

Scheduled Defragmentation versus Continuous Defragmentation



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A discussion of the respective merits of scheduled defragmentation versus continuous defragmentation has some nuances that might not be intuitive to the potential user. Whether you are a consumer or a system manager in a corporate IT department here are some things you should know.

PerfectDisk® provides the flexibility to use both a scheduled defragmentation model, as well as automatic background defragmentation. We employ this technology because PerfectDisk, unlike any other defragmentation software, defragments 99-100% of the data files on any size drive in a single pass. This is true even with as little as 1% free space available. PerfectDisk also does a bit more than just defragment files. In that same single pass, PerfectDisk consolidates the free space on the drive into the largest possible piece. This slows re-fragmentation and improves the disk write speed. This means that when PerfectDisk is finished with the disk, performance is about as good as it is going to get.

PerfectDisk also applies its patented SMARTPlacement™ strategy, which organizes files according to their change volatility. Files that don't change are defragmented and grouped together. If they remain unchanged, the next time PerfectDisk runs it can ignore these files. This means shorter run times and less resource use. Files that are recently created or changed are placed adjacent to the consolidated free space. This makes it easy to quickly repair any fragmentation that may occur and to re-consolidate the free space.

Disk defragmentation can be an I/O-intensive activity. Scheduling PerfectDisk to run at periods of low activity, or using the CPU and I/O throttling options to defrag in the background; ensures your data files stay defragmented, your free space stays contiguous and you have a disk that will re-fragment more slowly with use. PerfectDisk's patent-

pending Resource Saver™ technology further reduces system resource usage while defragmenting. For a server or computer that has no down time, scheduling is necessary to ensure defragmentation occurs; otherwise, with no down time there would be no defragmentation.

Another defrag software vendor employs a technology that has its defragmenter *only* using system idle time to defragment on a continuous basis. This product by design utilizes a multi-pass defragmentation engine. This means when the disk has a lot of files, is badly fragmented, or there is low free space (less than 20%) this product will need to run multiple passes to defragment the disk. A continuous run strategy ensures that a multi-pass engine keeps running. If you look at the results, you will see that while the data files are defragmented over time, the free space remains badly fragmented.

Gartner Research published a Research Note that made the following observation about the Windows® defragmenter which also uses a multi-pass defrag engine; and the same applies in this instance.

"...As such, multi-pass defragmenters characteristically fragment the remaining free space on the disk, which accelerates fragmentation later. It is recommended that a third-party single-pass server defragmentation tool be implemented instead."

In order to identify when the system is idle, it is necessary to monitor CPU, memory, disk I/O and some network traffic. As we all know, continually monitoring a system consumes resources; and this monitoring takes place while your systems are busy with other work. There is an inherent overhead in determining when the system is idle and when the defragmenter can run. This may or may not be feasible for your environment. If the system is always too busy, the drives will never be defragmented; this is why PerfectDisk provides the option of scheduling.

Another concern with continuous defragmentation is when will drive performance actually be improved? If a drive receives a lot of write activity it is likely to fragment quickly. If this activity creates a system slowdown, how long will it take a defragmenter running only at idle time to resolve the problem? If the system stays busy the continuous defragger isn't going to run. If the fragmentation is severe and there are just brief periods of idle time will the contiguous defragger make any real progress and how long will it take? Most importantly, since multi-pass defraggers do a poor job of free space consolidation, will a write-intensive disk get even more fragmented due to badly fragmented free space? With PerfectDisk there is immediate improvement in both disk read and write access.

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The continuous-defrag-*only* advocates contend that scheduled defrag is a bad idea because the user loses the benefits of defragmentation between scheduled intervals. This is a silly argument. While fragmentation is a real problem, there are few systems that would suffer performance issues with just a weekly defrag. The performance killer is not fragmented files, it is fragmented free space. When the free space is consolidated, re-fragmentation is slowed and the number of physical disk accesses is reduced. This was quantitatively proven in a white paper by Mr. David Goebel of Balder Technologies. Mr. Goebel was one of the original Microsoft® file system engineers who wrote NTFS. His paper can be found at <http://www.raxco.com/products/perfectdisk2k/whitepapers/FreeSpaceConsolidation.pdf>

Raxco believes its single-pass defragmentation will do a better job of defragmenting files and consolidating free space resources when scheduled to run on a regular basis.

In summary, Raxco believes its single-pass defragmentation will do a better job of defragmenting files and consolidating free space resources when scheduled to run on a regular basis *or* when running automatically during idle time. Our philosophy is to do it right the first time and to let you decide when you should defragment.

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