

Four Steps to Optimize Your SSD



June 22nd, 2011 written by Tibor in [Tips and Tricks](#)



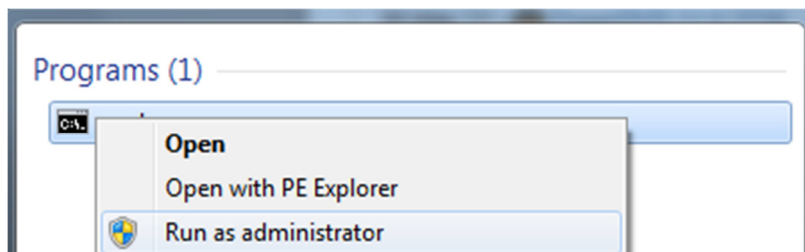
Mechanical hard disks have ruled for ages—but their reign is coming to an end. Uptake of faster, more energy-efficient solid state drives (SSDs) is increasing. Fast boot times and overall performance coupled with a decrease in prices are their major upsides, but users need to take special care of their SSDs. This blog post outlines the most important steps for optimizing your SSD.

Step 1 – Jump to Windows 7

Both Windows XP and Windows Vista come from an era in which SSDs were not widespread. They do not support the TRIM command which is important to boost systems' performance and lifespans. TRIM allows Windows 7 to tell the SSD which files should be deleted and completely erases the corresponding data blocks. The moment a file is deleted from an SSD, Windows 7 not only updates the file system (as it normally would) but also informs the SSD which data blocks can be removed. These blocks are marked as free so that Windows and third-party programs can use them. On a mechanical hard disk, this happens automatically, but on SSDs (without support for the TRIM command), data blocks need to be completely erased before they can be used again—this causes a loss in performance. Windows 7 (and its bigger server brother “Windows Server 2008 R2”) are the only Microsoft operating systems that support the essential TRIM command.

Step 2 – Make sure that TRIM is enabled

While Windows 7 officially supports TRIM, there have been cases in which it's not enabled (or maybe not supported). To see if TRIM is enabled, open up a command prompt by clicking on the Start orb and typing “cmd” into the search bar.



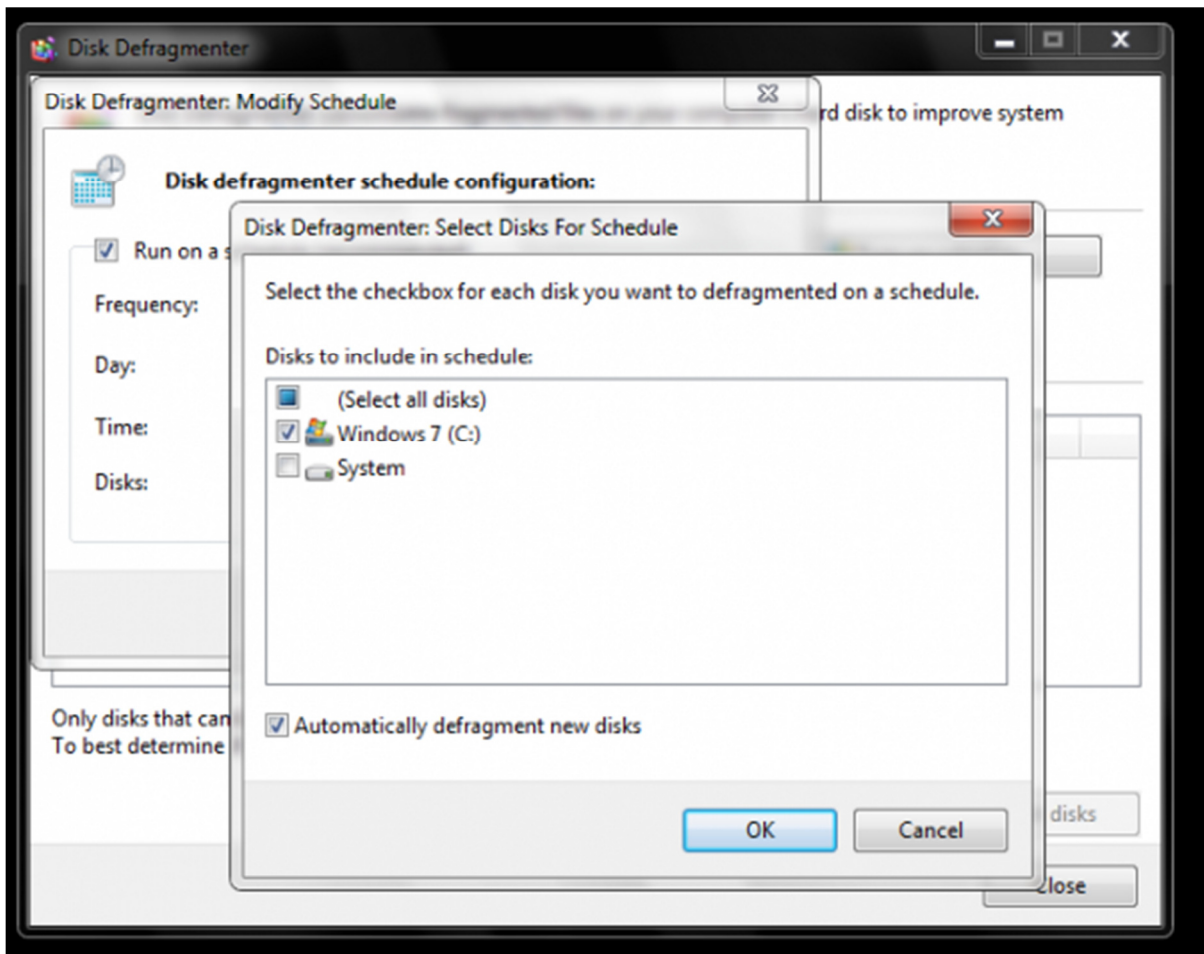
Right-click on the first result (“cmd”) and click “Run as administrator”. Next, type in the command “Fsutil behavior query disabledeletenotify”.

```
C:\Users\Tibor Schiemann> Fsutil behavior query disabledeletenotify
DisableDeleteNotify = 0
C:\Users\Tibor Schiemann>
```

Hit Enter. If this returns the result “= 0”, you’re good to go! Otherwise, TRIM isn’t supported and needs to be enabled. Try entering the command “fsutil behavior set DisableDeleteNotify 0”. If that doesn’t help, a firmware upgrade might be necessary to enable TRIM.

Step 3 – Do not defrag your SSD

Defragmentation is one of the more useful steps to keep your hard disk at its best. However, with SSD, defragmentation is not necessary. Read operations are incredibly fast throughout the entire disk. Thanks to the flash-based nature of SSDs, it simply doesn’t matter if data is stored in a non-contiguous manner. What most users don’t know is that defragmentation can actually be harmful to the SSD as the thousands of disk operations that occur during defrag reduce the life span of solid state cells. By default, Windows 7 should automatically disable its scheduled defragmentation—but unfortunately, I’ve seen too many cases where the built-in Disk Defragmenter was still enabled, despite the fact that an SSD was built-in! Users should make sure that it’s disabled. Here’s how: Go to the Start menu and click on “All Programs”, “Accessories”, “System Tools” and “Disk Defragmenter”. This can be even easier regulated with the new TuneUp version TuneUp Utilities 2012. It recognizes the SSD drive and excludes it automatically from defragmentation.



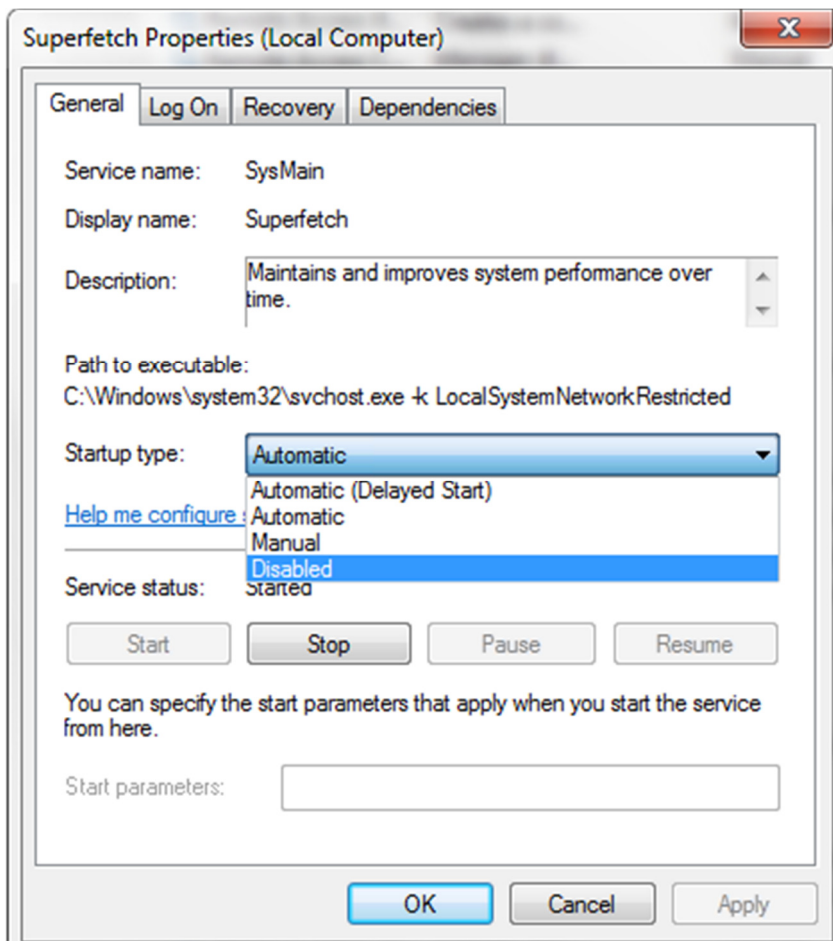
Go to “Turn off schedule” and make sure that Windows does not defragment your SSD drive (probably drive C:).

Step 4 – Disable SuperFetch, Prefetch, ReadyBoost, and ReadyDrive

Most performance-related features, such as SuperFetch, Prefetch, ReadyBoost, and ReadyDrive (for hybrid disks), should automatically be disabled when using an SSD, according to Microsoft's blog post.

“If the system disk is an SSD, and the SSD performs adequately on random reads and doesn't have glaring performance issues with random writes or flushes, then Superfetch, boot prefetching, application launch prefetching, ReadyBoost and ReadyDrive will all be disabled.”

While these technologies were designed to address certain performance bottlenecks, they are not necessary on SSDs. Windows 7 automatically disables all of the features mentioned above. If not, please check the SuperFetch service and the Prefetch feature and turn these off—but make sure that your SSD is fast enough. It could be either that Windows 7 didn't correctly identify your hard disk as an SSD (and thus left all the features on) or that it deemed your SSD to be too slow (and left them on, as well). There's only one way to find out: Disable SuperFetch and Prefetch and see if performance decreases at all. To do this, go to “Control Panel”, “System and Security”, “Administrative Tools”, and “Services”. Scroll down until you see the “SuperFetch” entry, double-click on it, and choose “Disabled” from the list.



Hit “OK” and close all windows. Next, open up the registry; click on the Start orb and type in “regedit”. Hit Enter, and go to “HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Session Manager\Memory

Management\PrefetchParameters". Double-click on "EnablePrefetcher" and enter "0" (default value is "3") to disable the Prefetcher.

Now conduct any test (e.g. some of the [performance tests we usually run](#)) to determine if performance stayed the same or not. If performance is the same as before, leave SuperFetch and Prefetch disabled. If performance decreased, go back and undo all the steps you previously took!

Reduce file operations

SSDs are perfect for anyone with a need for raw performance, but you'll need to treat them right. Follow our advice and avoid unnecessary file operations in order to maintain your system's performance and prolong its lifespan. Use the SSD as a system drive (Windows, third-party programs and important data), and move your huge files (like pictures, music and videos) to a secondary mechanical or external drive.

Need more advice about SSDs? Use the comment section below—we're more than happy to help!