

THE COMPUTER CORNER

No. 137. Defragging

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The best way to improve your computers performance short of hardware replacements is to keep the hard drive defragmented. Fragmented files take longer to read than files that are in one contiguous piece. That makes sense. But fragmented files also take longer to write – as when burning a CD, copying to a floppy or USB Flash Drive, or even when changes are made as in editing a Word document. So, what is the big deal? Just defrag now and then. Correct?

Sure, that is the answer. But, do defraggers set you up with a perfectly defragmented hard drive when they are finished? Are they all equally effective? What limitations do they have? And, how do defraggers work?

Your computer contains tens of thousands of files, and when Windows is running, many are in use. Some are in use by applications, some by Windows services or some by Windows itself, and these can easily involve thousands of files. Even if you are not running Word or other applications, there can be many files open and in use. For example, if you are on a network, Windows is constantly looking for attempts to contact your machine – and that takes running software and lots of open files. Furthermore, simply keeping Windows itself running requires hundreds of open files.

It is a simple fact that, when a file is open (in use), it cannot be defragged. It is locked. So a defragger cannot work on all of the files on a drive at any given point in time. You can think of the hard drive as thousands of files (blocks of data) of different sizes, bounded by unmovable data blocks (the files that are in use). To move the two pieces of a fragmented file to a spot where they can be next to each other (contiguous), the file cannot be in use and there has to be an empty spot large enough to put the two pieces together. It has to hunt among the unmovable spots for a large enough unused block of space. That puts a rather severe constraint on any defragger.

All defraggers are based on a standard system defragmentation library by Microsoft, included in all versions of Windows (2000, 2003, XP and Vista). This includes freeware, shareware and commercial defraggers, as well as the one bundled with your operating system. That means that all of them use the same methods for moving pieces of files, to wit: 1. They first copy two or more fragments to a space where the fragments can be contiguous. 2. Then they update the File Allocation Table (a database listing where all the files on a disk reside). 3. Finally, only when 1 and 2 are completed do they erase the original fragments. This is a good procedure, because it is safe – the danger of loosing data is low.

On the other hand, defraggers don't all work at the same speed. Everyone knows the Microsoft defraggers bundled with various versions of Windows are very sloooow. There are faster defraggers out there, and the price is right (free).

One good free one is **Auslogics Disk Defrag** (<http://www.auslogics.com>). It has a nice user interface that lets you see what is happening, and it is fast. I like to use it for a "quick and dirty" defrag, so I can get back to work in a minimum amount of time. However, if you have more than just a C: partition, you have to do each partition separately.

For a more thorough job, I like the free **JkDefrag** (www.kessels.com/JkDefrag). This one is fully automatic – it assumes you wish to do all the partitions that are present, and it does them one after the other without asking. Furthermore, the program does not have to be installed. You just unzip it to a

directory of your choice, then click the JkDefrag.exe program when you want to run it. Be sure to read the .html document that comes with it (under the subfolder **doc**) so you click the correct program (several versions, including a screensaver, are included). There are also lots of command line options for you geeky folks like me. But it is also quite simple and very effective if you are not a geek!

I like JkDefrag because the author (J. Kessels – in Holland) used great care in designing the program. It does its job in stages. First, it reads the disk to analyze where things are and what needs to be done. Next, it creates some free space at the beginning of the disk (1% plus room for directories), so that temporary files have a place to go (temporary files are created and erased constantly while the machine is working, and the beginning of the disk is the best place to put them; read on to see why). Then it defragments by moving fragmented files to empty spots after the free space. Finally, it optimizes the hard drive by packing the newly defragged files as close to the beginning of the drive as is possible, but above the 1% free space. Why that free space? The beginning of a hard drive, near the rim of the platter, is faster to read or write than sites closer to the spindle. So, when JkDefrag is finished, your drive is not only defragmented, but it is also optimized to run at the very fastest speed when you are working. Very nice, indeed! It is a safe program, and can be stopped any time by just closing the program by clicking the familiar x-box in the upper right corner.

There are other freeware defraggers out there in addition to these two, but none are really any better than the ones I have mentioned. One up-and-coming freeware program out there now in beta version runs constantly in the background whenever Windows is running. It defrags a little whenever the machine is idle, as when you are answering the phone or taking a coffee break, or even when you are just thinking between keystrokes. But, it is not ready yet. It contains a few bugs (it interferes with the shutdown process), it uses more memory than the ones I have mentioned (since it is always running in the background whenever the machine is on), and it doesn't do as thorough a job as JkDefrag. But the idea is nice – never having to actually start a defragger, since one starts automatically at boot up and runs quietly in the background, keeping your machine in peak condition. We shall see how it develops.

Even if you use the old, slow defragger that comes with Windows, do it and do it regularly! A hard drive running Win2k or XP or Vista can become badly fragmented in only a few hours of use. Defrag at least once every two weeks, at the outside. It will keep your computer humming along at its best. Happy Computing!