Using Image

Although it happens rarely, data stored on a hard drive can become damaged in several ways. For example, the electric company may be working down the street and accidentally send a spike, or power surge, to your PC. Even if you use a surge protector and connect all the computer's power cords and the modem's phone line to a surge protector (instead of connecting them directly to wall connectors), power surges can still reach your PC and cause lost or corrupted data.

An important step in preventing disaster is using Nuts & Bolts' Image to make a "snapshot" of the most critical areas on your hard drives. Since even a recent back-up copy is still not as good as recovering your current data, you'll want to try to recover the latest data first if anything goes wrong. If you use Image to make a snapshot of the most crucial information on your drives, then if a drive becomes corrupted, you can use Restore to restore the most current version of your data.

Image saves information that you'll need if your hard disk ever fails, including the boot record, partition tables, and FAT information. It's a good idea to run Image daily, as well as whenever you've reorganized a disk's files using Disk Tune. This ensures that you can use Image's Restore option to restore the latest states of your files and folders or directories. Image stores its information in a file on your hard drive. This file is stored using a special, patent-pending method that allows the file to be recovered even if the hardware is severely damaged.

Tip Set the Image Properties sheet option to run Image automatically each time you start Windows. Image will examine your system and update the image only if needed. Doing this ensures you always have the latest data saved for your disks.

These topics explain how to use Image:

- Creating an Image of Your Disks
- Setting Image Properties
- Restoring Drives From an Image File

Related Topics

Nuts & Bolts Contents

Creating an Image of Your Disks

Creating an image copy of your hard disks as a file (nbimage.dat) only takes a moment. You should create a new image file any time you've rearranged files or added many new files to your hard drive.

To create an image of your disks:

1. Start Image by doing one of the following:

- Click the Start button and choose the Program > Nuts & Bolts > Image command in Windows 95.
- Open the Nuts & Bolts folder and double-click the Image icon from the Windows 95 Explorer or My Computer window.
- Open the Nuts & Bolts program group and double-click the Image icon in Windows 3.1x.

   The Helix Image dialog box appears.

   You can set the properties for Image before continuing by clicking the Properties button. If you do this, the Image Properties dialog box appears.

2. Select the Create a New Image Backup option and click Finish.

   Image saves the nbimage.dat file on your system hard drive, and displays a message letting you know the process is complete.

3. Click OK.

4. Create a Rescue disk using Nuts & Bolts' Rescue Disk.

   Rescue Disk places some Image information on your 3.5-inch rescue disk.

Setting Image Properties

You can set Image Properties to specify whether Image saves the File Allocation Tables (FAT), a roadmap or index, to where all the pieces of files on a disk drive are located. Most likely, you'll want to keep this check box selected. You can also have Image create a new image copy of your hard disks each time you start Windows (recommended).

To set Image properties:

1. Start Image by doing one of the following:

- Click the Start button and choose the Program > Nuts & Bolts > Image command in Windows 95.
- Open the Nuts & Bolts folder and double-click the Image icon from the Windows 95 Explorer or My Computer window.
- Open the Nuts & Bolts program group and double-click the Image icon in Windows 3.1x.

   The Helix Image dialog box appears.

2. Click the Properties button.

   The Image Properties dialog box appears.

3. Select the options you want to use and click OK.

   The Helix Image dialog box reappears.

Restoring Drives From an Image File

In the unlikely event that one or more of your hard disks become corrupted, use the nbimage.dat file to try and fix the disk.

Important Use Disk Minder first. Disk Minder will repair the current information, while a Restore will put back information that may be out of date. If you've used Disk Tune to optimize your disk, you should not restore a FAT image created before the Disk Tune optimization because Disk Tune rearranges the FAT completely.

To restore one or more drives from an image file:

1. Start Image by doing one of the following:

- Click the Start button and choose the Program > Nuts & Bolts > Image command in Windows 95.
- Open the Nuts & Bolts folder and double-click the Image icon from the Windows 95 Explorer or My Computer window.


Open the Nuts & Bolts program group and double-click the Image icon in Windows 3.1x.

The Helix Image dialog box appears.

2. Select the Restore Drive(s) From Saved Image radio button, and click Next >.

   The Select Image to Recover dialog box appears.

3. Do one of the following and click the Next > button:


Select an image file to use for restoring your drives from the list of those found on your system hard drive.


Click the Scan >> button to look for additional image files if you don't see the one you want to use. Image scans your hard drives for image files.

   The Select Drives to Restore dialog box appears.

4. Select the hard drives you want to restore and click Next >.

   The Restore Image dialog box appears.

5. Select the kinds of information you want to restore.

   Image defaults to restoring the master boot sector, partitions, and the File Allocation Tables. In most cases, you should use the Image default settings. If you are an advanced user, you may want to only restore one or two of the options.

6. Click Finish.

Helix Image Dialog Box

This dialog box contains the following options:

Last Image Created
After you create an Image file, the creation date and time appear here in the Helix Image dialog box.

Options
Select the Create New Image Backup option if you want to create an image file of your disks. Or select the Restore Drive(s) From Saved Image to restore your hard drives from the selected image file.

Properties
Click the Properties button to select the Image properties settings you want to use. The Image Properties dialog box appears.

Finish / Next >
While the Create New Image Backup option is selected, this button is titled Finish. Click the Finish button to begin creating a new Image file.

While the Restore Drive(s) From Saved Image option is selected, this button is titled Next >. Click the Next > button to select an Image file that you want to use to restore your hard drives.

Cancel
Click the Cancel button to close Image without creating an Image file or restoring hard drives from an Image file.

Image Properties Dialog Box

This dialog box contains the following options:

Save File Allocation Tables
Keep this check box selected and Image saves the File Allocation Tables (FAT) as part of the Image (nbimage.dat) file. The FAT is a roadmap or index, to where all the pieces of files on a disk drive are located. Most likely, you'll want to keep this option selected.

Update Automatically
Select this check box and Image creates a new image copy of your hard disks each time you start Windows (recommended).

Check Disk Integrity
Select this check box to test the integrity of your hard drives before creating an Image file. This check box is selected by default, and is recommended.

OK
Click OK when you are finished working with Image. It accepts any changes you've made, closes and returns you to the desktop.

Cancel
Click Cancel to close the Image Properties dialog box without making any changes to the properties settings since the last time you clicked Apply. The Helix Image dialog box reappears.

Apply
Click Apply to apply any changes you've made and keep the Image Properties dialog box open.

Select Image to Recover

This dialog box contains the following options:

Image Files Recovered
Select an Image file in the list that you want to use to recover your hard drives. Most likely, you'll want to select the newest file.

Scan >>
Click the Scan >> button to look for additional image files if you don't see the one you want to use. Image scans your hard drives for image files. Image displays a progress thermometer to let you know how the scan is progressing. When it finishes, it displays all the nbimage.dat files it found in the Image Files Recovered list.

< Back
Click the < Back button to go back to the Helix Image dialog box.

Next >
Click the Next > button after you've selected the Image file you want to use to recover your hard drives. The Select Drives to Restore dialog box appears.

Cancel
Click Cancel to close Image and return to the desktop without restoring your hard drives.

Select Drives to Restore Dialog Box

This dialog box contains the following options:

Drives to Restore
Place a check mark beside the drives that you want to restore using the selected Image file.

< Back
Click the < Back button to go back to the Select Image to Recover dialog box.

Next >
Click the Next > button after you've selected the Image file you want to use to recover your hard drives. The Restore Image dialog box appears.

Cancel
Click Cancel to close Image and return to the desktop without restoring your hard drives.

Restore Image Dialog Box

This dialog box offers the following options:

What to Restore
You can select any combination of the following restore options:

 **Master boot sector**-Select this option if you cannot start the PC from your system hard drive. The master boot sector is the sector on your system hard disk that contains boot information with instructions for starting up your PC.

 **Partitions**-Select this option if you cannot find a logical drive on your PC. Partitions subdivide a physical drive into multiple logical drives. Each partition has its own drive letter.

 **File allocation tables**-Select this option if your files are corrupted and you have been unable to repair them using Disk Minder. Often much or all of your data may be intact on the disk, but the file allocation tables (FATs) may be damaged. By restoring the most current copy of a disk's FAT, you can often recover files that would otherwise be lost.

< Back
Click the < Back button to go back to the Select Drives to Restore dialog box.

Finish
Click the Finish button after you've selected the options you want to use to recover your hard drives. Image begins restoring your hard drives using the options you selected.

Cancel
Click Cancel to close Image and return to the desktop without restoring your hard drives.

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.

Launch Pad

The Launch Pad is a window where you can place application and document icons so you can conveniently access them.

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 computers 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 95, 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 a roadmap, or index, that points to the location where all the information in files 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.

When you save a file in Windows, it is stored in multiple pieces (in clusters made up of multiple sectors) on the disk. Windows also saves the roadmap, or index, that points to these clusters in two copies of the FAT (File Allocation Table). The FAT contains the directions to all the pieces of your files, so that applications can find them again later.

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. For instance, for each button on your screen the User program has to know where it is supposed to be located, what program owns it, and which part of the program needs to be notified when you click the button. GDI must maintain information about pens used to draw lines on screen, fonts used to draw characters, and so on.

The information about the various objects managed by the User and GDI programs is kept in six 64K regions of memory known as resource heaps. These regions are actually 64K local heaps. These regions are 64K because 64K is the maximum size a 16-bit program can deal with efficiently. User and GDI are 16-bit programs because Windows was originally designed to run on the Intel 8088 and 80286, 16-bit processors.

The User Resource Heaps are divided into:

 The Window Heap, which contains information on windows and controls

 The Menu Heap, which contains information on drop-down menus

 The Menu String Heap, which contains the text messages that appear in the menus

 The User Atom Heap, which contains mostly Window titles

The GDI Resource Heaps are:

 The main GDI Resource Heap, which contains pens, brushes, fonts and various other information related to displaying Graphics

 The GDI Atom Heap, which contains some font related information including font names.

The GDI and User Atom Heaps are usually discounted because the information in them is subsidiary to the other Local Resource Heaps. So, the other Heaps would always fill up before the Atom Heaps. The same is still true if Hurricane's Heap Expander (another Helix Software product) is loaded, although all the Heaps have been greatly expanded (now you understand the "Heap Expander" name too).

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 Helixs 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 PCs 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 95 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 95 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 95 Registry

The Windows 95 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.

Hidden Files

A hidden file is any file that does not show up in a regular directory listing. Typically, hidden files have one of the following file extensions:

 DLL-(Dynamic Link Library)

 SYS-System file

 VXD-Virtual Device Driver

 386-Virtual Device Driver

 DRV-Device Driver

In Windows, a programmer can set any file with the hidden file attribute.

Tip In Windows Explorer or My Computer, you can select to show or hide hidden files. To do this, choose the Options command from the View menu, click the View tab, select the Show or the Hide radio button, and click OK.

System Files

A system file is a file used exclusively by the operating system, or Windows.