

The inclusion of antivirus software with the DOS 6 upgrade will undoubtedly raise user awareness of the need for protection against computer viruses. This will more than likely spur sales of more sophisticated programs, especially those that provide the features necessary for protecting an entire workplace. Whether you decide to stick with the software Microsoft has given you or upgrade to more feature-rich programs, you now have absolutely no excuse to leave your system unprotected.

Hard Disk Optimization

BY BOB FLANDERS

Microsoft provides two utilities with DOS 6 that extract the maximum performance from your disk drive: Defrag and SmartDrive. Defrag optimizes a disk's capacity by reorganizing the physical placement of the files and directories on the drive. SmartDrive speeds your computer's access to its DOS drives by retaining the most frequently accessed information from those drives in memory. Although Microsoft distributed SmartDrive with DOS 5, the company has added a new feature that provides even better performance.

DEFRAGGING ORGANIZES FILE SPACE

It is almost inevitable that with normal use files on a DOS drive will become fragmented. This occurs when the contents of a file are stored in noncontiguous areas of the drive. While this condition is not dangerous to your files, it requires more movement of the disk drive's read/write heads and slows down access to data.

DOS 6's Defrag reorders—or defragments—the files on a drive, ensuring that each file occupies a single, contiguous chunk of disk space. DOS can then access the defragmented files more quickly.

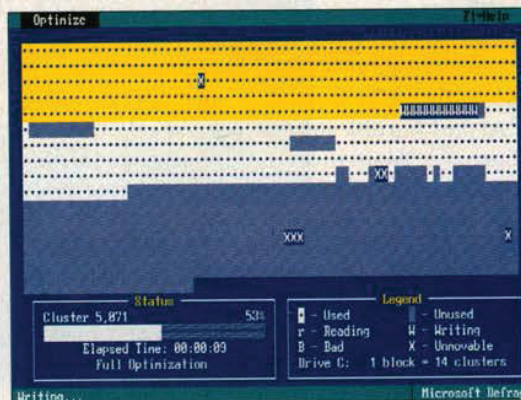
Defrag is a subset of the SpeedDisk utility found in The Norton Utilities from Symantec Corp. (800-825-2504), and its command line and user interface are very similar to SpeedDisk's. In fact, with the exception of a few command-line param-

eters, menu selections, and defragmentation strategies (such as file placement specification and the defragmentation of free disk space), Defrag fully measures up to SpeedDisk's reputation as a quality defragmentation utility.

Defrag also performs optimizations on drives compressed with DoubleSpace. Although it does not perform full defragmentation, Defrag is the only utility now available with this capability. The new SpeedDisk in Norton Utilities 7.0 also supports DoubleSpace.

Defrag supports two strategies: the simple unfragmenting of files, and total optimization. When unfragmenting files, Defrag performs the minimum amount of work needed to reorganize the files, usually leaving areas of free disk space scattered across the disk. With full optimization, Defrag rearranges all of the files and directories, compacting the used space into one area, and leaving a single, large free space on the hard disk. However, full optimization usually requires significantly more time to execute than just unfragmenting files.

Another option lets you sort directory entries on the hard disk in ascending or descending order by any combination of name, extension, size, or date and time. While DOS 5 can view directory entries in a sorted order (an option on the DIR command), this feature actually stores the directory entries in sorted order.



A subset of Norton's SpeedDisk, Defrag can defragment your hard disk, reordering scattered pieces of files to speed access to data.

SmartDrive can significantly reduce the amount of time needed to access information on a disk drive.

Compared to Defrag's two strategies, both Norton's SpeedDisk and Compress (in Central Point Software's PC-Tools', 800-825-2504) offer five strategies that give you greater control over performance and speed. Another option lets you decide which files to leave in place. But you can achieve virtually the same effect with Defrag by marking a file as "hidden."

Unless you are a power user seeking absolute control over disk space organization, Defrag may be the only defragmentation utility you will ever need.

DISK CACHING SPEEDS YOUR READ

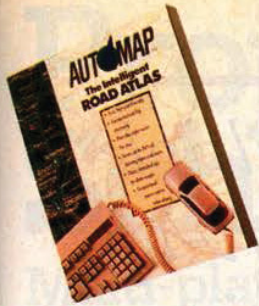
Regardless of how fast today's disk

drives are, they all can be considered slow when compared to the CPU. Relatively speaking, your computer sits there twiddling its thumbs while the disk drive takes interminable milliseconds retrieving a piece of data from the hard disk. However, SmartDrive can significantly speed access to information on a disk drive.

SmartDrive performs this magic by retaining the most frequently accessed portions of the disk in memory. When a program (or DOS) requests a read from the disk, and SmartDrive notes that the information is already in memory, it simply transfers the data from its buffer to the program's buffer.

Originally introduced with Windows, Microsoft also shipped SmartDrive with DOS 5. The major improvement in DOS 6's version of SmartDrive is a new feature called delayed write, or write caching. Write caching captures the results of disk writes, and physically writes them to disk a second or two later.

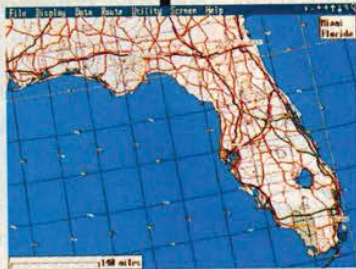
By delaying the write, SmartDrive can often collect several write requests and execute them as a single write to the disk, saving the time that is normally consumed by head movement. Of course, should the system crash after a pro-



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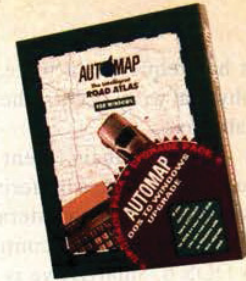
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gram has requested a write, but before the physical write occurs, the data is irretrievably lost.

A second enhancement to SmartDrive is called double buffering, a feature allows SmartDrive to interact properly with bus-mastering disk controllers.

In DOS 6, SmartDrive is no longer a device driver. Microsoft has reconfigured the utility as an executable file, allowing you to install SmartDrive from AUTO-EXEC.BAT or from the DOS command line. In addition, after you have started SmartDrive, you can now request a display of its status, flush the cache, and start or stop caching on individual drives with a simple command.

Just as it has done with the other utilities included in the DOS 6 package, Microsoft has limited SmartDrive's flexibility, while preserving its performance. For example, in an unusual move, Microsoft removed the option that allowed you to place SmartDrive's cache into expanded memory. Since you can use only extended memory for the cache buffer, you cannot run SmartDrive unless your system has extended memory.

NCache, a utility supplied with The

Norton Utilities, and PC-Cache, a utility that comes packaged with PC Tools, both accept a wide range of cache sizes, such as 247K or 1,142K. SmartDrive, however, only accepts cache sizes in 1MB increments, such as 1,024K or 2,048K. NCache also allows you to write-protect cached drives. This prevents programs from writing to selected drives via DOS or BIOS, although NCache cannot prevent programs from writing to disk if they access the hardware directly. Neither SmartDrive nor PC-Cache supports this option.

Finally, you can uninstall NCache and PC-Cache by using a command-line argument, freeing up the memory that the utilities themselves are using. SmartDrive offers no such option, but you can disable and reenable caching for one or more drives from the command line.

While its performance and memory utilization are on equal ground with those of other third-party caching utilities, SmartDrive supports relatively few configuration options. While this may be perfectly acceptable to the average user, hard-core power users may want to consider other products with which to fine tune their systems.

Multiple Start-up Options

BY BARRY SIMON

Have you ever added a new driver to your CONFIG.SYS file and then discovered that it was incompatible with an existing driver? Your system probably choked and you probably searched around for a boot disk. If this sounds familiar, you'll love DOS 6's Clean Boot feature: Hit F5 before CONFIG.SYS processing begins and both CONFIG.SYS and AUTO-EXEC.BAT are skipped. If you prefer, hit F8 and choose to either process or skip individual lines in CONFIG.SYS.

These are only a few of a host of new features in DOS 6 that give you flexibility in running your two basic configuration files. Among the new commands in CONFIG.SYS is one that turns NumLock on

■ IBM Readies New DOS

by Rick Ayre

It used to be that IBM, not Microsoft, sold DOS throughout the retail market. Sure, you got a copy of DOS with your computer, but if you wanted to upgrade, you bought IBM's DOS. And there were some great ones to buy. Remember classics like DOS 2.1 and DOS 3.3?

But when IBM stumbled with its release of DOS 4, a version many considered not quite ready for prime time, Microsoft sensed an opportunity. The success of Microsoft's DOS 5 upgrade kit is now legendary. So what has become of IBM's DOS?

IBM programmers are busy at work on their own DOS 6, targeted for release in the second quarter of this year. As of February, the feature set was not yet frozen, but you can expect IBM to compete in the same arena as Microsoft. Real-time disk-compression soft-

ware from a leading third-party developer will be integrated into the operating system kernel to help ensure safe operation, and IBM is enlisting leading third-party developers for an enhanced backup program and a memory-management program. Advanced antivirus software is being developed in-house.

Will it be a repackaged MS-DOS? Not likely. According to IBM, all of these enhancements will be based on core code different from the code base that was used to build Microsoft's DOS 6. Goals for improving the DOS kernel itself include a faster and smaller kernel (on the order of 1K), faster DOS screen I/O, faster printing through DOS, optimizations specific to 386 and 486 machines, and support for PCMCIA 2-compatible components such as credit card-size flash memory and modems.

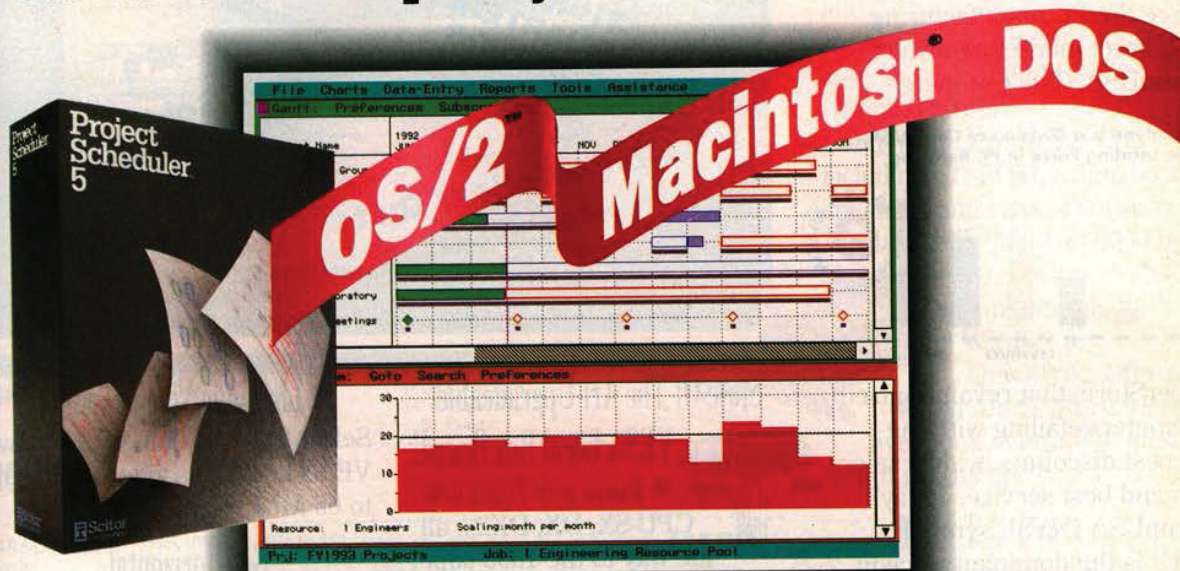
That and more will likely sit atop the new features IBM already shipped with Version 5.02, including a file transfer utility, International Standards Organization (ISO) standard screen fonts, utilities for dealing with ejectable/lockable media such as CD-ROMs, and Advanced Power Management (APM) for laptops.

Later this year, IBM plans to introduce Workplace DOS, which places OS/2's Workplace Shell on top of DOS so that DOS, OS/2, and UNIX users will be able to work from a common drag-and-drop environment.

Can IBM compete with Microsoft? It has every intention of doing so. And as long as IBM continues to take DOS development seriously—and its DOS 6 efforts certainly suggest it is doing just that—you'd be mistaken in thinking of Microsoft as the only DOS player in town. □

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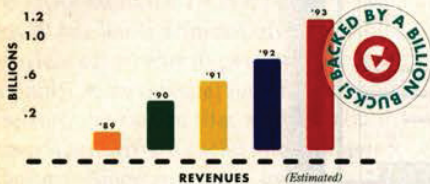
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