

# Defragmenting makes computer more efficient

Twenty years ago I was the systems analyst working for a dozen PhDs at J. S. Nolen and Associates taking care of a DEC VAX mainframe and help manage a 150,000 line FORTRAN program that simulated oil reservoirs.



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Twice a year I had to backup all the data from the physically large 300 MB hard drives onto 9-track magnetic reel tape.

Here comes the scary part. Next I would erase all the data from the hard drives by formatting them and then reload the data back to them from the tape.

I held my breath every time while praying to the Lord that nothing bad would happen like the tape breaking during the restore which would result in a loss of at least one day's work of all those eggheads.

The goal of this time-consuming and stressful process done late at night was to defragment the data and improve performance of the overall system. To this day I still defragment computer hard drives but I use a different and less risky pro-

cedure to accomplish the task.

To understand what defragmentation is let's discuss fragmentation.

When a computer writes out a digital file it first attempts to place it on the hard drive in a continuous single entity rather

than multiple pieces.

As time goes by and free disk space becomes less available, so do larger free areas which make the computer chop the files into multiple pieces or fragments on the hard drive.

An index table keeps tabs on the names, locations and fragment pieces so the operating system will know where all the parts of every file is and how to look them up. Try to imagine seeing the read head that moves back and forth over the spinning disc platters reading a single contiguous file quickly compared to making several read operations in multiple locations to locate and read the numerous parts to a single file.

All those millisecond delays add up when you trying to read in a 10 MB Adobe PDF file that is over 100 pages long with

pictures embedded in it. On a brand new computer this file should be in one piece but if you downloaded it to an old Windows 2000 computer running with a 90 percent full hard drive that has not be defragmented in years, it would probably put that file in 10 different parts scattered all over the hard drive.

This is because there were no free space openings that were at least 10 MB large. There may however been smaller areas available that added up to 10 MB if you add up one open space at 5 MB, one at 2 MB, two at 1 MB and four at 512 KB.

It was transparent to the user when this file was written in eight pieces but from that point on the computer will always have to locate, read, and combine those eight parts of a single file every time you view that file.

Now you understand how important it is for system efficiency and to take steps to keep your file system in good shape so the vast majority of your computer files are stored as single entities rather than numerous pieces scattered all over the computer's hard drive.

Do not worry about and don't even try do this the old fashion

way of backing up and restoring the complete hard drive like I did back in the 1980's since there is a native Windows utility available to defragment a fragmented hard drive.

This nifty tool is run by clicking on Start – All Programs – Accessories – System Tool and choose Disk Defragmenter.

If you are running Microsoft Vista you will notice that the Disk Defragmenter is already configured and scheduled to run automatically every Wednesday at 1 a.m.

Though I think that is too often, the yahoos at Microsoft set it up that way but you can modify the schedule to once a month if you wish.

In other words, Vista is already defragmenting your hard drive by default, so there is nothing else you need to do but make sure there is enough free disk space.

Since most Windows users are still running XP, you need to either manually run Disk Defragmenter or you can schedule it to run on a regular basis.

I prefer to run it manually about once every three to six months depending on usage and disk space consumption.

The higher the activity and

space consumption the more often you should defragment.

Here are a few good ideas for performing the defragmentation before you get started. First, make sure your PC is powered from a battery backup (UPS) so it does not get cut off during this defragmentation process since this is rebuilding files.

If your computer is only plugged into a power strip then at least look out the window or check the radar and verify there are no thunderstorms coming.

Next, just to be safe back up your computer files especially any critical databases like Quickbooks, Money or Quicken. hose external hard drives are big, cheap and available at Computer Helpers and Walmart for around \$100.

Also, verify you have shutdown all active programs like Internet Explorer, Word, or Outlook and check that nothing else is active on your task bar.

Finally, right click on the hard drive your want to defragment, choose properties and check to see if you have at least 15 percent free space on the pie chart.

Once you have done or verified all those things above you are ready to see if you even need to defragment by choosing

the primary hard drive (C:) and clicking on the Analyze button. This will tell you if the volume needs defragmentation.

If it does then just click the Defragment button and sit back to watch the graphical progress bar change colors from red to blue as it parses your multi-pieces files back into single contiguous entities.

During the defragmentation process do NOT start any other programs!

Just let it do its thing which may take an hour or more.

You will get a notice that the defragmentation has been completed and only then should you resume work on the computer.

Odds are you will notice a performance increase now that the files are no longer cut up into little pieces.

Bottom line: A good rule of thumb is to defragment your hard drive at the change of every season to keep your computer files efficient and all together.

Next week's column: Windows update.

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