

**Disks and Files [Part 3-Defragging]**

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Neat and tidy is nice. Even if you like a bit of clutter, you must admit that things are easier to find if the clutter is reduced. Files stored on a computer hard drive begin by being stored neatly in little areas called clusters. Larger files can spread across many clusters. In that case a piece at the end of each cluster tells the system where the next relevant cluster starts.

This might not be the next one on the disk and the system must go where it is directed to continue writing (or reading) a file. This happens, gradually becoming more severe, as files are deleted and created. The groups of free clusters do not match the spatial needs of new files and so they become progressively more scattered about the disk. The disk is then said to be “fragmented”. File fragments are no longer stored in the most convenient sequence for rapid reading.

In an area reserved for the purpose, the system keeps track of every file - and every cluster is flagged as occupied or available. This is the area first visited when a file is requested or written. The system locates the first cluster and follows the trail to read a file or creates a new trail as it writes one.

The machine is happy to do this, but users get annoyed because it takes longer for a file to load into memory as the read-head has to move around the disk. A process called “defragmentation”, or ‘defrag’ for short, will take the fragmented files and shuffle them into a better order for faster reading. Defragging is a time-consuming exercise, but the machine doesn’t mind.

The result is that the reading speed is returned (almost) to the speed when it was a new machine. This would be a noticeable improvement if the disk had previously been severely defragmented.

The ‘defrag’ routine has become less vital as technology has improved. It is still a useful method of getting a bit more speed out of a machine - but only if it uses a traditional spinning disk.

*For solid state drives (SSDs) there will be NO improvement in performance. Never defrag them. The lots of write-rewrites involved uses up their useful life sooner. This also applies to thumb drive/memory sticks/flash drives that are also solid state devices.*

Windows 8 and Windows 7 have automatic defragmentation schedules built in. Windows Vista and XP also have ‘defrag’ facilities that can be scheduled. (See their help files.)

Some users have the habit of defragging weekly, which is fine if they do a lot of deleting and creating on their machine. For light users a longer interval is more suitable. If you do it regularly and cannot feel any noticeable improvement in speed, you are probably doing it too often.