

## Memory and Storage

These two terms are often used interchangeably which causes confusion.

Memory in the past has referred to a type of solid state storage known as random access memory (RAM), which is used for temporary storage normally by a computer to run programs etc.

Storage normally refers to mass storage mainly of data which is held on such things as floppy disks, hard disks and optical disks (CD's and DVD's)

However, changes in technology mean that there are now a variety of storage media which are also solid state. They have a variety of different names and come in different shapes and sizes. A list of these follows with an appendix on Megabytes (MB) and Gigabytes (GB).

There are two types of solid state storage, one that has to have a little battery to keep its memory (such as [SDRAM](#)) and one that doesn't, such as flash or non volatile memory. Devices like personal organisers have the little battery. We are looking at the other type.

The price of these things is always changing, fluctuating with the strength of different currencies etc. but in general the prices stay the same, but capacities increases. So, for example a 1GB storage card might have cost around £45 a couple of years ago, and now the same money buys you a 4GB card. This does not necessarily mean that 1GB cards are amazingly cheap (say around £20 now), it just means that people expectations are for greater capacity.

### USB flash drives



Known as pen drives in the USA, they are also sometimes called USB memory sticks/drives and have a variety of brand names. The key here is the word USB, as these are all solid state storage devices which can plug directly into your computer through the USB port.

Some of the more popular USB flash drive ranges are: Sandisk Cruzer Micro & Mini, Kingston DataTraveler, Lexar Jumpdrive Sport & Traveller.



They vary in price and unbranded ones tend to be around £100 for the very largest size (always the newest – currently £8GB), around £50 for the next size down (4GB currently), around £30 for the next (2GB) and about £18 for the lower end (1GB). Smaller sizes will be cheaper, but will probably not be made for much longer



Although very useful, they do present security issues which some manufacturers are overcoming by introducing biometrics (finger print readers) on to the drives or using the [U3 standard](#) which allows programs to be run from the USB drive itself. So, beware of misuse and be secure; don't let your flash drive be stolen!

Many computers these days are not being fitted with floppy disk drives, instead have card readers. Whilst these are very useful, you do not need a card reader to 'read' a USB flash drive as these plug directly into the on your computer.



but need a USB port

For a benchmark on costs to buy check [www.dabs.com](http://www.dabs.com) .

For bulk purchases look around; they are mainly made in China and take about 5 days to ship to the UK. There are substantial discounts for large (1000+) quantities.



### SD memory cards

SD stands for secure digital. These come in a variety of sizes up to 8GB and are used in some cameras, personal organisers and phones.



### Mini SD cards

The same as above but smaller. Note the pictures are not to scale!



### Micro SD cards

And smaller again. Note the cut off's around the perimeters. These enable card readers to identify the different types of card.



### SDHC cards

The latest form of these cards, called secure digital high capacity.



### Memory Stick family

Originating from Sony, this is proprietary but popular solid state memory card coming in a [variety of flavours](#), some requiring different readers. Some Sony computers come equipped with a built in reader and many of their cameras use these formats. A fraction more expensive, they are small and reliable.



### Compact Flash

A squarer looking type of flash memory which is a little more expensive. Again used in cameras and PDA's.



### MMC cards

Multimedia cards are tiny and meant for ultra small devices including cameras and mobile phones. They tend to hold slightly less information (512MB – 1GB).



### XD family of cards

Ultra compact storage primarily for digital imaging, they come as XDPicture Card Type M, XDPicture Card, XDPicture Card Type H and XDPicture Card Type M & H.

## **Megabytes and Gigabytes.**

A megabyte (MB) is a unit of information or computer storage equal to approximately one million bytes. A Gigabyte (GB) is equal to one billion (that is, a thousand million) bytes. 3.5" floppy disks hold 1.44 MB. So a 1GB USB flash drive is the same as about 700 floppy disks. A CD tends to hold around 550Mb and a DVD around 5Gb. As new storage media come into play, these sizes will increase, but at the same time the way we store data has meant that files are getting bigger and more graphical. These take up more space.

A kilobyte is 1000 bytes. An MS Word document with 800 words in it takes up 32KB. The same character in a plain text document will take up a quarter of that. A digital photograph may take 5MB. So, you can fit a lot of words on a USB flash drive and quite a few photos as well.

[Click here](#) for some examples of how much space that is ...