Solid State Drive guidelines for performance and longevity

- Change the location of temporary files[2]
  In Control Panel, System, Advanced system settings, Environment Variables, change the TEMP and TMP variables in the User and System variable areas to a location on a mechanical drive.

- Change the location of the Pagefile[2]
  In Control Panel, System, Advanced system settings, Advanced tab, Performance Settings, Advanced tab, Change, untick *Automatically manage paging file size for all drives*, select C:, choose *No paging file* and click Set. Now select a mechanical drive, choose *either Custom size* or *System managed size* and hit Set. Hit Ok and reboot the PC for changes to take effect.

- Turn off Windows Disk Defragmenter[4].
  Unlike mechanical drives, SSD's do not store your data coherently. An algorithm referred to as *wear levelling* spreads the storage load over all memory cells. Since access times are the same for all memory cells there is no benefit in doing a defragmentation on SSD's. All you achieve is excessive read/writes on every memory cell[1] while getting no performance benefit.

- Consider each program you use. Most have options, preferences, or general internal settings where you can change the default location of storage folders.
  For example, Office Word uses a *AutoRecover file location* function that is pre-set to save backup documents to your user profile account on C:\ drive. This can be changed to a mechanical drive.

- Change the location of your User Profile files
  The Windows approved method is to right click on your Documents folder, Properties, Location tab, and change the drive letter from your SSD to a mechanical drive. If the new location does not exist, you will be prompted to create it, then prompted if you want to move all of the files from the old location to the new location. This would then be repeated for Pictures, Music, Downloads etc.

- Turn off the Hibernation file
  Since the location of this file cannot be changed, if you do not use the hibernate power feature it can be turned off by starting a Command Prompt with Admin rights and typing the command; *powercfg –h off*

- Don't fill the drive to capacity; leave some space, about 20%, so behind-the-scenes activities like TRIM, Garbage Collection, Free Space Consolidation and Wear Levelling can run efficiently.

- Disable the following;

Service	Description	Benefit when disabled	Downside if disabled
System Restore	Snapshots of certain system files are created when installing software, updates and making major changes which can be used to restore the system back to a known state. It does NOT include personal files.	Reduces drive access[1]. Potentially frees up a large amount of disk space for other things.	Ability to recover certain system files to restore Windows to a state before an error. Since personal data is not included, backing up your files is still essential.
Changed by Control Panel[2], System, System Protection, select the SSD drive, Configure, Disable system protection.			
Indexing	Used by the Windows Search feature. If you rarely search for files, there is no need for it.	Reduces drive access[1].	Slows down file Searches.
Changed by the Windows Search service			

Service	Description	Benefit when disabled	Downside if disabled
Prefetch[5]	Speed boost feature that preloads frequently used programs. Due to the high-speed access times of SSD's, this feature is redundant. Changed by Registry[3] key HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\SessionManager\Memory Management\PrefetchParameters EnablePrefetcher & EnableSuperfetch = 0 (disable fetching), 1 (enable for apps), 2 (enable for boot), 3 (enable for apps and boot)	Obsolete feature.	None.
Event Logging	EVERYTHING Windows does gets recorded. Programs also log events. Events range from errors ('you have a problem') to informative ('I just started') and can quickly number into the 1000's. Changed by the Windows Event Log service	Reduces drive access[1]. Frees up a small amount of disk space.	Ability to troubleshoot a problem. No logs of events are available. *(some people report system may become unstable)*
Timestamps[5]	Windows records the date and time a file was last accessed. Changed by Registry[3] key HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\FileSystem NtfsDisableLastAccessUpdate = 1 (disable timestamp), 0 (enable timestamp)	Reduces drive access[1].	Last Accessed date/time field not updated.
Boot Files Defragmentation[5]	To allow for faster boot times, Windows can put all boot files together on the drive. Due to the high-speed access times of SSD's, this feature is redundant. Changed by Registry[3] key HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Dfrg\BootOptimizeFunction Enable = Y (enable boot defrag), N (disable boot defrag)	Obsolete feature.	None.
8.3 file name creation	Windows creates these short names for files and folders to make them compatible with 16bit DOS programs. Modern programs use the longer names convention for files and folders. Changed by Registry[3] key HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\FileSystem NtfsDisable8dot3NameCreation = 0 (enable 8.3 names), 1 (disable 8.3 names)	Unrequired drive access. Not needed if running NTFS.	Only needed for older programs not supporting long file names.

[1] SSD memory chips have a finite number of read/write cycles. Reducing drive access increases the units' life expectancy.

[2] using Windows 7.

[3] Registry changes carry an element of risk and should be backed up prior to changing. User Beware !

[4] Windows 8 no longer 'defrags' a SSD but simply submits TRIM hints, so this feature can be, and is by default, left active.

[5] this feature is enabled by default on Windows 8.