and a VM size of over 100GB is common

**Purpose:** Storing programs and data that are currently being used.

**Access time:** VM is much slower to access because of the moving parts and the slow transfer through the cable.

**Interesting facts:** The contents of VM will still be saved if the computer shuts down, but without the contents of RAM it will be meaningless.



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## Factsheet: Cache

**What it looks like:** A tiny chip as part of the CPU.

**How it works:** Acts like a buffer between the CPU and main memory.

**Typical size:** Very small - between 16KB and 8MB.

**Purpose:** Storing the most commonly used instructions, so they can be accessed very quickly.

**Access time:** The smallest, L1 cache, can be accessed in a millionth of a second.

**Interesting facts:** Modern i7 processors have a Level 1 cache (around 64KB), a Level 2 cache (around 256KB) and a Level 3 cache (256MB). Each one is progressively bigger, but also slower.

