Defragmenting Windows System Harddrive

DIY Guide

There are many different causes for a computer system to run slow. From the very first day that you unpacked the boxes, set up your new computer, and powered it on, it began to accumulate and store many different types of data. Music, videos, letters, pictures, emails and more; the list gets larger and larger as more and more of our everyday lives become digitized to some degree.

All of this data is stored on the system hard drive and is managed by the computer's operating system. There are file allocation tables that store pointers to the exact address on the hard drive where each file, no matter how large or small, is stored. The file's name, size, type, date modified, date created, attributes, status, along with about 15 other parameters all get saved there. In addition to whatever data files the computer user stores on the hard drive, the computer's operating system has literally hundreds of files that it uses to perform its various functions stored there as well.

As the operating system prepares to write data to the hard drive it merely looks for the first available empty region on the hard drive that it can find. If the file to be stored is 10 megabytes in size and the first available empty region that is found contains at least 10 megabytes of contiguous storage space, then the entire file will be laid out there, in a contiguous fashion. When a computer is new, this is what tends to happen at first since the hard drive is largely empty. However, it doesn't take long for this nice neat little scenario to change as files are constantly being stored temporarily and then removed as they are no longer needed. Without getting too esoteric let's suffice it to say that as time goes on the file structure becomes more and more 'fragmented'.

System Defragmentation

As the operating system compensates for removed, relocated, completely new and resized data files, a single fragmented file can become spread out, in multiple pieces, across several sections of the hard drive. Now imagine nearly every file the system needs to function becoming fragmented in this way. That is exactly what happens to a computer's hard drive over time. Using a little imagination one can see how this would tend to cause the computer to run slower and slower as the system has to piece together, from various locations, all of the fragments necessary to retrieve an entire data file.

At this point you must be thinking, 'there must be something I can do?" Well, fortunately there is. To return the computer's hard drive back to a more organized state, similar to the way it looked when the computer was new and to reverse the ill effects of file 'fragmentation', we will be performing a process called, 'De-Fragmentation!' Of course I'm sure you had already guessed that is where we were heading.
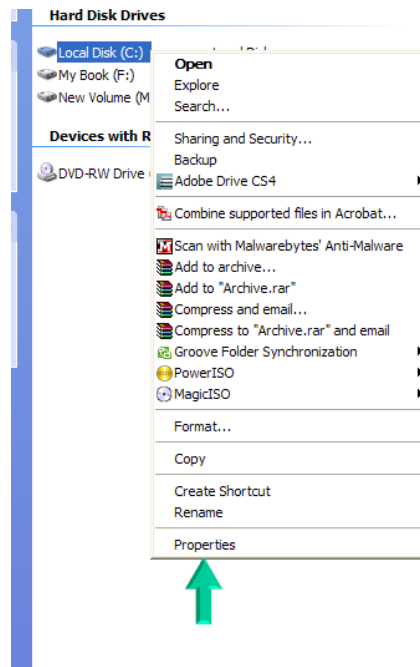
Depending upon the size of the hard drive to be defragmented, the amount of data that is stored on it, the level of fragmentation and the speed of the computer's processor, along with several other factors, a defragmentation can regularly take many, many hours! The standard defragmentation tool that is included in the Windows disk utilities should be performed while the computer is idle. This means that while Windows is defragmenting the hard drive the computer should not be used to perform any other functions.

Be sure to allocate enough time for the defragmentation so as to allow it to successfully complete a full defragmentation of the entire system drive. You may wish to begin the defragmentation just prior to retiring for the evening thereby allowing it to run all night if need be.

It is also important that no other applications be running in the background during this process. Take note if you use anti-virus or anti-spyware software, these programs are notorious for causing a defragmentation to abort prematurely. Disconnecting the computer from the Internet and Network would also be a good idea.

Assuming all of the aforementioned conditions have been met it is now time to proceed to starting the defragmentation.
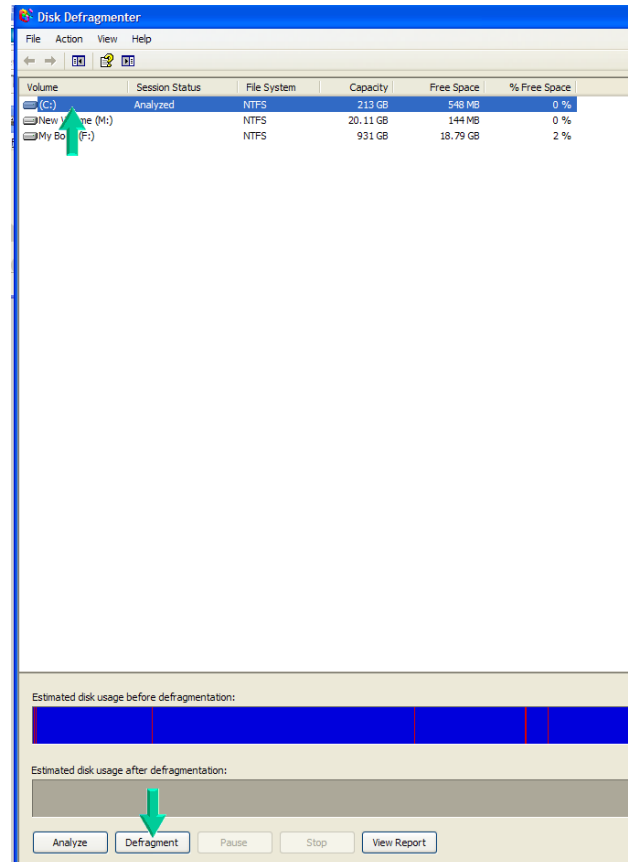
System Defragmentation

➢ Click on 'My Computer'.
➢ Locate your System Drive (Typically drive letter C: is the system drive).
➢ Place your Mouse Pointer over the System Drive and Press the Right Mouse Button.
➢ From the Menu choose 'Properties' (found at the bottom of the menu).

Hard Disk Drives

Local Disk (C:)
My Book (F:)
New Volume (M

Devices with R

DVD-RW Drive

| Open |
| Explore |
| Search... |
| Sharing and Security... |
| Backup |
| Adobe Drive CS4 ▶ |
| Combine supported files in Acrobat... |
| Scan with Malwarebytes' Anti-Malware |
| Add to archive... |
| Add to "Archive.rar" |
| Compress and email... |
| Compress to "Archive.rar" and email |
| Groove Folder Synchronization ▶ |
| PowerISO ▶ |
| MagicISO ▶ |
| Format... |
| Copy |
| Create Shortcut |
| Rename |
| Properties |

> ➢ This brings up the Local Disk C: Properties Sheet.
> ➢ Select the 'Tools' tab.
> ➢ Press 'Defragment Now' to start the Defragmentation Utility.

> ➢ Be sure that the System Drive Letter is highlighted.
> ➢ Press 'Defragment' to start the Process.

Well that raps it up. Remember this process could take anywhere from 30 minutes to 8 hours so be patient and you will be rewarded with a snappier, more responsive computer system.

System Defragmentation

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