5.9.5 Disk Optimization Facts

Optimizing your hard disk drive can improve your computer's overall performance. The following table lists some features you can upgrade to optimize your hard disk performance:

Features	Description
Upgrade the Hard Disk	Upgrade to the fastest hard disk possible. Hard disk drives come in a variety of different rotation speeds such as: ▪ 5400 RPM (not desired) ▪ 7200 RPM (minimum) ▪ 10,000 RPM ▪ 15,000 RPM
Upgrade the Disk Interface	Upgrading your disk interface will greatly improve the throughput of data to and from your hard disk drive. For optimal performance, consider upgrading to SATA3. This will upgrade your speed to 600 Mbps.

A mostly full drive can run slower than a mostly empty one. The following table contains various methods you can use to clean up a disk drive:

Utility	Description
Disk Cleanup	Disk Cleanup helps manage disks by locating and disposing of files that can be safely removed from the disk by: ▪ Emptying the Recycle Bin ▪ Deleting temporary files such as those used by a web browser or for application installation ▪ Deleting installation log files ▪ Deleting offline files ▪ Compressing old files You can type **Cleanmgr** at the command prompt to run Disk Cleanup.
Disk Defragmenter	Disk Defragmenter optimizes the performance of your hard drive by joining fragments of files that are in different locations on your hard drive into a single location. ▪ To improve defragmentation, disable programs that run in the background like screensavers and virus software. Any disk access while Disk Defragmenter is running (whether to read from or write to the disk) will slow down the defragmentation process. ▪ The more information that is on the drive, the more time it will take to defragment the drive. Run **Defrag** at a command prompt to run Disk Defragmenter in a text mode.
Check Disk	Check Disk is a utility that verifies the file system integrity of a hard disk. Errors that can be checked and fixed by Check Disk include: ▪ Lost clusters are a series of used clusters on the hard disk drive that are not associated with a specific file. ▪ A cross-linked file occurs when two files claim the same cluster. Check Disk will identify cross-linked files and correct their cluster associations. ▪ *Orphaned* files are files that exist on the hard drive but are not associated with a directory in the index. Normally Check Disk can re-associate the file with the correct directory. ▪ A *bad sector* is a portion of the hard disk that cannot be used. Bad sectors are marked so that they are no longer used. Any used bad sectors are redirected to another sector. The NTFS file system automatically detects bad sectors as the system operates saving and reading files. You can run Check Disk by typing **Chkdsk** at a command prompt. ▪ Use **Chkdsk** with the **/f** switch to automatically fix errors without scanning for bad sectors. ▪ Use the **/r** switch to scan and fix bad sectors and other errors. ▪ Use the **/?** command for help.

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