



Instalação de discos rígidos

You Will Learn...

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- How to install a hard drive
- How to use diagnostic software
- How to recover lost data on hard drives
- How to apply hard drive troubleshooting skills

Instalação de disco rígidos

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- Instalação de discos IDE e SCSI
 - Instalar o hardware e configurar os jumpers da drive
 - Configurar a drive no CMOS
 - Criar uma ou mais partições na drive
 - Formatação de alto nível das partições
 - Instalar o SO

Physical Installation of IDE or SCSI Hard Drives

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■ IDE

- Drive
- 40-pin data cable
- Possibly a kit to make drive fit in larger bay

■ SCSI

- Drive
- Cable compatible with host adapter
- Possibly
 - ◆ External terminator
 - ◆ Host adapter
 - ◆ Kit to make drive fit the bay

Installing an IDE Hard Drive

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- IDE hard drives support up to four IDE devices on the same system
- Four possible setups for each device
 - Primary IDE channel, master device
 - Primary IDE channel, slave device
 - Secondary IDE channel, master device
 - Secondary IDE channel, slave device
- Place fastest devices on primary channel and slower devices on secondary channel

Installing an IDE Hard Drive

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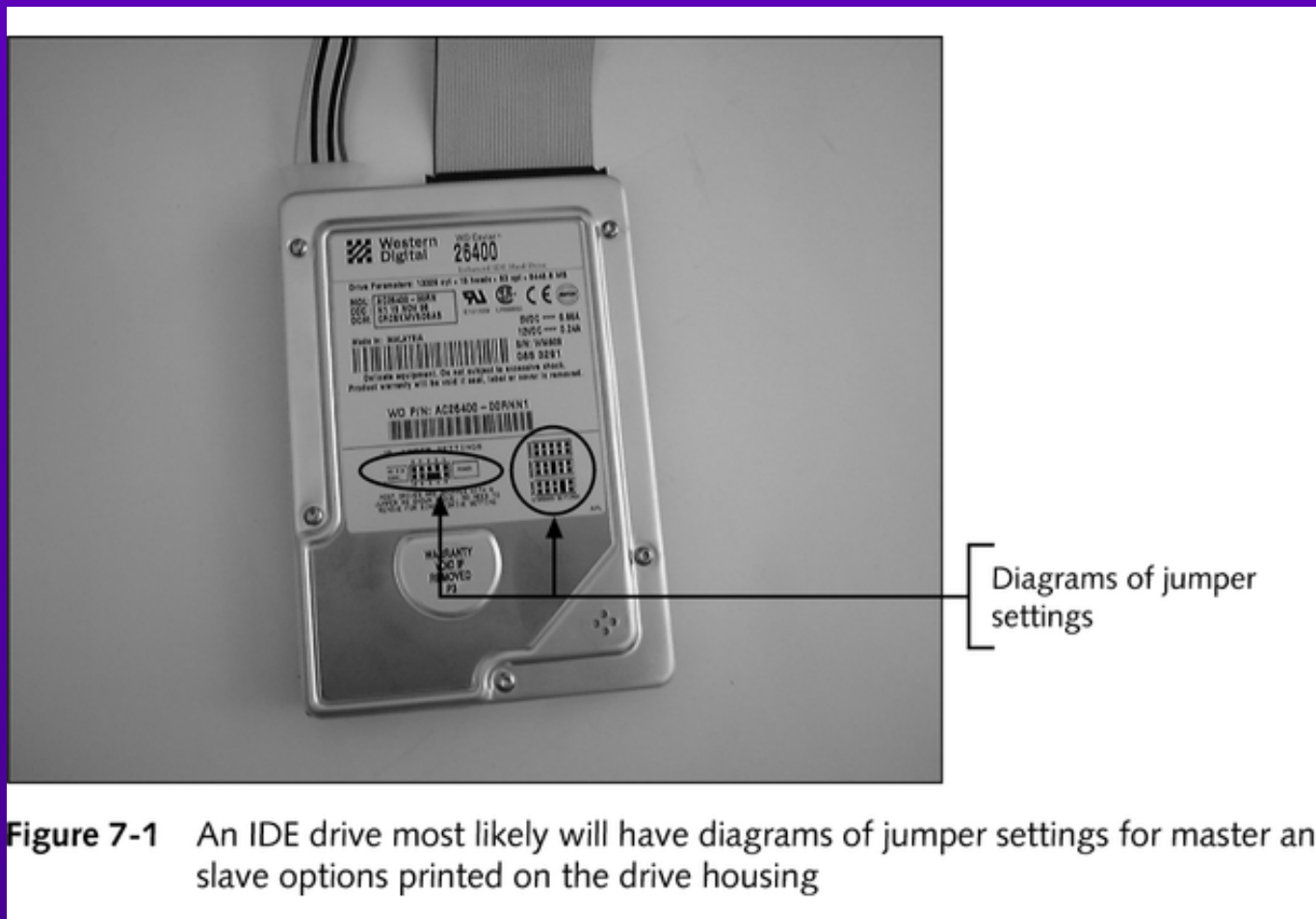
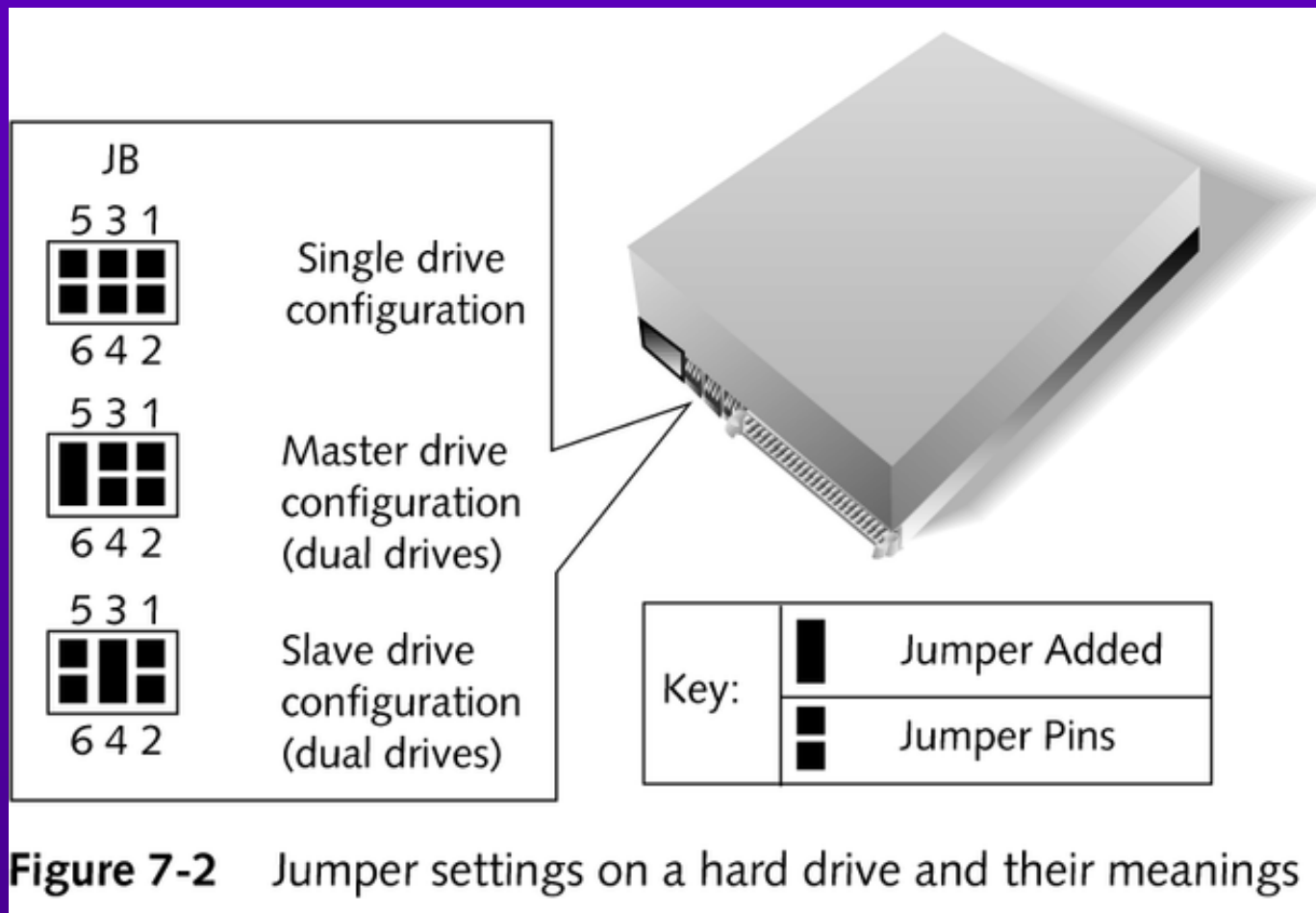


Figure 7-1 An IDE drive most likely will have diagrams of jumper settings for master and slave options printed on the drive housing

Installing an IDE Hard Drive

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Installing an IDE Hard Drive

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Table 7-1 Jumper settings on an IDE hard drive

| Configuration | Description |
|----------------------------|---|
| Single drive configuration | This is the only hard drive on this IDE channel. |
| Master drive configuration | This is the first of two drives; it most likely is the boot device. |
| Slave drive configuration | This is the second drive for the system. |

Installing an IDE Hard Drive

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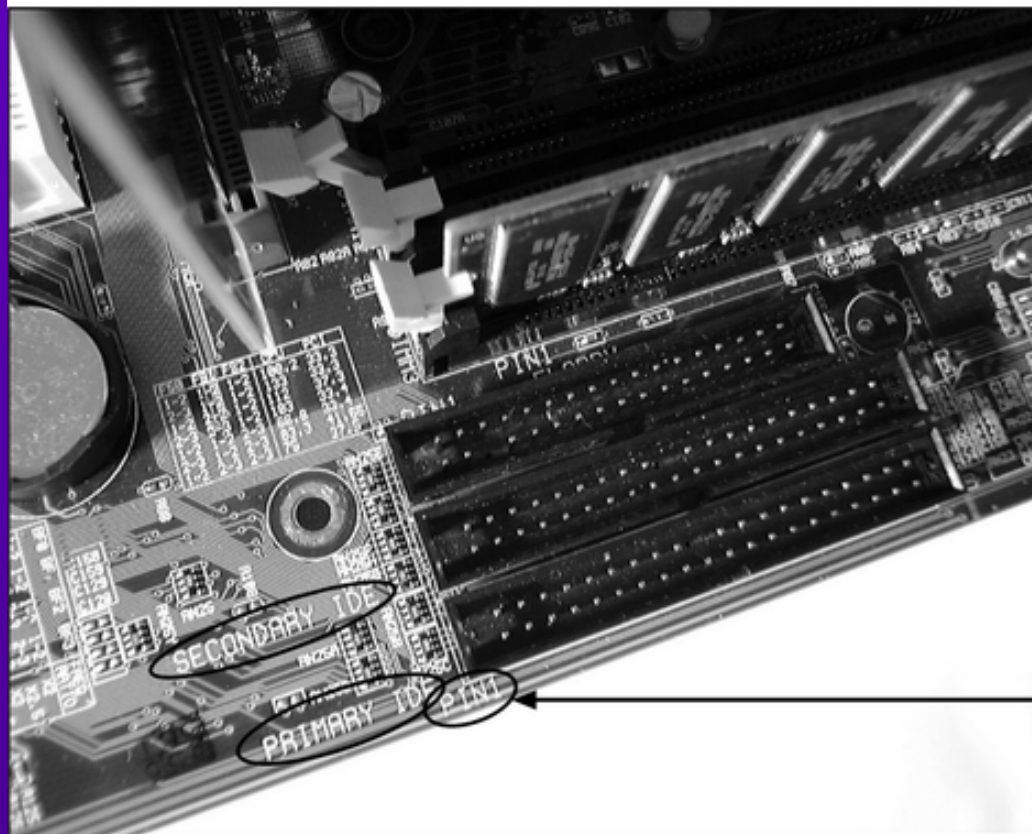


Figure 7-3 Two IDE connections on a system board, primary and secondary

Installing an IDE Hard Drive

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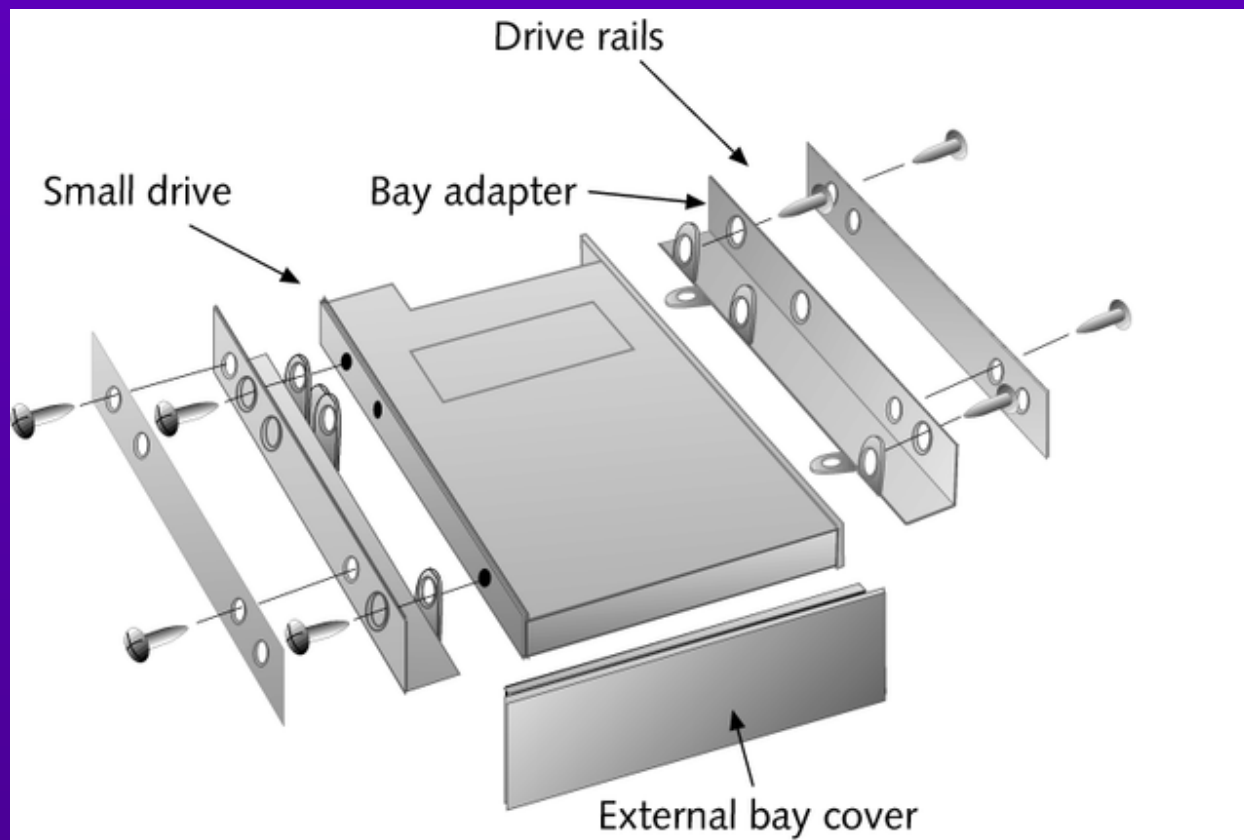


Figure 7-4 Use a universal bay kit to make the drive fit the bay

Installing an IDE Hard Drive

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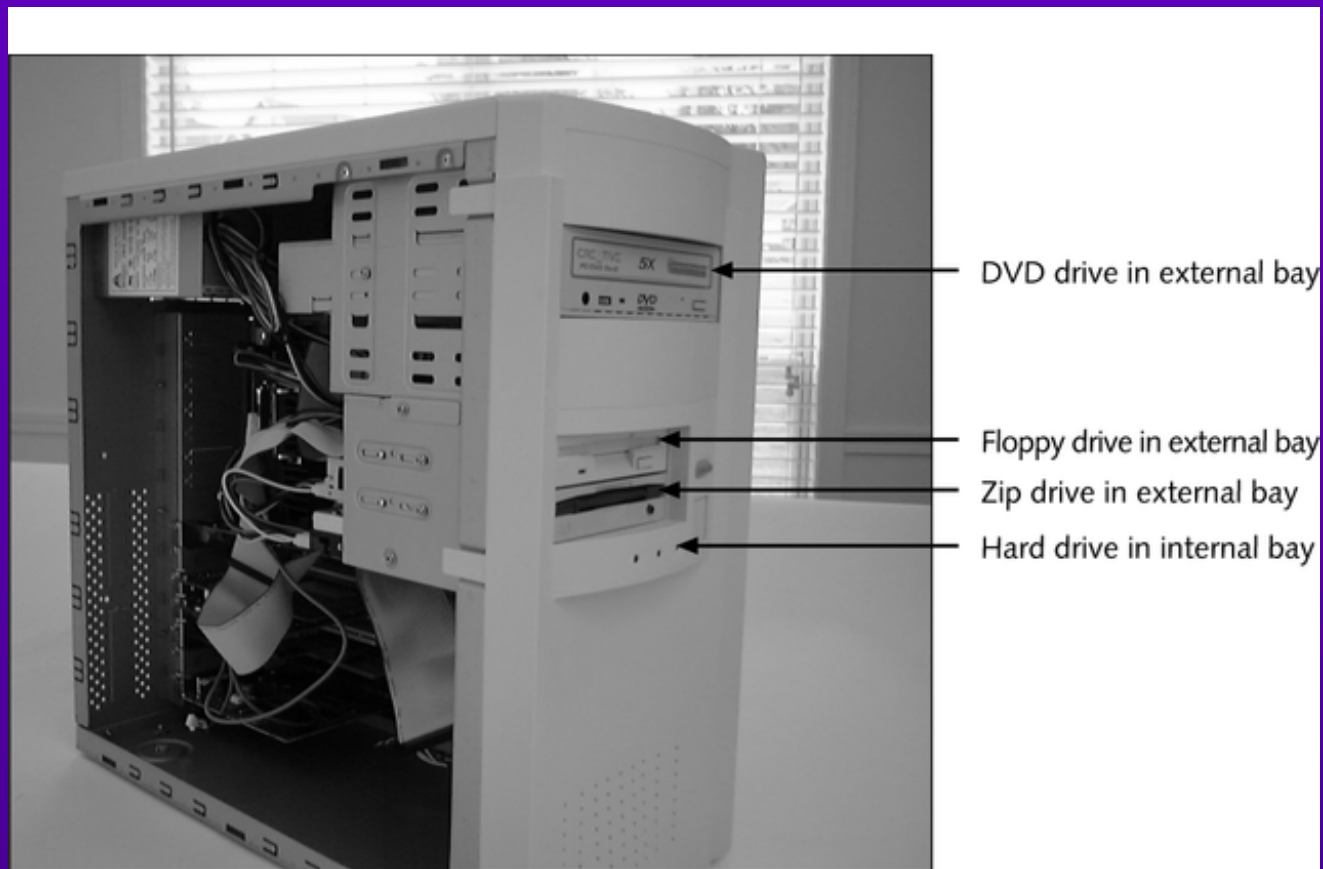


Figure 7-5 A tower case may have internal or external bays

Installing an IDE Hard Drive

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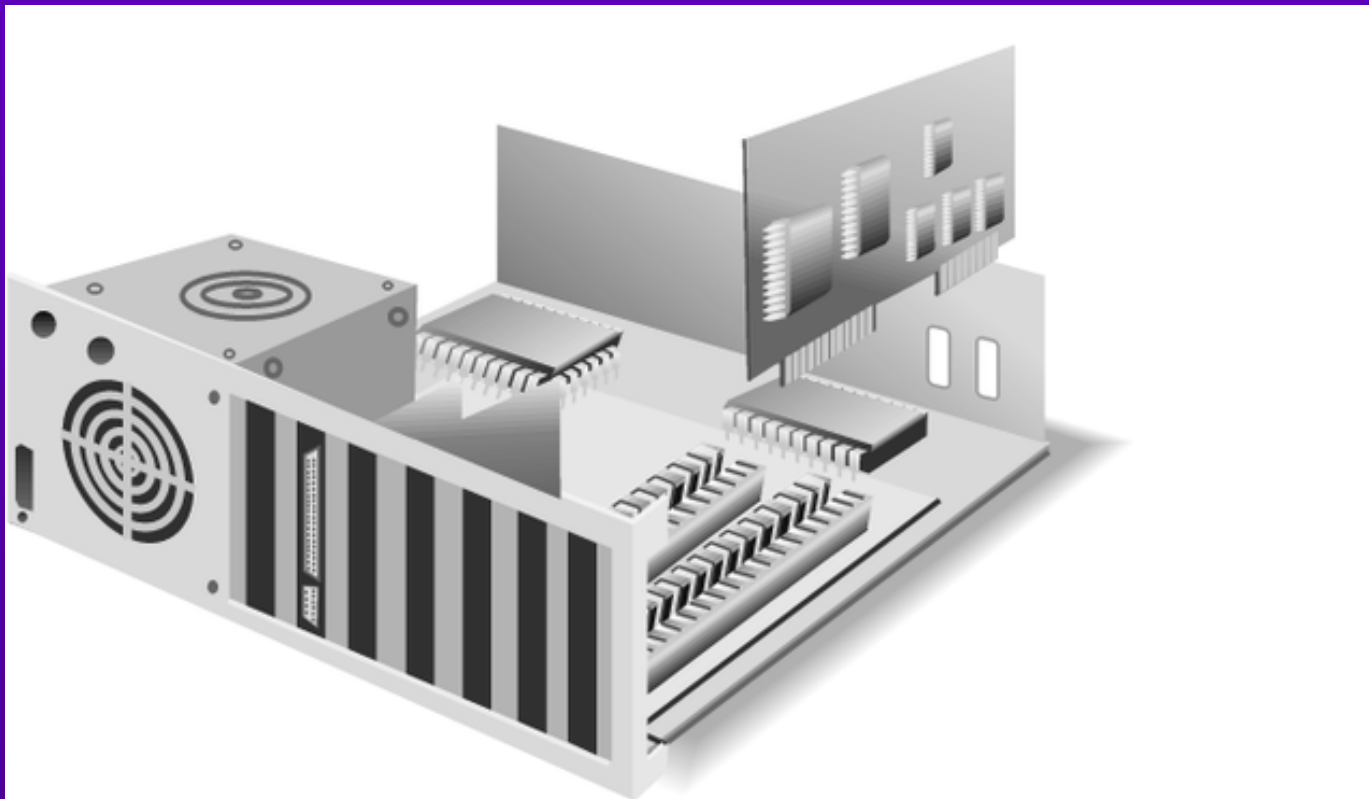


Figure 7-6 Place the adapter card in an expansion slot

Informing Setup of the New Hard Drive

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■ Figure 7-7 CMOS setup screens

a) CMOS setup utility opening menu

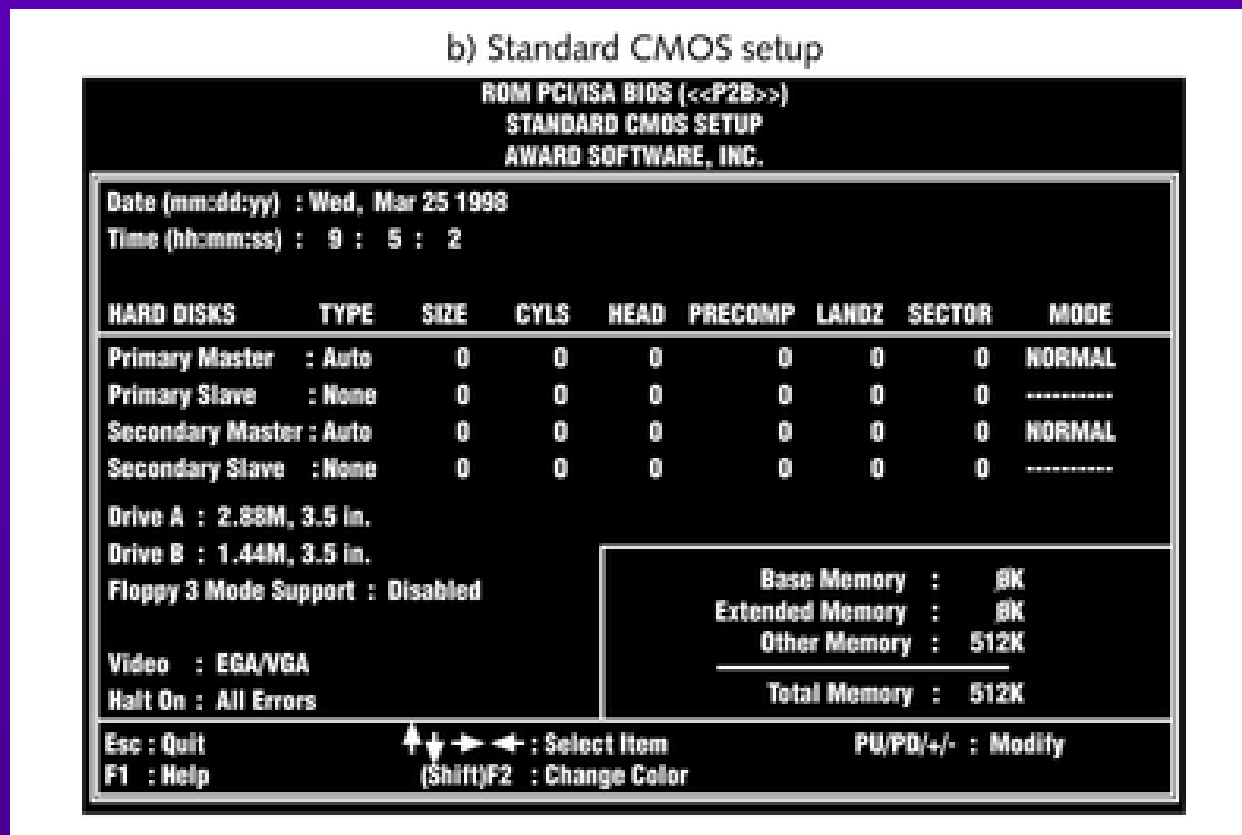
| ROM PCI/ISA BIOS (<<P2B>>) CMOS SETUP UTILITY AWARD SOFTWARE, INC. | |
|---|--|
| STANDARD CMOS SETUP BIOS FEATURES SETUP CHIPSET FEATURES SETUP POWER MANAGEMENT SETUP PNP, AND PCI SETUP LOAD BIOS DEFAULTS LOAD SETUP DEFAULTS | SUPERVISOR PASSWORD USER PASSWORD IDE HDD AUTO DETECTION SAVE & EXIT SETUP EXIT WITHOUT SAVING |
| Esc : Quit F10 : Save & Exit Setup | ↑ ↓ → ← : Select Item (Shift)F2 : Change Color |
| | |

continued

Informing Setup of the New Hard Drive

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- Figure 7-7 CMOS setup screens



continued

Informing Setup of the New Hard Drive

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■ Figure 7-7 CMOS setup screens

c) CMOS setup for chipset features

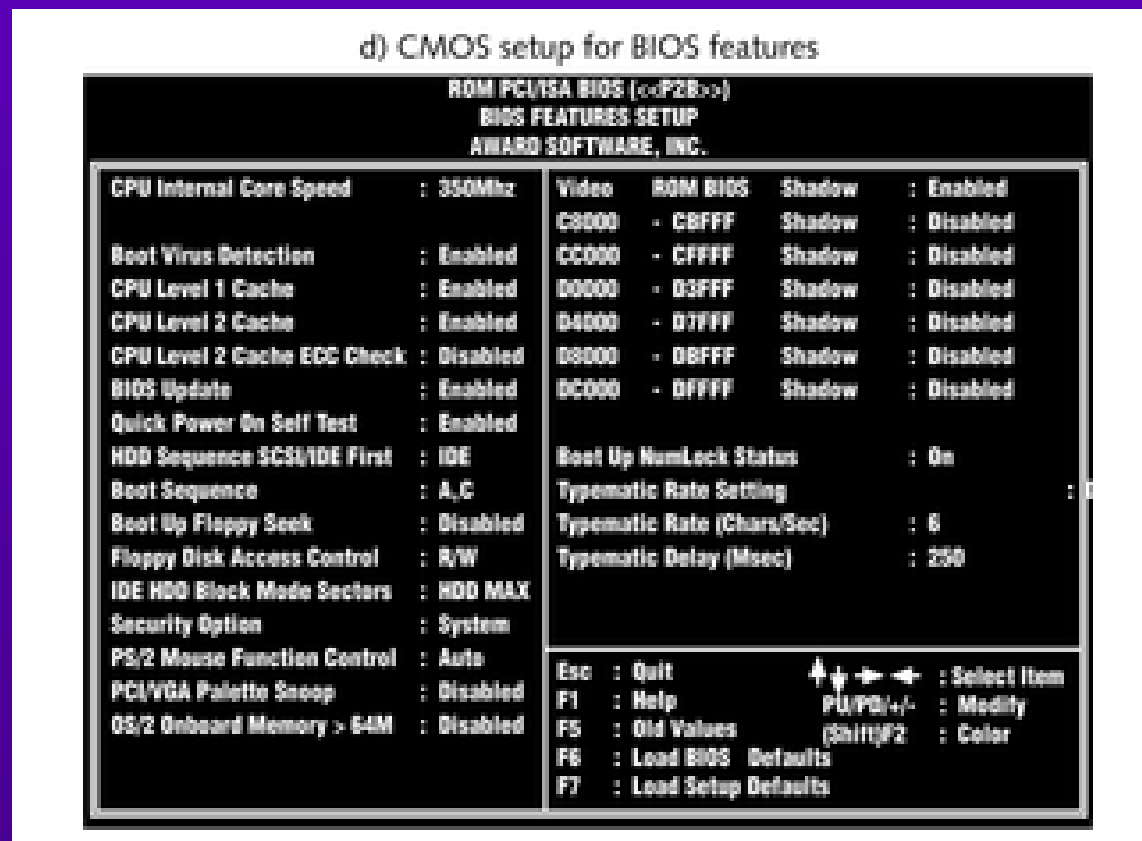
| ROM PCI/ISA BIOS (<<P2B>>) | | | |
|---------------------------------|------------|--------------------------|--------------------|
| CHIPSET FEATURES: | | | |
| AWARD SOFTWARE, INC. | | | |
| SDRAM Configuration | : By SPD | Onboard FDC Controller | : Enabled |
| SDRAM CAS Latency | : 2T | Onboard FDC Swap A & B | : No Swap |
| SDRAM RAS to CAS Delay | : 3T | Onboard Serial Port 1 | : 3F8H/IRQ4 |
| SDRAM RAS Precharge Time | : 3T | Onboard Serial Port 2 | : 2F8H/IRQ3 |
| DRAM Idle Timer | : 15T | Onboard Parallel Port | : 378H/IRQ7 |
| SDRAM MA Wait State | : Normal | Parallel Port Mode | : ECP+EPP |
| Snoop Ahead | : Enabled | ECP DMA Select | : 3 |
| Host Bus Fast Data Ready | : Enabled | VART2 Use Infrared | : Disabled |
| 16-bit I/O Recovery Time | : 1BUSCLK | Onboard PCI IDE Enable | : Both |
| 8-bit I/O Recovery Time | : 1BUSCLK | IDE Ultra DMA Mode | : Auto |
| Graphics Aperture Size | : 64MB | IDE0 Master PIO/DMA Mode | : Auto |
| Video Memory Cache Mode | : UC | IDE0 Slave PIO/DMA Mode | : Auto |
| PCI 2.1 Support | : Enabled | IDE1 Master PIO/DMA Mode | : Auto |
| Memory Hole At 15M-16M | : Disabled | IDE1 Slave PIO/DMA Mode | : Auto |
| DRAM are 64 (Not 72), bits wide | | | |
| Data Integrity Mode | : Non-ECC | | |
| | | Esc : Quit | ↑↓→← : Select Item |
| | | F1 : Help | PU/PD/+/- : Modify |
| | | F5 : Old Values | (Shift)F2 : Color |
| | | F6 : Load BIOS Defaults | |
| | | F7 : Load Setup Defaults | |

continued

Informing Setup of the New Hard Drive

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- Figure 7-7 CMOS setup screens



Informing Setup of the New Hard Drive

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- Setup for hard drives less than 528 MB
- Setup for large-capacity hard drives
- When BIOS does not support large-capacity hard drives

Partitioning the Hard Drive

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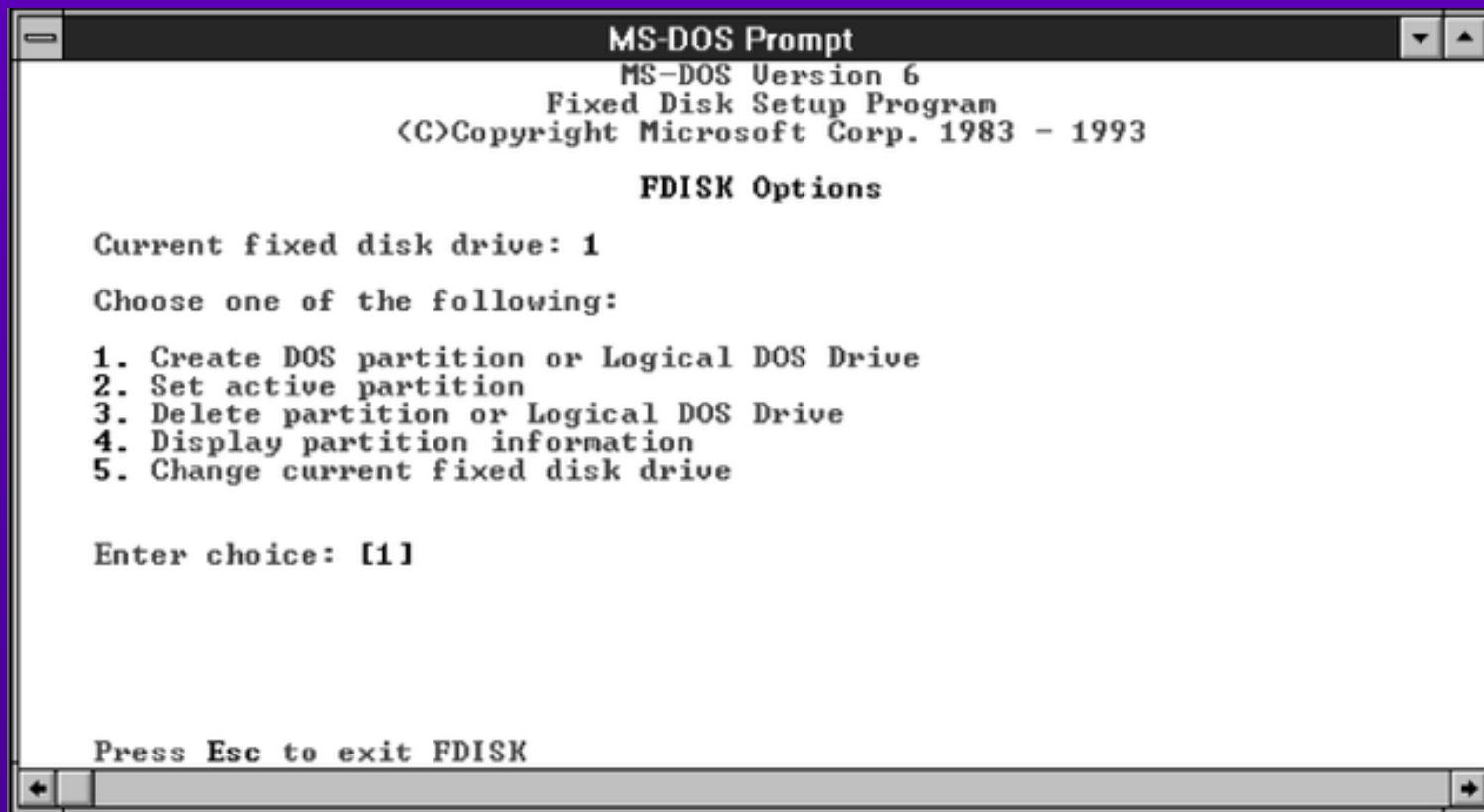


Figure 7-8 Fixed disk setup program (FDISK) menu

Partitioning the Hard Drive

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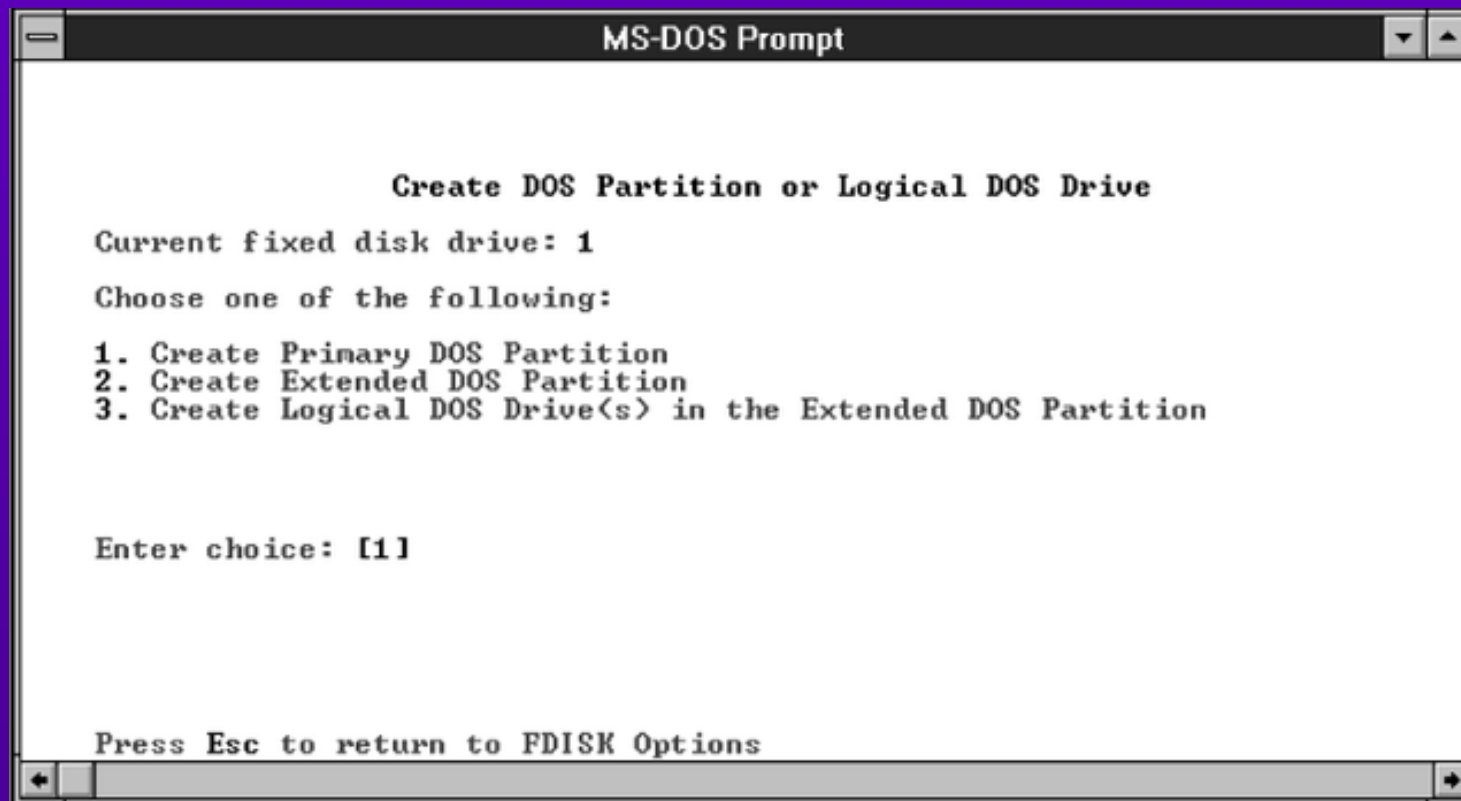


Figure 7-9 FDISK menu to create partitions and logical drives

Partitioning the Hard Drive

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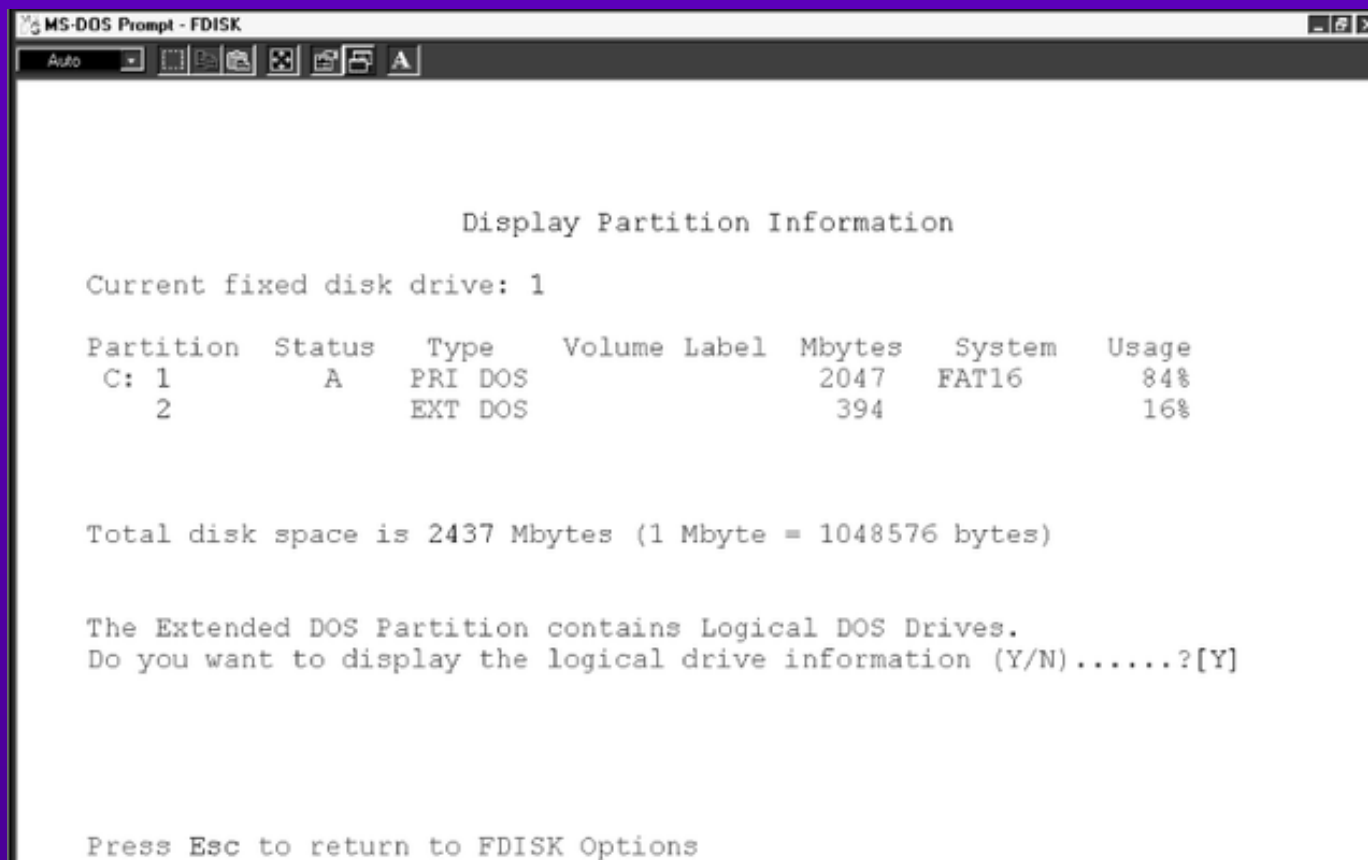


Figure 7-10 FDISK displays partition information

Partitioning the Hard Drive

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Table 7-2 Size of logical drives compared to cluster size for FAT16 and FAT32

| | Size of Logical Drive | Size of Cluster |
|-------|-----------------------|------------------------|
| FAT16 | Up to 128 MB | 4 sectors per cluster |
| | 128 to 256 MB | 8 sectors per cluster |
| | 256 to 512 MB | 16 sectors per cluster |
| | 512 MB to 1 GB | 32 sectors per cluster |
| | 1 GB to 2 GB | 64 sectors per cluster |
| FAT32 | 512 MB to 8 GB | 8 sectors per cluster |
| | 8 GB to 16 GB | 16 sectors per cluster |
| | 16 GB to 32 GB | 32 sectors per cluster |
| NTFS | Up to 512 MB | 1 sector per cluster |
| | 512 MB to 1 GB | 2 sectors per cluster |
| | More than 1 GB | 4 sectors per cluster |

OS or High-level Format

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- Performed by means of the DOS or Windows 9x Format program
- Example: `FORMAT C:/S` creates the boot record, FAT, and root directory on drive C and makes the drive bootable

Installing Software

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- Install Windows 3.x or Windows 9x
- Load the applications software
- Make a complete backup of the entire drive
- Create a rescue disk to recover from a corrupted partition table

When Things Go Wrong

7

- Information to have ready before calling technical support
 - Drive model and description
 - Manufacturer and model of computer
 - Exact wording of error message
 - Description of the problem
 - Hardware and software configuration of the system

Installing a SCSI Hard Drive

7

- Configure SCSI host adapter and SCSI hard drive so they can communicate
 - Set SCSI IDs
 - Disable or enable disk drive and hard drive controllers
 - Terminating resistors
 - CMOS setup for a SCSI system
 - SCSI device drivers

Multiple Operating Systems

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- Dual booting = having more than one operating system on a hard drive

Table 7-3 DOS and Windows 9x files that are renamed by Windows 9x

| Name When Windows 9x Is Active | Name When DOS Is Active | This File Belongs to |
|--------------------------------|-------------------------|----------------------|
| Autoexec.bat | Autoexec.w40 | Windows 9x |
| AUTOEXEC.DOS | AUTOEXEC.BAT | DOS |
| Command.com | Command.w40 | Windows 9x |
| COMMAND.DOS | COMMAND.COM | DOS |
| Config.sys | Config.w40 | Windows 9x |
| CONFIG.DOS | CONFIG.SYS | DOS |
| IO.sys | Winboot.sys | Windows 9x |
| IO.DOS | IO.SYS | DOS |
| Msdos.sys | Msdos.w40 | Windows 9x |
| MSDOS.DOS | MSDOS.SYS | DOS |

Troubleshooting Hard Drives and Data Recovery

7

- An ounce of prevention
 - Make backups and keep them current
 - Defragment files and scan the hard drive occasionally
 - Don't smoke around the hard drive
 - Don't leave PC turned off for weeks/months
 - High humidity can be dangerous for hard drives
 - Be gentle with a hard drive

Utility Software

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- Nuts & Bolts
- Norton Utilities
- Partition Magic

Nuts & Bolts

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- Consists of four suites
 - Repair and Recover
 - Clean and Optimize
 - Prevent and Protect
 - Secure and Manage

Nuts & Bolts Main Menu

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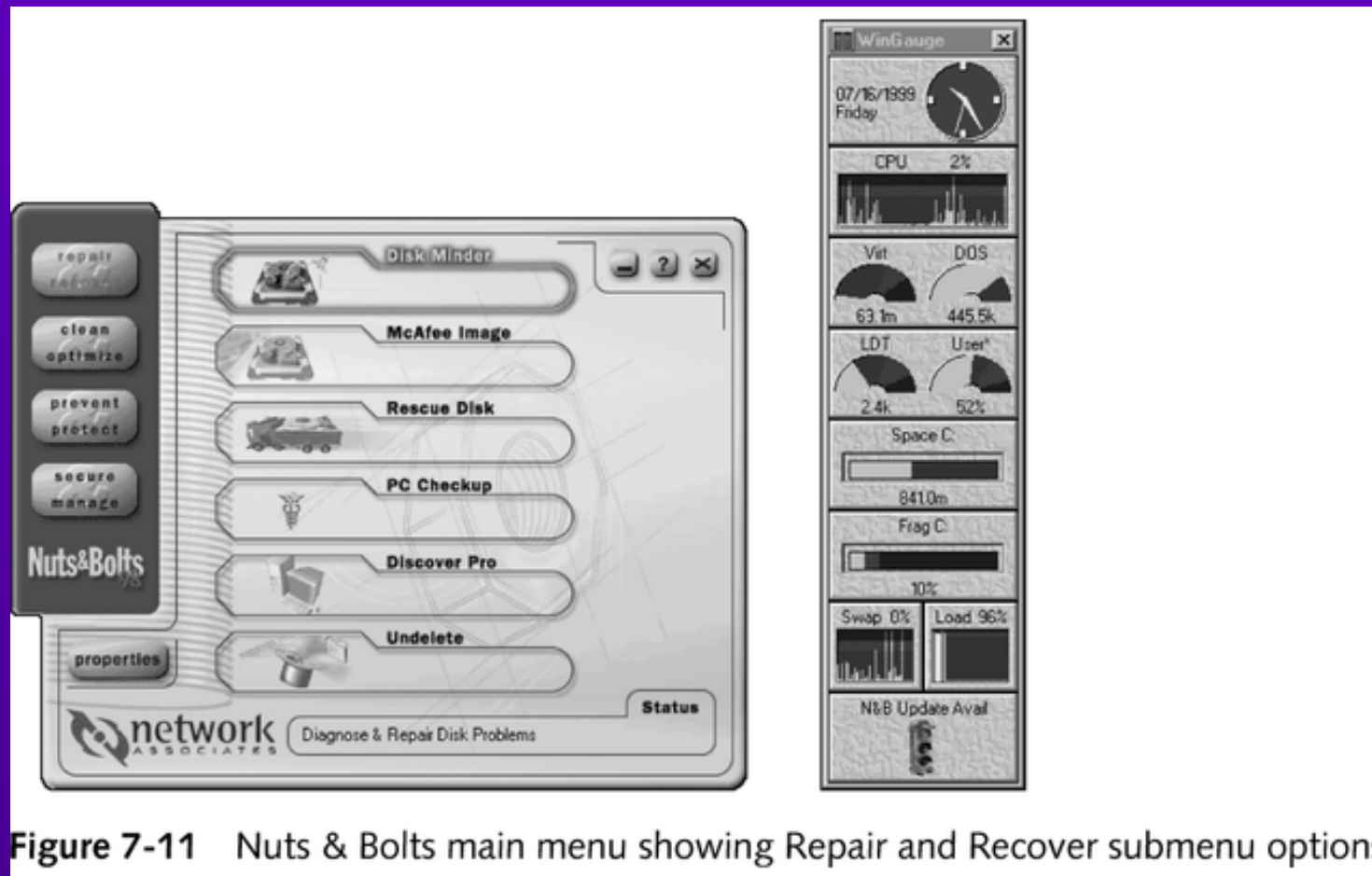


Figure 7-11 Nuts & Bolts main menu showing Repair and Recover submenu options

Four Nuts & Bolts Utilities

7

■ Disk Minder

- Diagnoses and repairs hard drive problems (partition table, boot record, PAT, files, directories)

■ Image

- Creates an image of critical disk information

■ Rescue Disk

- Creates a disk from which you can boot and begin recovery process if needed

■ Disk Tune

- Defragments hard drives, consolidates free space, reorganizes files on the drive

Nuts & Bolts Disk Minder

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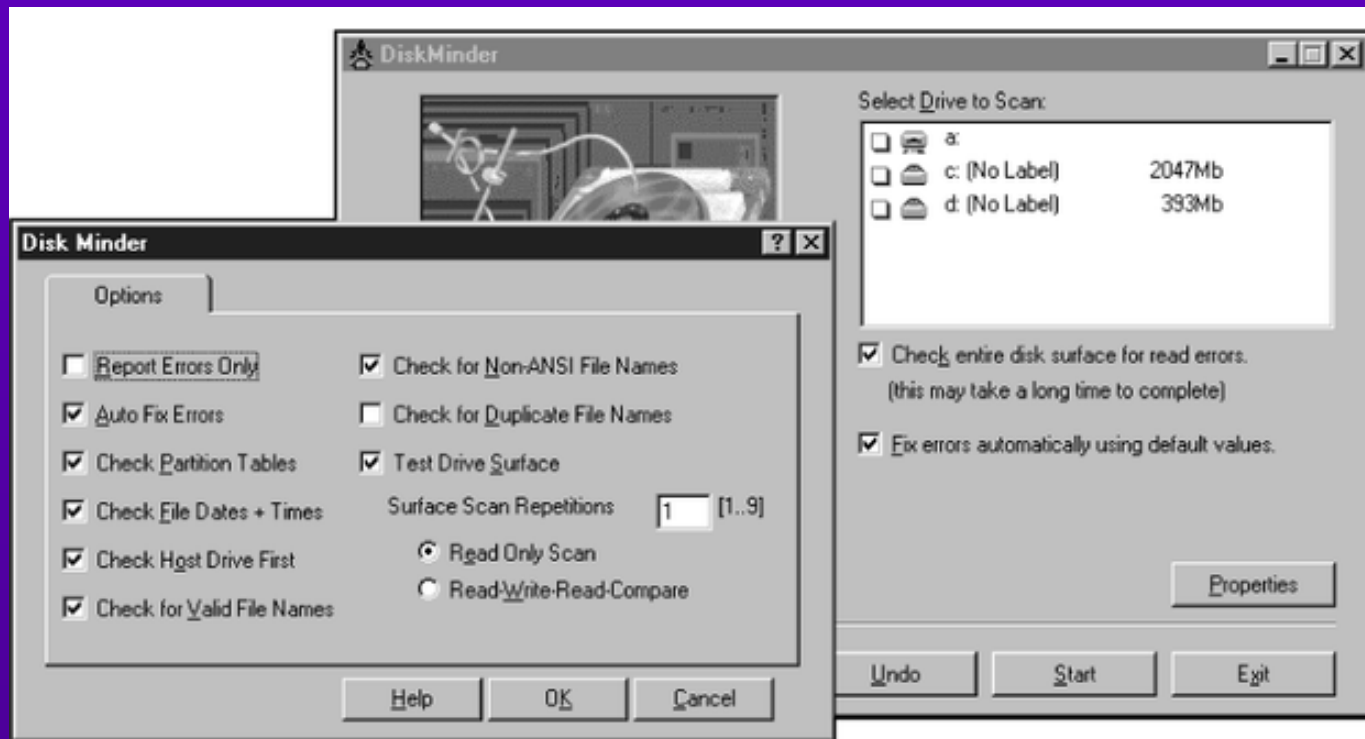


Figure 7-12 Nuts & Bolts Disk Minder scans drive for errors and can automatically repair them

Nuts & Bolts Image

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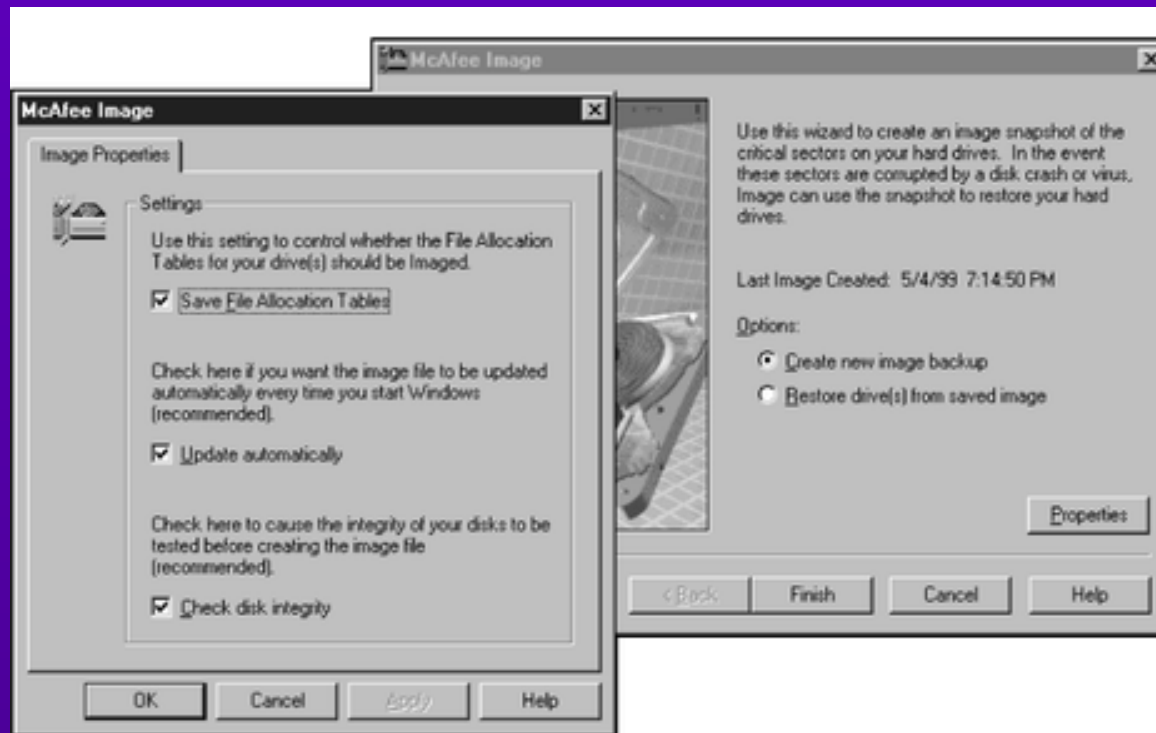


Figure 7-13 The Image Properties dialog box shows how to have Nuts & Bolts take a snapshot of critical areas of the hard drive each time Windows is loaded

Nuts & Bolts Image

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Figure 7-14 Nuts & Bolts Image creates the snapshot files in the root directory of the hard drive

Nuts & Bolts Image

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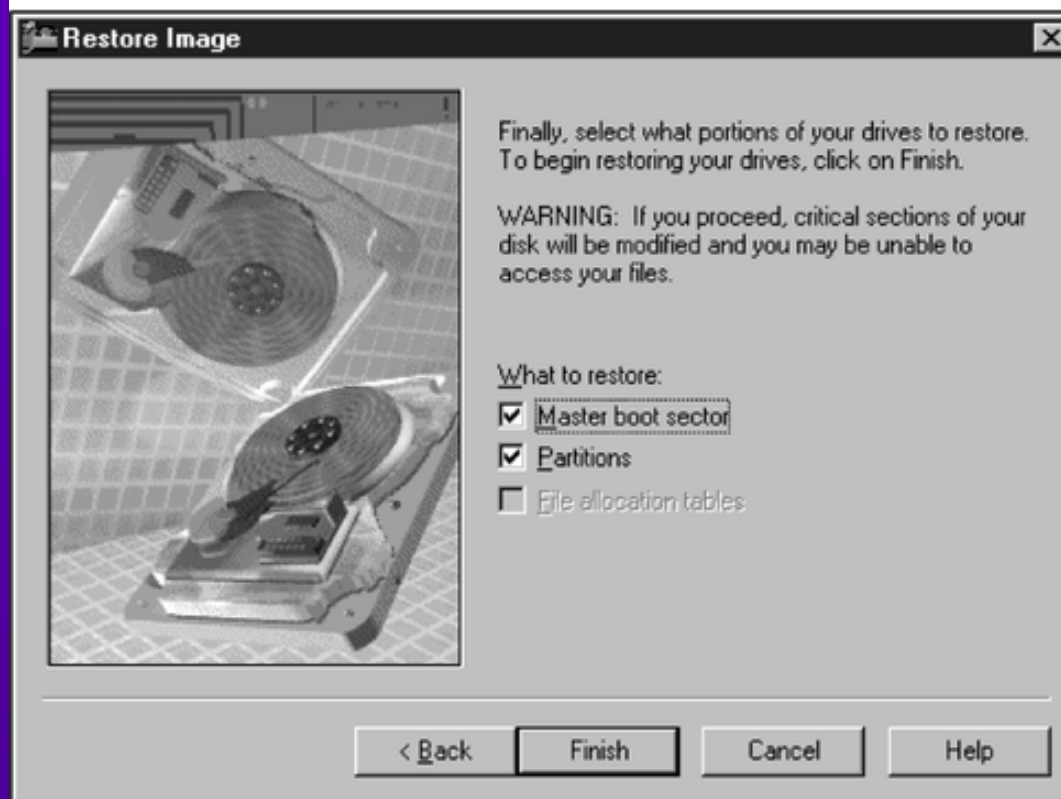


Figure 7-15 What Nuts & Bolts Image can restore on a damaged hard drive

Nuts & Bolts Rescue Disk

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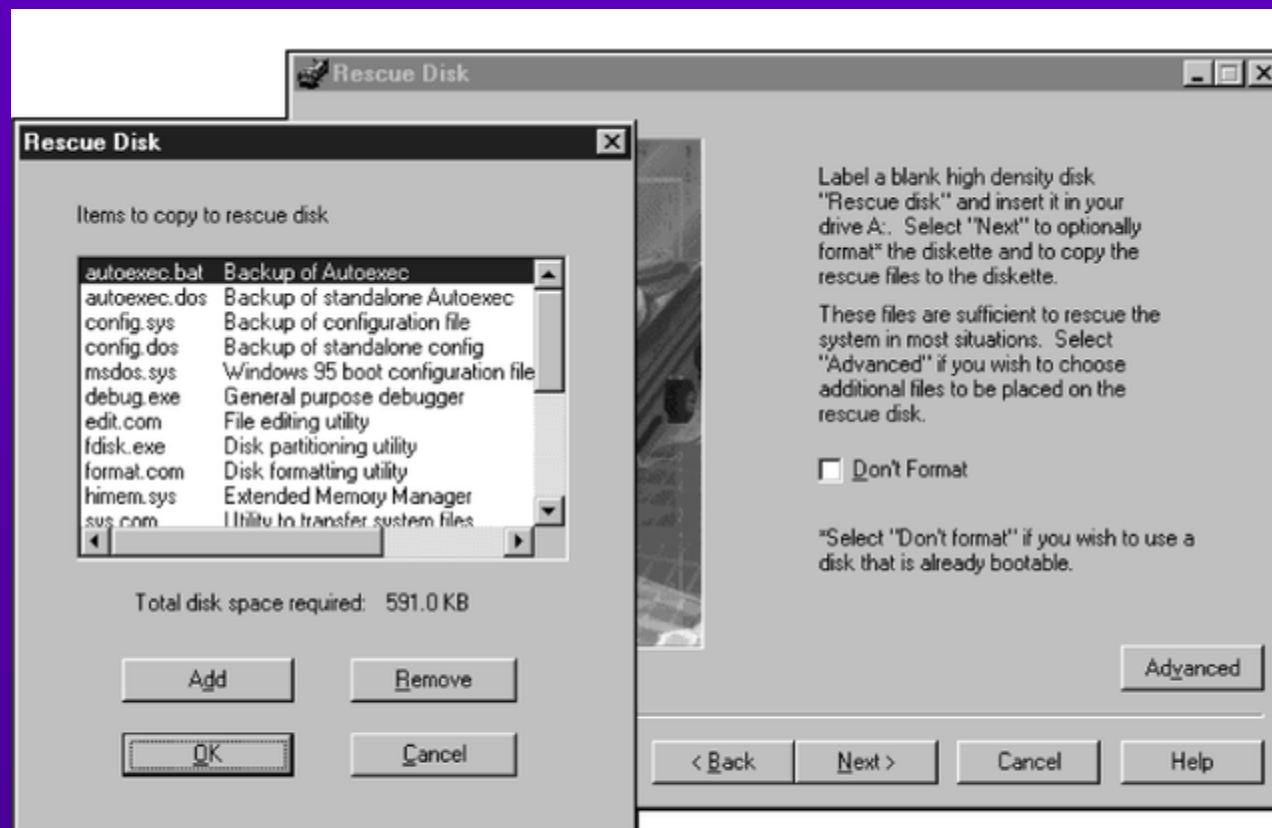


Figure 7-16 Items Nuts & Bolts stores on a rescue disk

Nuts & Bolts Rescue Disk

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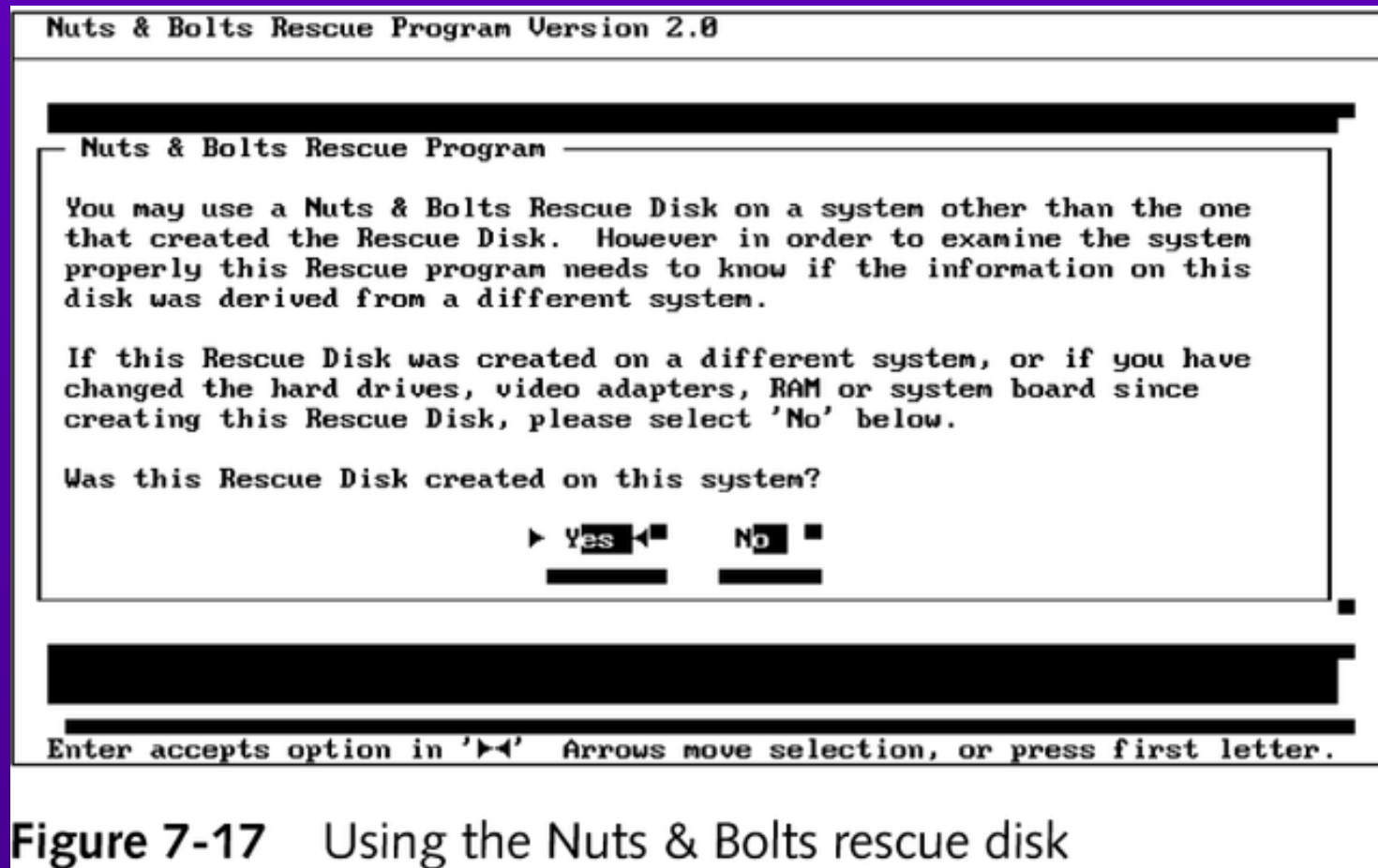


Figure 7-17 Using the Nuts & Bolts rescue disk

Nuts & Bolts Rescue Disk

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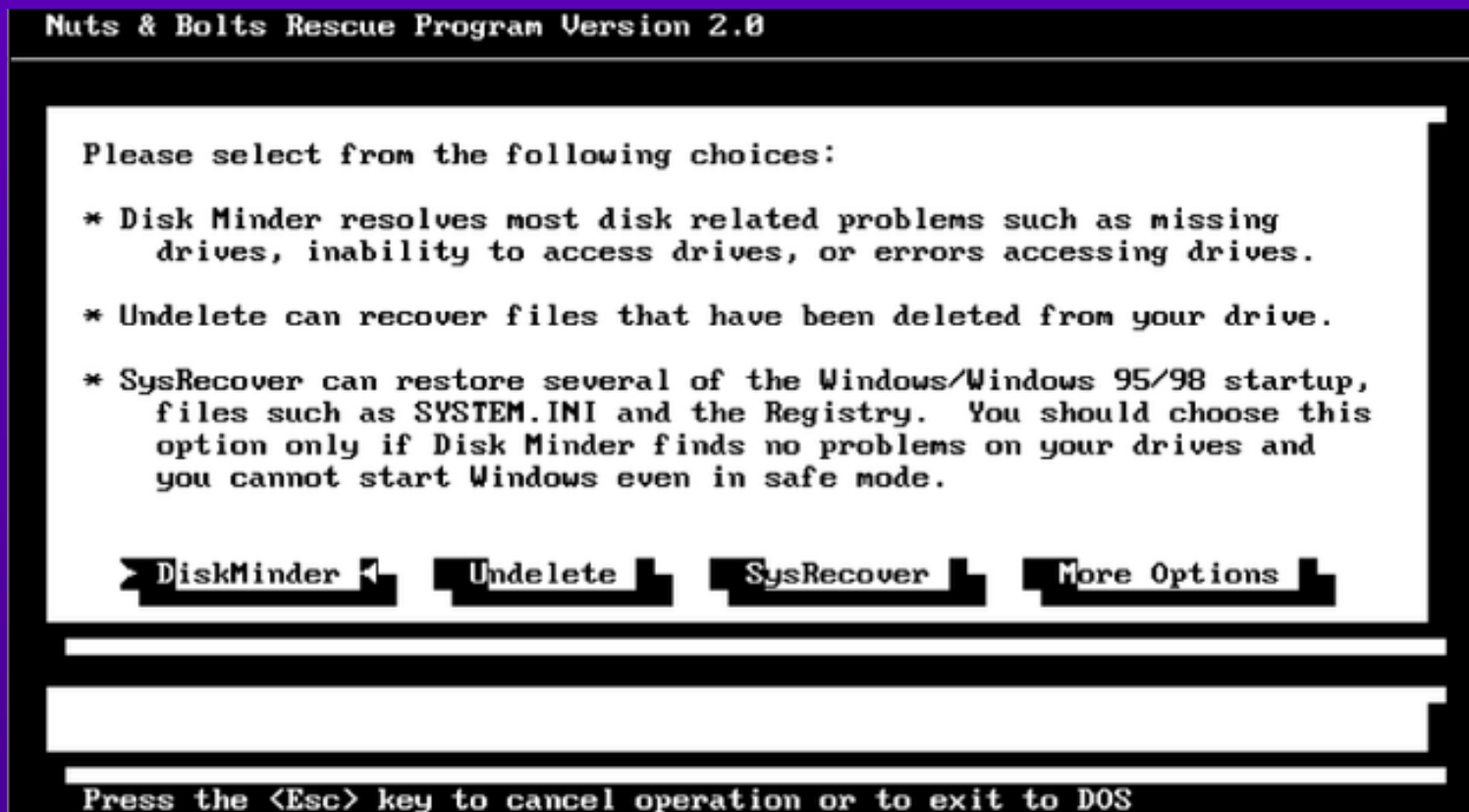
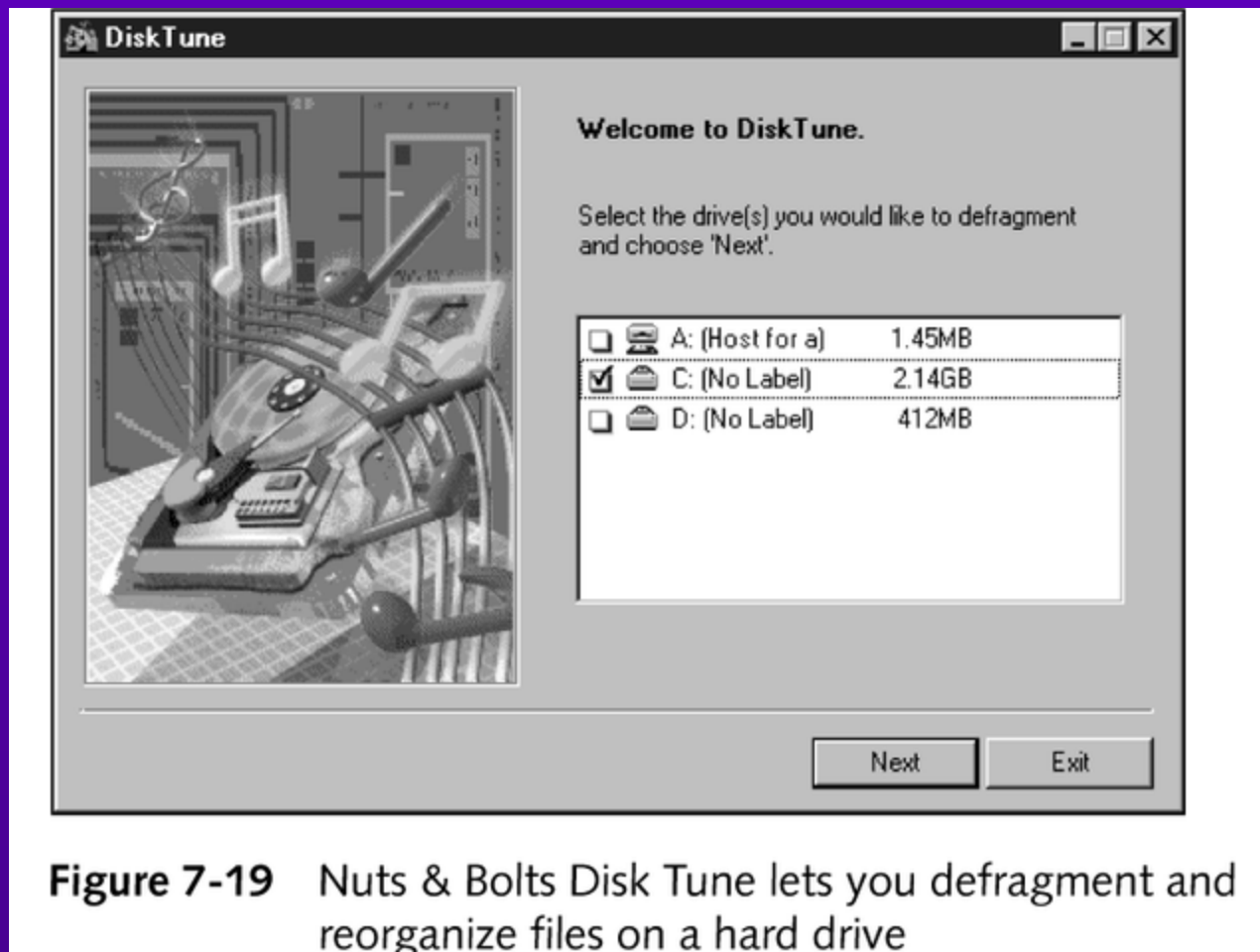


Figure 7-18 Utilities available on the Nuts & Bolts rescue disk

Nuts & Bolts Disk Tune

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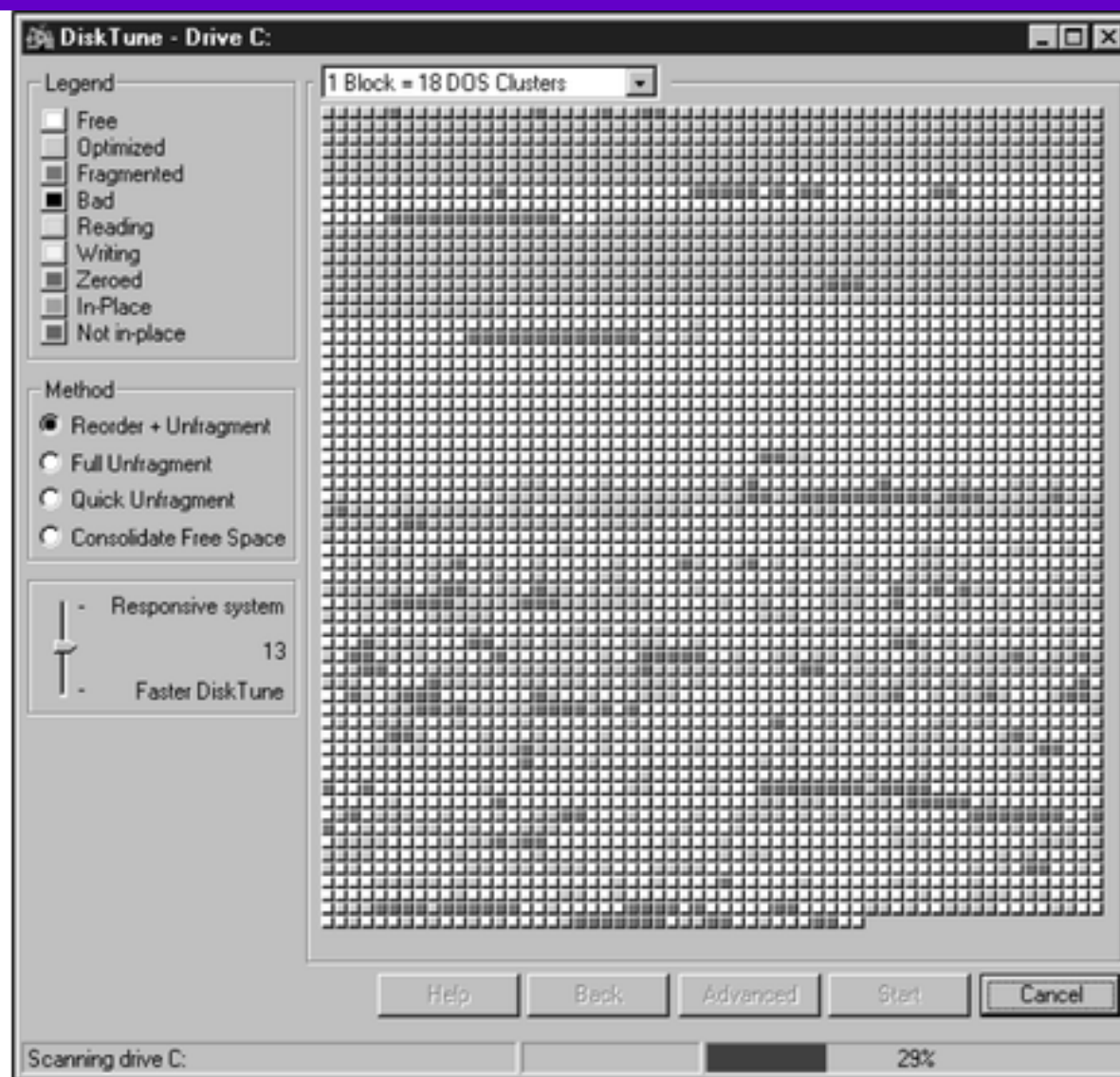


Figure 7-20 The color-coded grid of Disk Tune lets you visually inspect the drive to see how fragmented it is and watch as Disk Tune optimizes the drive

Norton Utilities

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- Three main functions
 - Prevention of damage
 - Recovery from damage
 - Increased system performance

Norton Utilities

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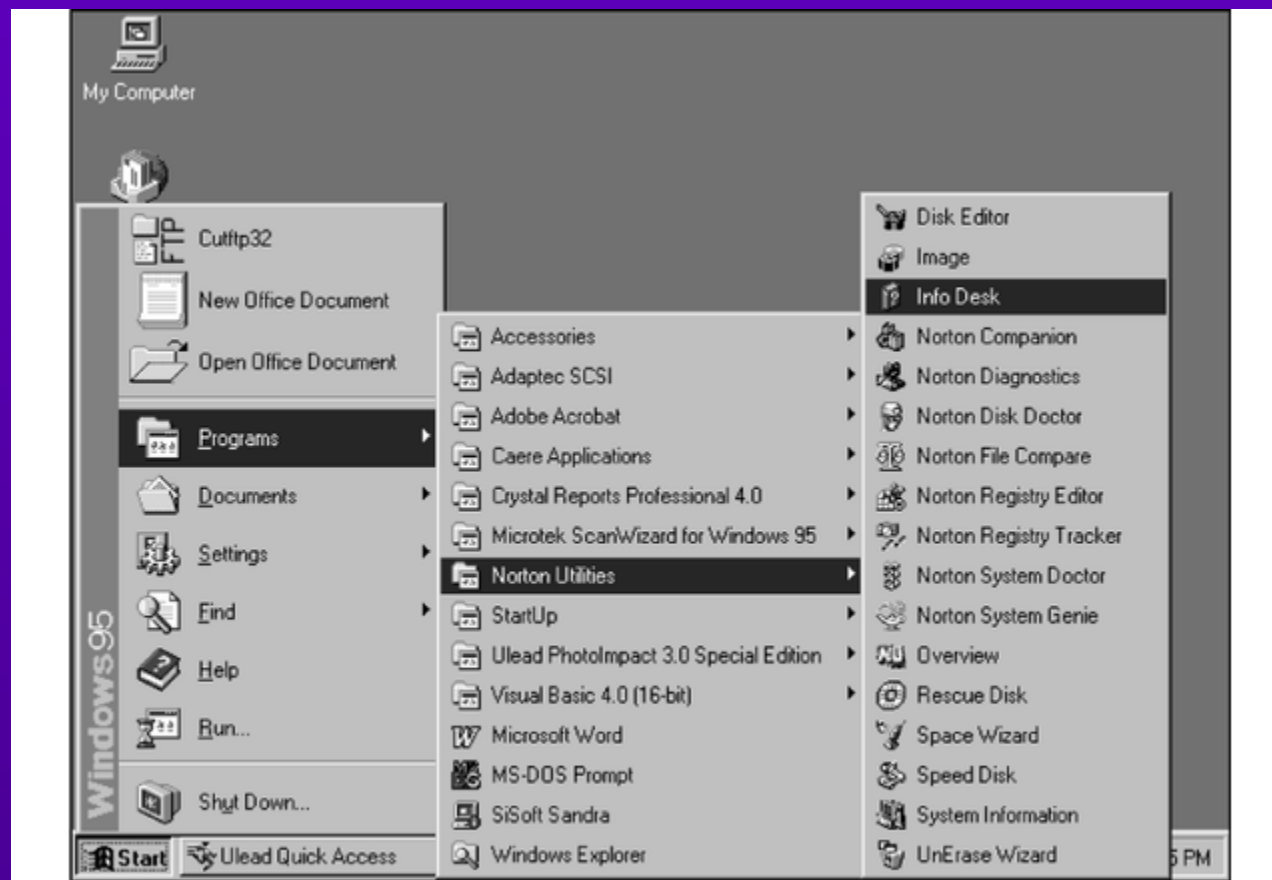


Figure 7-21 The programs of Norton Utilities

Norton Utilities: Prevention Programs

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- Norton System Doctor
- Norton Protection
- Rescue Disk
- Image

Norton Utilities: System Doctor

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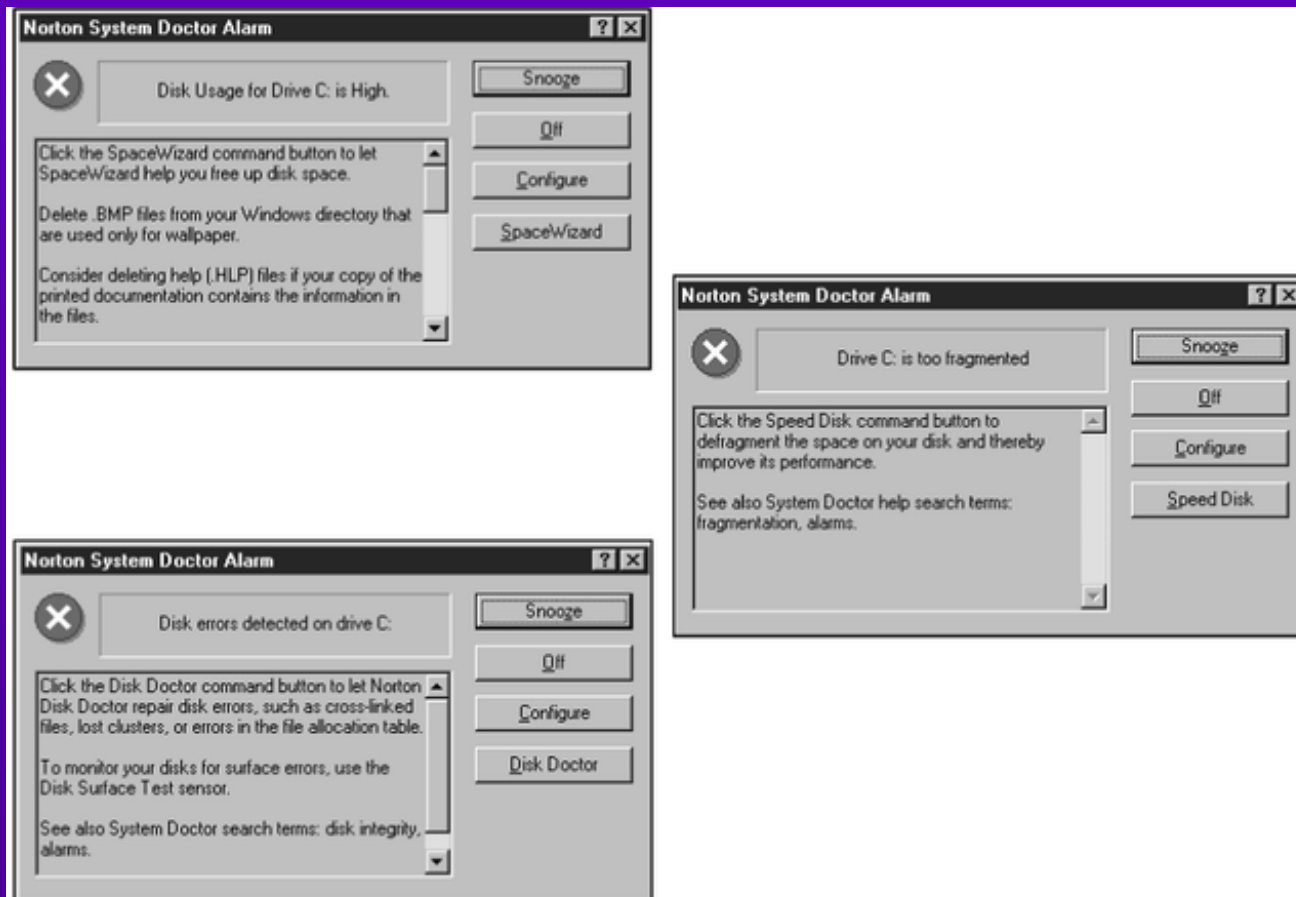


Figure 7-22 Examples of Norton System Doctor alarms

Norton Utilities: Recovery Programs

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- Norton Disk Doctor
- UnErase Wizard
- Norton Registry Tracker
- Norton File Compare
- Disk Editor

Help Features of Norton Utilities

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- Direct access to Info Desk
- From utility programs themselves

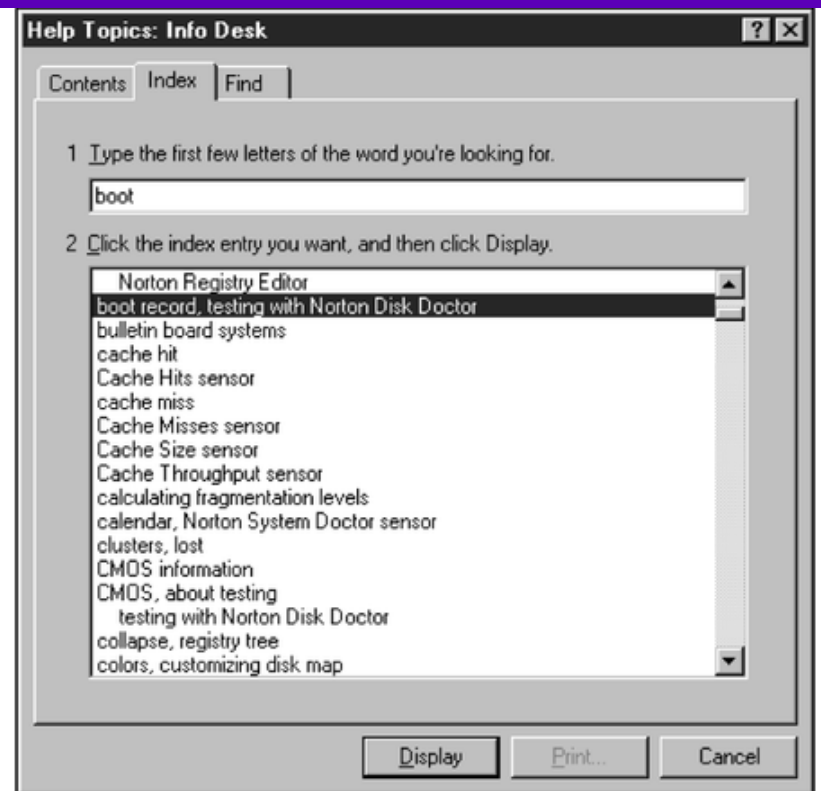


Figure 7-23 One Norton Help utility – Info Desk

Norton Rescue Options

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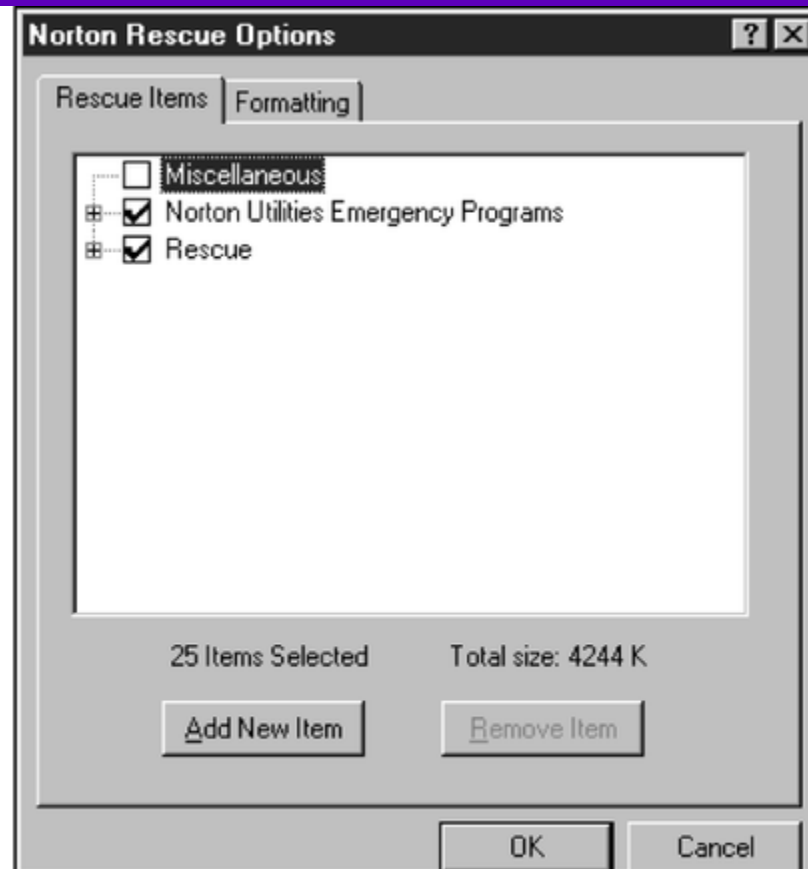


Figure 7-24 Norton Rescue Options

Norton Rescue Options

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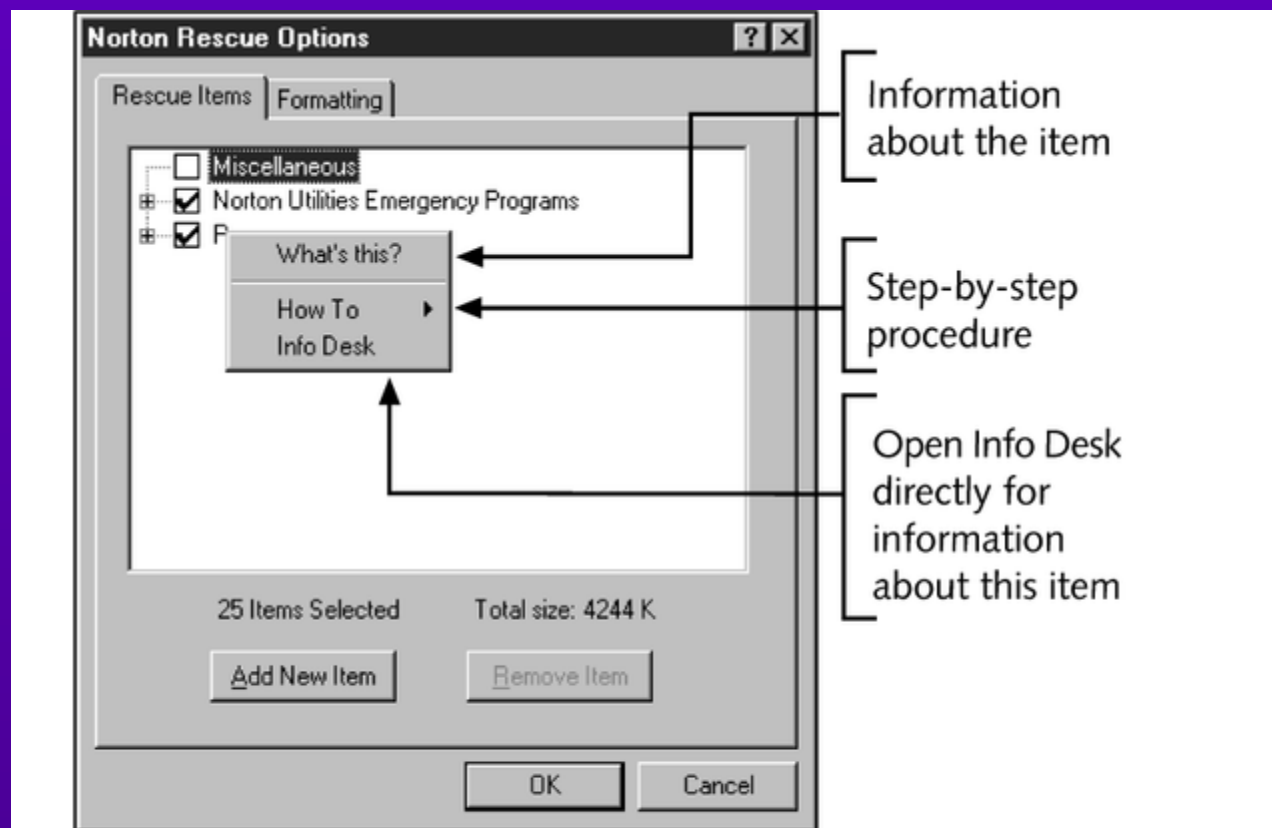


Figure 7-25 To find out more about a Norton Rescue Option, right-click on the item

Norton Rescue Options

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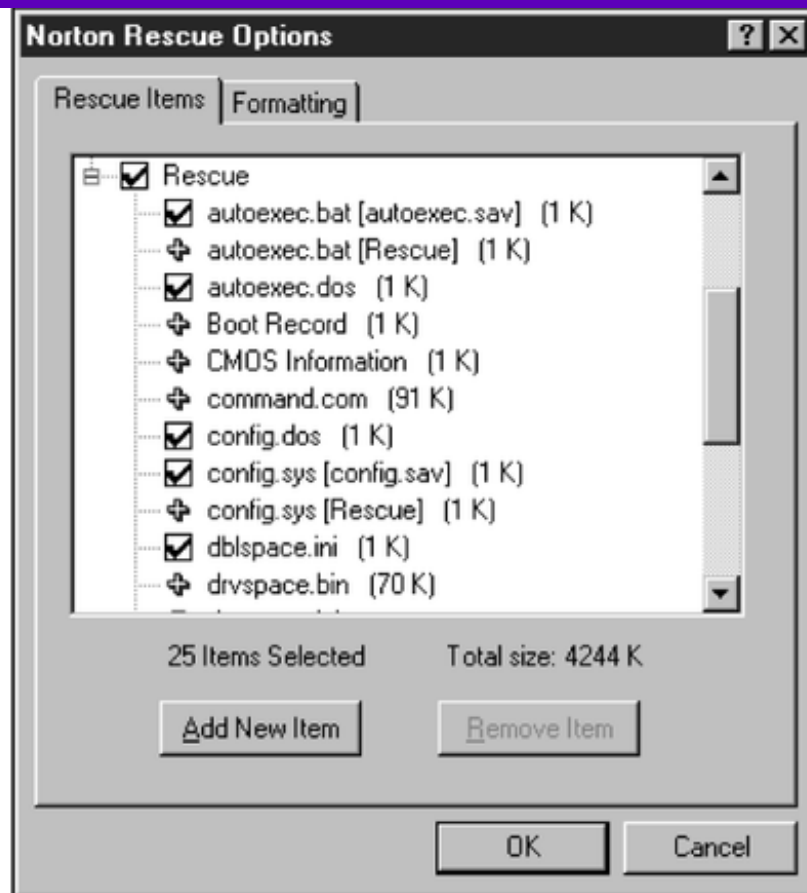


Figure 7-26 Files and information for the Norton rescue disk

Partition Magic

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- Quickly and easily rearrange partitions to get least amount of slack
- Other PowerQuest products to manage hard drives
 - DriveCopy
 - DriveImage
 - DriveImage Professional
 - Lost & Found

Problems with Hard Drives

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■ Hardware problems

- Problems with hard drive controller, power supply, data cable, BIOS or setup
- Damage to drive mechanism or physical damage to disk surface where the partition table, boot record, directories, FAT and/or data are stored

continued

Problems with Hard Drives

7

■ Software problems

- Corrupted OS files
- Corrupted partition table, boot record, or root directory, making all data on the hard drive inaccessible
- Corruption of the area of the FAT that points to the data, the data's directory table, or the sector markings where data is located
- Data or access to it destroyed by a virus

Problems with Hard Drives

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- Usually show up at POST
- Damaged partition table
- Damaged boot record

Problems with Hard Drives

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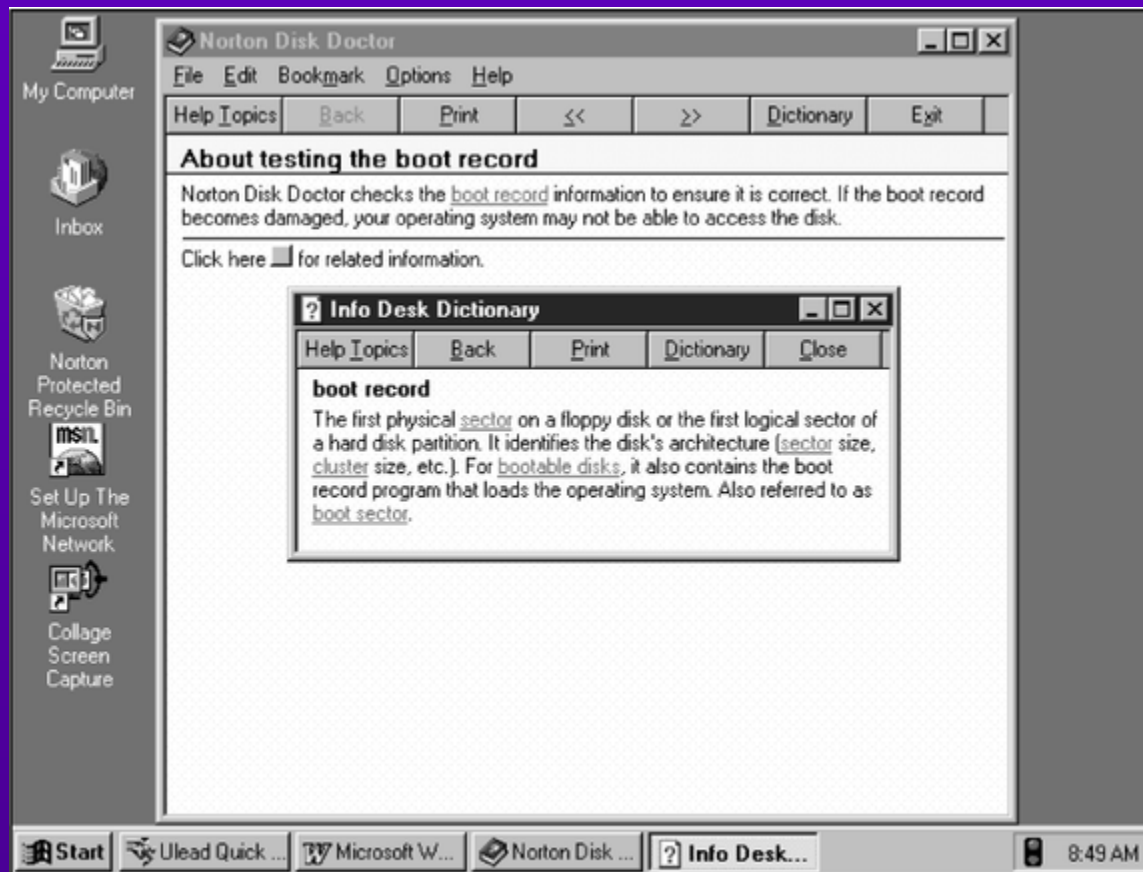


Figure 7-27 Help from Norton Utilities about testing the boot record

Problems with Hard Drives

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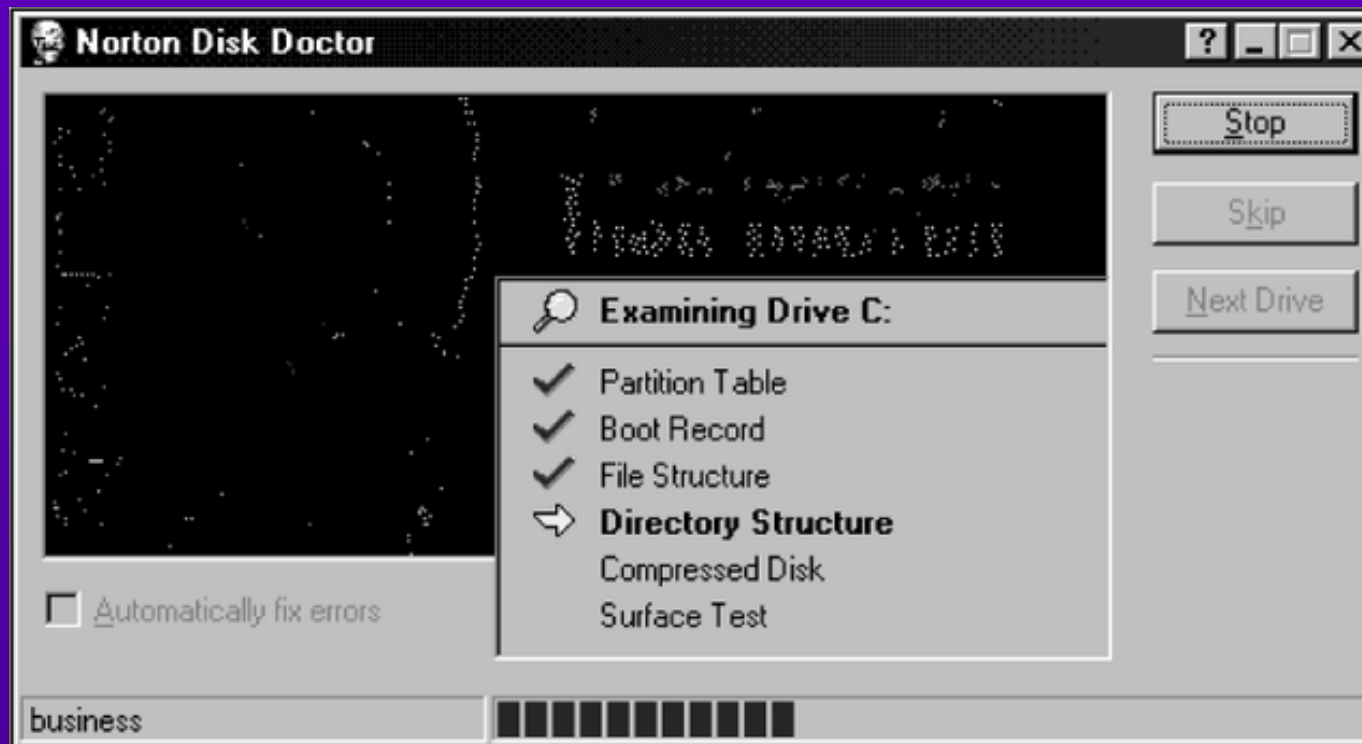


Figure 7-28 Norton Disk Doctor examining a hard drive

Problems with Hard Drives

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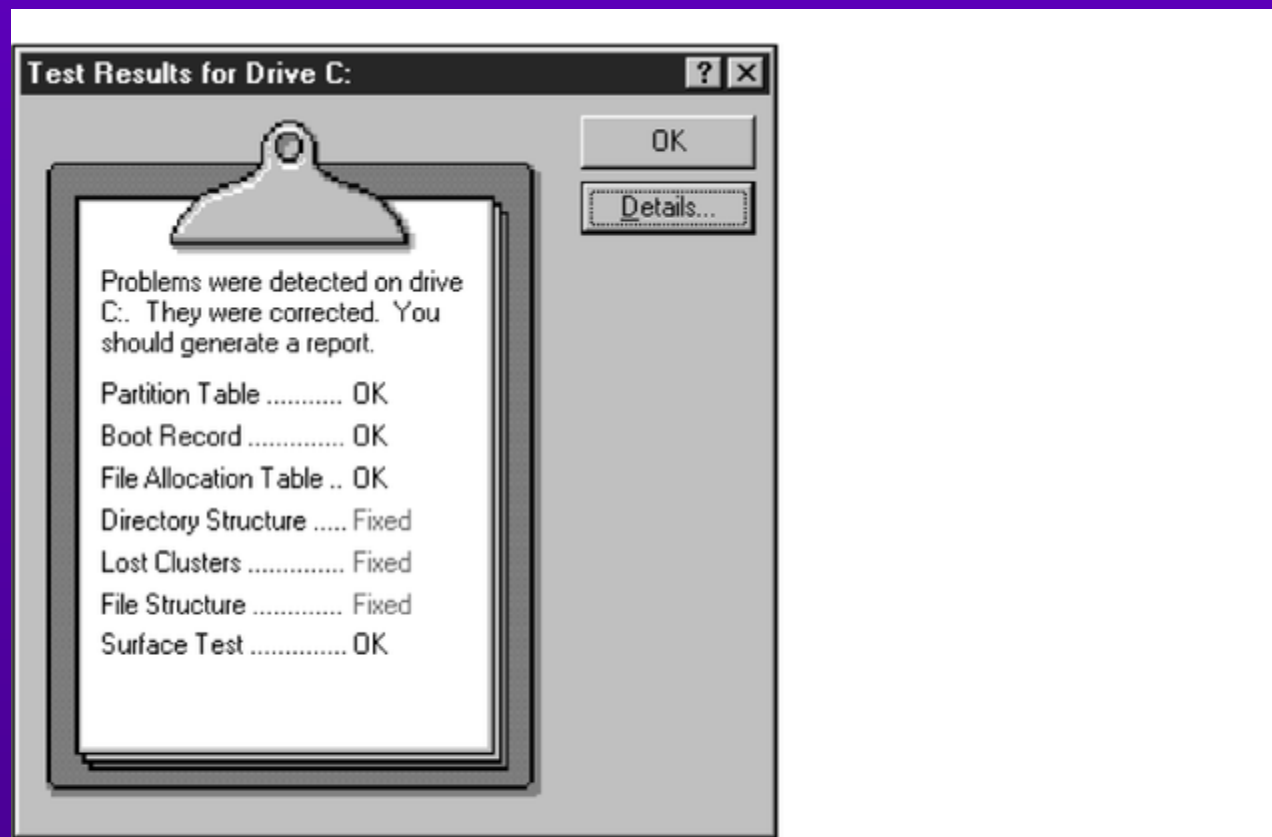


Figure 7-29 Norton Disk Doctor displays test results for drive C

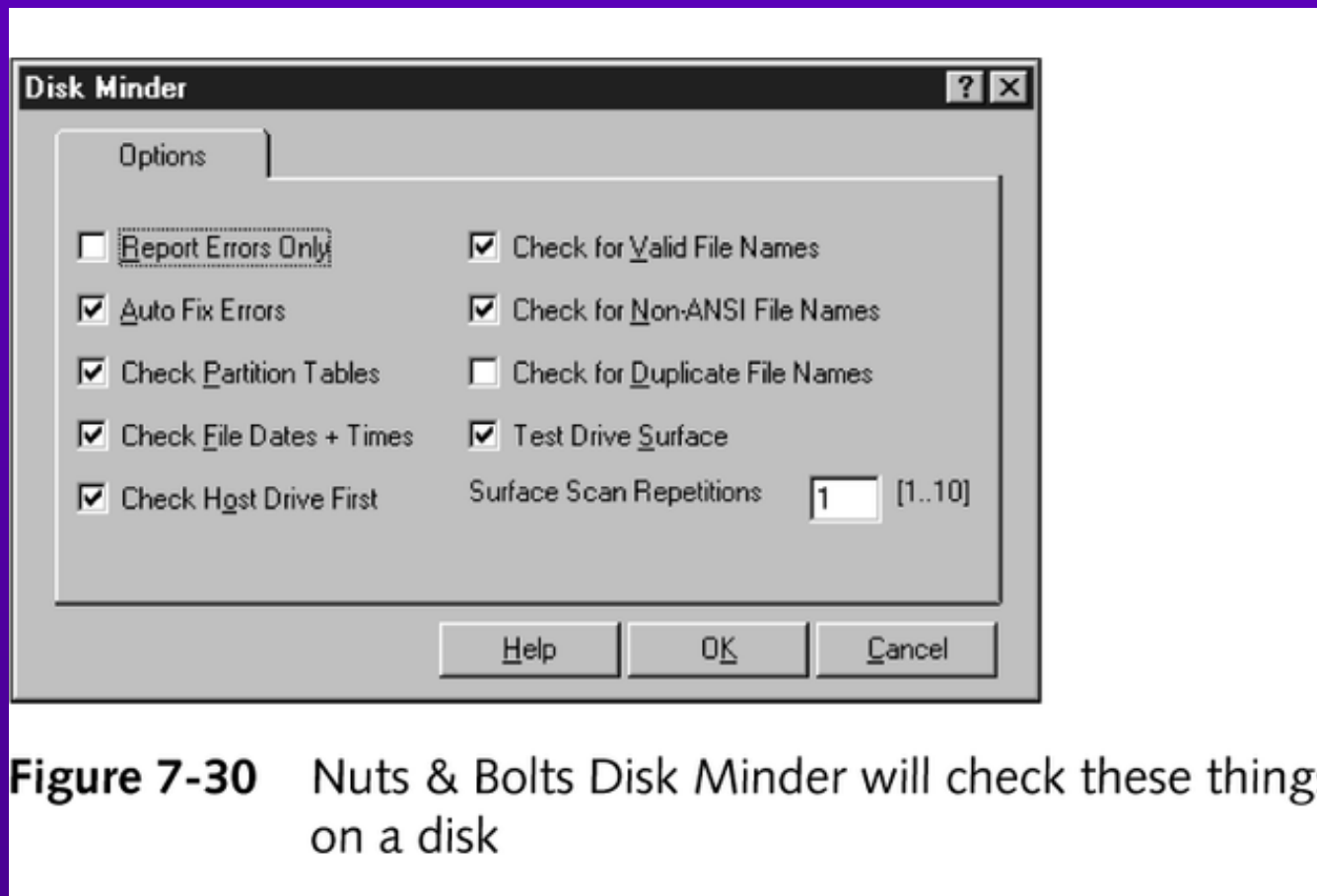
Damaged FAT or Root Directory

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- Norton Utilities programs
 - Norton Disk Doctor
 - Disk Editor
- Nuts & Bolts program
 - Disk Minder

Nuts & Bolts Disk Minder

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Using Norton Disk Editor to View a FAT

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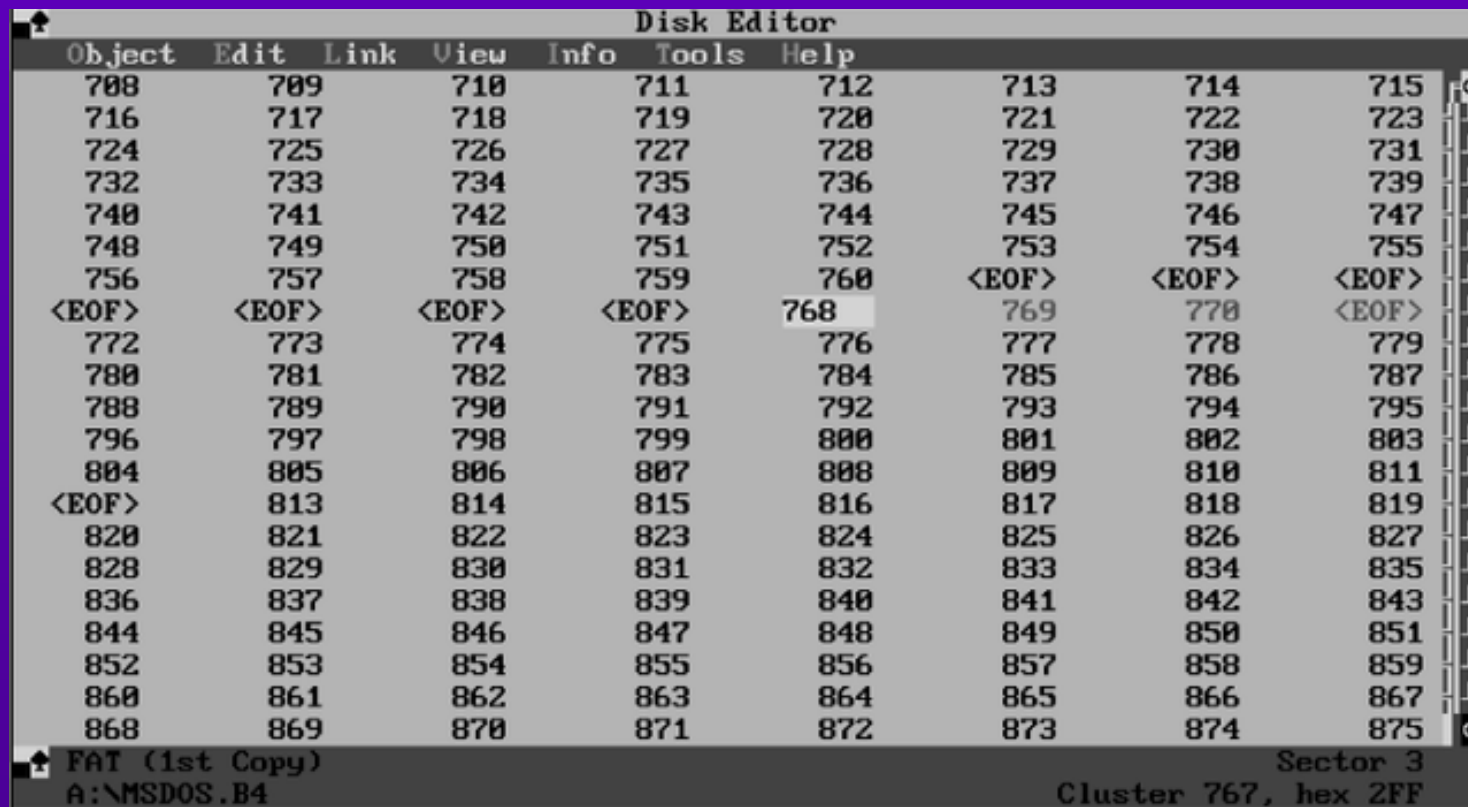


Figure 7-31 Norton Utilities Disk Editor in FAT view

Corrupted System Files

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- DOS error message
 - Non-system disk or disk error...
- Windows 9x error message
 - Invalid system disk...
- Boot from a floppy disk, access drive C, begin looking for the problem

Corrupted Sector and Track Markings

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- DOS error message
 - Bad Sector or Sector Not Found
- Low-level format will refresh these sector bits
 - Nondestructive format
 - Destructive format

Corrupted Data and Program Files

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- Options for restoring a data file that is not backed up
 - Use operating system tools and commands
 - Use Nuts & Bolts, Norton Utilities, Lost and Found, or other third-party software
 - Turn to a professional data recovery service

Using OS Tools and Command to Recover Data

7

- Corrupted file header
- Lost allocation units
- Bad sectors
- Erased file

Hard Drive Troubleshooting Guidelines

7

- Was the computer recently moved?
- Was any new hardware recently installed?
- Was any new software recently installed?
- Was any software recently reconfigured or upgraded?
- Does the computer have a history of similar problems?

Causes and Solutions for Common Hard Drive Problems

7

- Hard drive does not boot
- Disk retrieves and saves data slowly
- Computer will not recognize a newly installed hard drive

Chapter Summary

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- Installing a new hard drive
- Using software utility packages to help manage a hard drive
- What to do when a hard drive fails, shows signs of impending disaster, or when data is lost
- Importance of keeping good backups of software and data stored on the hard drive as well as backups of partition table, boot record, root directory, and FAT