Using Disk Minder

Disk Minder lets you safely, easily, and quickly diagnose and repair existing or potential problems with the disk drives where you save your valuable application programs and data. Disk Minder verifies, and can correct automatically or interactively, problems with the partition tables, File Allocation Tables (FATs), boot sector, extended boot sector, compression structure, directory structures, file dates and times, filenames, and clusters. A *cluster*, the smallest measurement unit of disk storage space, is typically four or more sectors on a disk. Disk Minder also checks for non-ANSI and duplicate filenames, and can verify the integrity of the sectors on a disk by performing read/write tests of the entire recordable surface area of the disk.

Why should you use Disk Minder instead of ScanDisk, when ScanDisk comes with DOS and Windows?

- ScanDisk cannot correct the most serious errors, such as those with the hard drive's partition table or boot sectors.
- ScanDisk corrects the second most serious problems--cross-linked files, and size errors--improperly, never actually fixing the error.
- ScanDisk misses many minor problems that can interfere with Windows operations, such as duplicate files or non-ANSI files.
- Disk Minder can scan your disk in less than half the time it takes ScanDisk, making Disk Minder more convenient to use frequently.

When should you use Disk Minder? Immediately after a system crash or whenever you receive a message telling you a file cannot be accessed for any reason, you should use Disk Minder to verify the integrity of the disk containing that file. The earlier you fix a disk problem, the less chance there is of it causing a more serious problem down the road.

Tip When you use Disk Minder, always create an Undo file. Then if the repairs cause any unexpected or undesirable results, you can revert to the Undo file so the disk returns to its state before you ran Disk Minder.

You can use Disk Minder in three main ways:

- **Fix Errors Automatically Using Default Values**-If you are just getting started using your PC, if you are uncertain about what errors you might want to fix, or if you simply don't have extra time to oversee the disk repair, you can let Disk Minder fix any errors it finds for you. You can select either the Fix Errors Automatically Using Default Values option in the Disk Minder window, or the Auto Fix Errors option in the Disk Minder Properties sheet. Both options make Disk Minder automatically fix errors. During the repair, Disk Minder verifies data on the selected disks, and fixes any problems it finds without asking your advice. If you decide to use this option, you can start Disk Minder and leave it running while you're away from your PC, such as before you leave the office at night.
- **Report Errors Only**-If you are a more advanced PC user, you may want to see a report showing any errors on a disk before you decide what to do to resolve these errors. You can easily get a detailed report about the state of a disk using the Report Errors Only option in the Disk Minder Properties sheet. When you select this option and click Start, Disk Minder verifies the information on your disk, and produces a summary and detail report. It does not make any changes to the disk. You can print the detail report of the test results on your printer or save it as a text file. This gives you the facts you need to decide whether and how to fix disk problems.
- **Fix Errors Interactively**-If you deselect the Fix Errors Automatically Using Default Values check box in the Disk Minder window, Disk Minder runs an interactive disk repair process by displaying a message about any errors it finds. Disk Minder lets you decide whether to fix each error or not, and how to fix the error. Each message describes the error situation and offers a suggested solution (the default choices in the message).

Note McAfee Utilities provides a DOS, and Windows version of Disk Minder. If you suspect there is a problem with a disk's information, run Disk Minder in Windows. If the disk problems prevent you from starting Windows, or if your system has recently crashed, use Disk Minder in DOS first. Once you can run Windows again, use Disk Minder in Windows to complete any repairs.

No matter which disk repair method you use, you can specify Disk Minder properties to specify the kinds of data it checks, whether Disk Minder performs read/write tests to verify the integrity of the disk surface, and if so, how many times it repeats the read/write tests.

The procedures you can perform in Disk Minder are described in these help topics:

- Creating and Reverting to an Undo File
- Using Disk Minder to Auto Fix Errors
- Using Disk Minder to Report Errors Only
- Interactively Fixing Errors
- Customizing Disk Minder Properties
- Using Disk Minder in DOS
- Exiting Disk Minder

Customizing Disk Minder Properties

You can set Disk Minder properties that determine whether it will only report errors or fix them, whether it fixes errors automatically or interactively, and what kinds of information it will verify. You may also decide whether to test the drive's recordable surface media and how many repetitions of this surface scan you want Disk Minder to perform.

To customize Disk Minder properties:

1. Start Disk Minder by doing one of the following:
   - Click the Start button and choose the Program > McAfee Utilities > Disk Minder command.
   - Open the McAfee Utilities folder and double-click the Disk Minder icon from the Windows Explorer window.

   The Disk Minder window appears.

2. Click the Properties button.

   The Disk Minder Properties dialog box appears.

3. Select the options you want and click OK.

   The Disk Minder window reappears.

Using Disk Minder to Auto Fix Errors

Using Disk Minder for Windows to automatically fix errors is very easy. Until the process is complete, you can walk away from your PC because no further interaction from you is required.

To use Disk Minder to auto fix errors:

1. Start Disk Minder by doing one of the following:
    -   Click the Start button and choose the Program > McAfee Utilities > Disk Minder command.
    -   Open the McAfee Utilities folder and double-click the Disk Minder icon from the Windows Explorer window.

    The Disk Minder window appears.

2. Select the drives to repair and the Fix Errors Automatically Using Default Values check box.

    You can also click the Properties button to display the Disk Minder Properties dialog box where you can specify options about how Disk Minder behaves and what it scans the disk for.

3. Click the Start button.

    Disk Minder checks and repairs each of the selected drives, explaining what it is fixing along the way. You can let the repair proceed on its own.

Creating and Reverting to an Undo File

If Disk Minder finds a problem, it asks if you want to create an Undo file before making any changes to the disk.

To create an Undo file:

1. Start Disk Minder by doing one of the following:
    -   Click the Start button and choose the Program > McAfee Utilities > Disk Minder command.
    -   Open the McAfee Utilities folder and double-click the Disk Minder icon from the Windows Explorer window.

    The Disk Minder window appears.

2. Select the drives to repair, select or deselect the Fix Errors Automatically check box, and click Start.

    When Disk Minder finds an error, it asks if you want to create an Undo file before making any changes.

3. Click Yes and pick a destination for the Undo file.

To revert to an Undo file:

1. Click Undo in the Disk Minder window.

2. Select the drive with an Undo file you want to use. Then click OK.

Exiting Disk Minder

When you finish repairing your PC's drives, you can exit Disk Minder and return to the desktop.

To exit Disk Minder:

Click the Exit button in the Disk Minder window.

Using Disk Minder to Report Errors Only

Before interactively fixing errors, you can run Disk Minder with the Report Errors Only option selected to examine or print reports describing a disk's problems.

To use Disk Minder to report errors only:

1. Start Disk Minder by doing one of the following:
   - Click the Start button and choose the Program > McAfee Utilities > Disk Minder command.
   - Open the McAfee Utilities folder and double-click the Disk Minder icon from the Windows Explorer window.

   The Disk Minder window appears.

2. Click Properties, select the Report Errors Only check box and click OK.

3. Select the disks to check, whether to scan the disk surface, deselect the Fix Errors Automatically check box if necessary and click Start.

   Disk Minder checks the disk and displays the Disk Minder Summary Report dialog box.

   You can click the Detail button to view the Disk Minder Detail Report dialog box, where you can print or save the error report details.

Interactively Fixing Errors

Disk Minder defaults to informing you when it finds an error and letting you interactively decide whether or not you want to fix the problem.

To use Disk Minder to interactively fix errors:

1. Start Disk Minder by doing one of the following:
   - Click the Start button and choose the Program > McAfee Utilities > Disk Minder command.
   - Open the McAfee Utilities folder and double-click the Disk Minder icon from the Windows Explorer window.

   The Disk Minder window appears.

2. Select the disks to check, whether to scan the disk surface, deselect the Fix Errors Automatically check box and click Start.

   When Disk Minder finds a problem while checking a drive interactively, it displays a message that asks you what to do to resolve it. The suggested response is indicated by the default settings, including which button is the default (in the illustration, the Fix button is the default, which means that pressing **Enter**, is like clicking the Fix button).

Using Disk Minder in DOS

Disk Minder lets you repair disks even if you cannot start Windows. You can also use Disk Minder in DOS at any time if you want to verify or repair disks at the DOS level.

Tip   We recommend that you do not run Disk Minder in DOS using a Windows MS-DOS Prompt window. Instead, restart your computer in DOS mode if you are using Windows.

To use Disk Minder in DOS:

1.   After booting your PC, select Disk Minder for DOS from the Rescue Disk menu.

2.   Press the **Tab** key to change the drives that are currently selected to be scanned. Selected drives have an x beside them in the list.

3.   Press the **Up Arrow** and **Down Arrow** keys to highlight a drive and press **Enter** to select it.

4.   Press the **Right Arrow** key to move the cursor back to the buttons.

     You can select Disk Minder options if you like. For details, see Customizing Disk Minder Properties.

5.   Select Start and press **Enter** to start checking the drives.

     Disk Minder displays a screen showing the kind of data it is checking and the options in effect. If the Display Summary for Each Drive option is set, Disk Minder displays a summary message showing the total number of errors found on each drive, if any. It also shows information about the clusters on the drive.

Disk Minder Window

This window contains the following options:

- **Drives**

  The Drives list lets you select one or more drives on your PC that can read and write information to scan for a variety of error conditions. You can select what you want Disk Minder to look for in the <u>Disk Minder Properties dialog box</u>.

- **Check Entire Disk Surface for Read Errors**

  Select this check box to scan the recordable surface area of the drive to ensure it can accurately read and write information. This process may take a long time, so for example, you'll probably want to do this before leaving the office for the evening.

- **Fix Errors Automatically Using Default Values**

  Select this check box to have Disk Minder automatically fix any errors it finds on a drive. If you deselect this check box, Disk Minder fixes errors interactively.

  Note   If you select the Report Errors Only check box in the Disk Minder Properties sheet, Disk Minder only reports on the errors it finds and does not fix them automatically or interactively.

- **Undo**

  Click Undo to revert to an undo file you created when Disk Minder first discovered an error on the disk and asked if it should create an Undo file for you.

- **Start**

  Click Start to begin the disk repair or verification (report errors only) process that is currently selected.

- **Exit**

  Click Exit to exit Disk Minder and return to the desktop.

Disk Minder Properties Dialog Box

This dialog box contains the following options:

- **Report Errors Only**

  Causes Disk Minder to only report errors in the Summary and Detail reports.

- **Auto Fix Errors**

  Fixes any data or disk errors automatically. This is the same as selecting the Fix Errors Automatically Using Default Values check box in the Disk Minder window. If you deselect this check box, Disk Minder lets you fix errors interactively.

- **Check Partition Tables**

  Verifies partition tables, that define the partitions subdividing a physical drive into more than one logical drive. Partitions are created using FDISK or other programs, often before storing data on the disk. All drives have partition tables.

- **Check File Dates + Times**

  Verifies that dates and times associated with files are valid. In Windows, Disk Minder verifies the Created, Modified, and Accessed date and time stamps.

- **Check Host Drive First**

  Checks the physical drive where DriveSpace or DoubleSpace compressed volume files are stored. Then it checks the compressed volume files, or logical disks.

- **Check for Valid File Names**

  Verifies that filenames use acceptable characters. Valid characters for filenames are numbers 0-9, letters A-Z, and basic symbols excluding the backslash (\ ), greater than (>), less than (<), colon (:), double quotations ("), and bar or pipe (|). Disk Minder for Windows also checks long filenames as well as short filenames that follow the 8.3 filename convention.

- **Check for Non-ANSI File Names**

  Finds any non-ANSI filenames. All characters are uniquely numbered from 0 through 255. Two standards exist for numbering characters: ANSI and IBM ASCII. Windows uses ANSI, and characters that appear on both numbering systems are automatically translated by Windows to their ASCII equivalents for use in filenames, which must be stored in ASCII. Some ASCII characters do not have ANSI equivalents, in which case, Windows is unable to display or access the filename properly. Disk Minder can detect and fix this problem.

- **Check for Duplicate File Names**

  Checks for duplicate filenames--files with the same name in the same directory.

- **Test Drive Surface**

  Performs read/write tests of a disk's recordable surface media. This may take some time because the entire disk is read and then rewritten. If a sector is damaged, Disk Minder saves the data elsewhere so you can try to recover it later. Disk Minder maps out the bad sector so it won't be used in the future.

- **Surface Scan Repetitions**

  Becomes active if you select the Test Drive Surface check box. Enter a number between 1 and 10, for the number of times you want to perform a complete read/write test on the drive's surface. The more repetitions, the longer the process takes, but the more confirmation you have that the media can accurately store data. If you decide to run several repetitions, you may also want to use the Auto Fix Errors option and let Disk Minder perform the tests while you are away from your PC.

Disk Minder Summary Report Dialog Box

This dialog box contains the following options and information:

- **Summary Information**

    The Summary report tells you how many errors were found on the scanned drive. It also gives you complete information about the status of clusters (the smallest storage units of information on a PC drive) on the drive.

- **Detail**

    Click the Detail button to examine, save, or print a Detail report about your disk and any errors found and corrected. The Disk Minder Detail Report dialog box appears.

- **OK**

    Click OK when you are done examining the Summary reports for scanned or fixed drives.

- **<< / >>**

    Click the Forward (>>) or Backward (<<) buttons to move from the Summary report for one drive to another. These buttons are dimmed if you only scanned a single drive. If you selected multiple drives to scan, these buttons become active.

Disk Minder Detail Report Dialog Box

The Detail report tells you exactly what Disk Minder found when testing your drive. It contains the following options and information:

- **Detail Information**

  The Detail report describes the following kinds of information: the total number of errors found on the drive, if any; the cluster status information (bytes per cluster, available clusters, bad clusters, and the number of clusters in the total number of directories, hidden files, and user files); Partition Table errors; File Allocation Table errors; Boot Sector errors; Extended Boot Sector errors; compression structure errors; directory errors; and file errors.

- **Print**

  Click the Print button to print the Detail report.

- **Save**

  Click the Save button to save this report as a text file for later review.

- **OK**

  Click OK when you are done working with the Disk Minder Detail Report.

Address Space

The sum total of all possible memory addresses available at a given time. This is 4 GB (gigabytes) on a 386 or later PC in protected mode.

Benchmarks

A benchmark is a standardized task that tests various devices for measurements, such as speed.

BIOS

The BIOS (or Basic Input/Output System) contains buffers for sending information from an application to the hardware device, such as a printer, where the information should go.

Buffers

A buffer is a temporary storage location for information being sent or received.

Bytes

A byte is eight bits of information composed of zeros and ones, one of which may be a parity bit. Most character sets, such as ASCII, use one byte to represent each character (letter, number, or special symbol).

Cache

A cache is part of the computer's memory used to temporarily store recently accessed information. A cache is designed on the premise that recently used information may be needed again soon. Keeping information available in cache reduces the time it takes for an application to obtain the information again.

Cluster

A cluster is a unit of storage allocation usually consisting of four or more 512-byte sectors.

Conventional Memory

Conventional memory is the first 640 K (kilobytes) of RAM (random access memory).

CPU (Central Processing Unit)

The "brain" of your computer. This is main computer chip that controls all activity that takes place on a computer.

Diagnostics

Diagnostics are tests run to detect faults in a computer system. Diagnostics tests are run to detect faults before they become serious problems so the faults can be corrected.

Directories

Directories are locations within a volume on a drive where you can store files or subdirectories. In Windows, directories are equivalent to folders that appear on the desktop in a drive window.

Discardable Memory

Discardable memory is memory used by an application that it has marked as discardable. Windows can reallocate the discardable memory to a different application if it needs to.

DLLs (Dynamic Link Libraries)

A DLL is an executable code module that can be loaded on demand and linked at run time. DLLs can be shared among multiple applications and independently updated, transparent to the applications. DLLs can also be unloaded when they are no longer needed.

DMA (Direct Memory Access)

DMA is a fast method of moving information from a storage device or LAN interface card directly to RAM which speeds processing time. DMA is direct memory access by a peripheral device that by-passes the CPU to save time.

Expanded Memory

DOS running on the Intel 80286, 80386, or 80486 family of computers can only address one megabyte of memory at one time. Expanded memory is the memory located between the base memory (either 512 K or 640 K) and one megabyte. Expanded memory is reserved by DOS for housekeeping tasks, such as managing information that appears on the screen.

Extended Memory

Memory above one megabyte in 80286 and higher PCs. Extended memory can be used for RAM disks, disk caches, or Windows, but it requires the CPU to run in a special mode (protected mode or virtual real mode).

FAT (File Allocation Table)

The FAT is an index to the location where all the information is stored on a floppy disk or hard drive. The FAT is extremely important because the system uses it to store and retrieve files containing information.

GDT (General Description Table)

The GDT is a table that is basic to the operation of protected mode. This table contains data structures (descriptors) that describe various regions of memory and how they may be accessed. Windows uses the GDT for system devices. *See LDT.*

Global Heap

The Global Heap is the general pool of memory available to Windows applications.

GPF (General Protection Fault)

An error condition caused by an application when it attempts to perform an operation not allowed by the operating system. Windows uses GPFs to determine and control the state of the currently executing application. GPFs that are unexpected by Windows cause a system error message to appear.

HMA (High Memory Area)

The HMA is the first 64 K of extended memory. If you use DOS 5.0, you can save memory by loading DOS into the HMA. Do this by adding the DOS=HIGH setting to your CONFIG.SYS file and restarting your PC.

Interrupt

A temporary suspension of a process caused by an event outside that process. More specifically, an interrupt is a signal or call to a specific routine. Interrupts allow peripheral devices, such as printers or modems, to send a call to the CPU requesting attention.

I/O (Input/Output) Device

An I/O device is any piece of computer hardware that can exchange information with the CPU. Examples of I/O devices include network cards, printers, speakers or other sound devices, or devices connected to the serial or parallel ports of your PC such as external modems.

Kernel

The Kernel is the part of a computer operating system that performs basic functions such as switching between tasks.

LDT (Local Descriptor Table)

The LDT is a secondary data structure table that contains additional information about various regions of memory and how they can be accessed. Windows uses the LDT for programs.

Linear Memory

Linear memory is the currently defined address space of the system that Windows uses to allocate memory to Windows applications.

Local Heap

The Local Heap is a region of memory allocated for local use by an application.

Locked Memory

Locked memory is memory used by an application that cannot be relocated or discarded by Windows.

Mapping

Mapping is the process of assigning physical memory (RAM) to a particular linear address range.

Mode Switch

A mode switch is a transition made by the CPU when changing from one mode of operation to another. For example, switching from real or protected mode, or a transition between different levels of protection. *See Ring 0, 1, 2, 3.*

Modules

A module is a device driver loaded by Windows.

Paging

The process of saving information stored in RAM to the swap file on the system hard drive so Windows can make the RAM available at a different linear address.

Parallel Port

The parallel port is a connector on the back of your PC and on some peripheral devices. With the appropriate driver software installed and a parallel cable connected to the parallel ports on your PC and a peripheral device, the two can communicate with each other. Parallel transmissions have no EIA standard, but most equipment follows a quasi-standard called the Centronics Parallel Standard.

PCI (Peripheral Component Interconnect) Bus

The PCI Bus is a local motherboard specification (that provides connector slots on the motherboard for installing peripheral cards). The PCI Bus, designed by Intel, offers a high performance, peripheral component level interface to the CPU bus.

Physical Memory

Physical memory is the RAM (Random Access Memory) installed in your PC. *See Random Access Memory (RAM).*

Protected Mode

A mode of operation of 80286 or later CPUs which allows access to more than 1 MB of memory.

RAM (Random Access Memory)

RAM (Random Access Memory) is also called physical memory. It is installed in your PC on SIMMs (Single Inline Memory Modules) or DIMMs (Dual Inline Memory Modules). RAM is volatile, extremely high-speed storage used by your computer for processing information.

Real Mode

A mode of 80286 or later CPUs, where the CPU operates substantially like an older 8086 CPU and can address directly only 1 MB of memory.

Resources

Resources are objects that Windows and its applications can use, such as the buttons on the screen that you can click.

Ring 0, 1, 2, 3

Different levels of protection in protected mode, where programs having varying degrees of freedom of operation. Ring 0 (zero) is least protected and has direct access to all hardware in the system.

Sector

A sector is a pie-shaped portion of a hard disk. A disk is divided into tracks and sectors. Tracks are complete circuits and are divided into sectors. Under DOS, a sector is 512 bytes.

Serial Port

A serial port is an input/output port (connector) that allows the transmission of information out at one bit at a time, as opposed to parallel which transmits eight bits, or one byte at a time.

Swap File

The swap file is created by Windows on the system hard disk. It uses the swap file to copy information stored in part of the linear address space so it can reallocate the RAM used at that location to another linear address space.

Swapping

Swapping is the process of saving to disk or restoring from disk the contents of RAM so that the RAM can be used elsewhere in linear memory.

System Resources

System resources are a series of data structures kept by Windows. System resources are managed by the Windows User and GDI programs and maintain information about objects that appear on your screen.

32BDA (32-Bit Disk Access)

32BDA is a process in Windows where the device driver that accesses the disk runs entirely as a 32-bit program at Ring 0 (zero).

32BFA (32-Bit File Access)

32BFA is a process in Windows where the DOS file operations are controlled by a program, or set of devices, that operate entirely as 32-bit programs at Ring 0 (zero).

Unlocked Memory

Unlocked memory is physical memory that Windows can copy to the swap file on disk, and whose linear address can be changed whenever Windows chooses.

UMB (Upper Memory Block)

The UMB is the area in memory between 640 K and 1 MB that have RAM mapped into them by memory managers, such as Network Associates' Netroom or MemMaker. *See Expanded memory.*

V86 Mode (Virtual 8086 Mode)

V86 mode is a mode of operation of 80386 or later CPUs where programs, originally designed to run in real mode, can run as sub-programs to a protected mode control program or operating system.

Video Memory

Video memory, called VRAM, is physical memory installed on your PC's video card that is used for displaying information on the screen.

Virtual Memory

Virtual memory is the amount of memory that exists either as physical memory (RAM) or on the hard drive (in the swap file).
When a part of memory that is located in the swap file is accessed by an application, Windows reads the information into RAM.

VMs (Virtual Machines)

Virtual machines (also called Virtual DOS machines or VDMs) are created in Windows when you open a MS-DOS Prompt window. The VDM is a software emulation of a separate computer, offering all the services that the DOS application expects of a PC.

VxDs (Virtual Device Drivers)

VxDs are used in Windows to communicate with all physical hardware in the system. This prevents any application from having direct access to a piece of hardware. Instead, it communicates only through the VxD for that hardware.

Windows Registry

The Windows Registry file contains user, application, and computer-specific configuration information in a central location that was kept in various .INI files in Windows 3.1. The Registry contains settings that determine how your computer runs.