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BY LIDKA SCHUCH AND JAMES BELARDO

ways to keep your systems running clean

If you lived in the East Bloc before the changeover, you knew that driving a car also meant having to repair it yourself. • Here in the West, we tend to rely on trained specialists to take care of the appliances, tools and gadgets that surround us. But with computers now mandatory tools for many professions, this strategy doesn't work any more. • The good news is that, with very few exceptions, the culprit is rarely a hardware fault; almost all computer crashes are caused by software. This means that you can usually repair your computer yourself, sometimes with just a few magic keystrokes. As long as you keep your computer healthy and organized, re-installing the whole system is only a last resort. • Here are some tips and solutions to some common operating system problems. Although the logic behind problem-solving techniques applies to both Macintosh and Windows systems, most issues are platform-specific, so we will describe each platform separately.



m a c i n t o s h

1

preventative medicine is the key

Every office needs maintenance and cleaning from time to time — and so does your computer. And indeed, this is the correct order of things: maintenance first, then cleaning.

Imagine a hard drive as a big filing cabinet or a closet: new files are added in front of existing data, old files are trashed, leaving empty spaces — after a while your hard drive begins to look like a chunk of Swiss cheese with lots of short blocks of empty space. Eventually every newly created document and every installed program gets split and written into many little blocks in various places.

A drive mechanism works much like an old record player where the needle accesses grooves in platters to find information. So you can imagine the kind of complicated math we are asking a computer to perform!

Macs come with a program called Disk First Aid for diagnostics and repair, but there are much better tools on the market.

The most commonly used software is Symantec's Norton Utilities. Norton Utilities can do many things (like rescue deleted files, volume recovery and excellent searches) but let's focus on the two most important utilities the program provides: Norton Disk Doctor and Speed Disk.

The number one thing to know is that diagnosing/repairing and defragmenting programs should never be used on an active startup disk (would you try to repair an engine while it's running?).



If you run System 9 you should use Norton Utilities version 5.x. There is a standard System Folder included on the original installation CD, so use this CD to start up

your computer when you want to perform cleanups and repairs. But if you are a Mac clone user you must build your own startup disk. Your computer will not start unless there is a file called Enabler in it. If you download the software via the Internet, you

w i n d o w s

In the days of yore when people worked in the Windows 3.1x environment, system maintenance meant 'dropping down' to the DOS command line.

Today there is better integration between the Windows 98 GUI (Graphical User Interface) and its command line (DOS) underlying operating system. With any luck, we may never have to "drop-to-DOS" again.

In a similar fashion to the Mac OS, there are four basic maintenance procedures you must run regularly to keep your system running effectively.

- clean up lingering TEMPorary files
- scan your hard disk for errors and repair them
- defragment your hard drive(s)
- optimize the file structure of your hard drive(s)

1

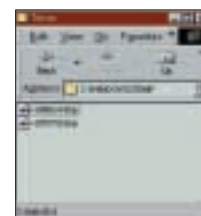
clean up those TEMP files

While we feverishly try to make those surrealistic deadlines, our hard drives work like crazy. Even if we don't save or open any files, the computer must access the hard drive.

You may have heard of 'swap files' or temporary files. These

are files that are created and deleted by your operating system, and in fact, most applications create these as well. A swap file usually uses "tmp" as an extension to its file name.

These files are usually unreadable after a system restarts so it's okay to delete them. Windows 98 has addressed the problem of cleaning up these unnecessary files with the Disk Clean Up Utility. You should run it as part of your regular scheduled maintenance.



The other way to clean up is to roll up your sleeves and do it manually, and the best time to clear out Temp files is at startup. You can navigate to the Windows 98 "Temp" located within the Windows Folder. Any file or folder found in here can be deleted without causing problems, provided you are not running applications that are creating them. If any of these files are 'in-use' you will not be able to delete them.

2

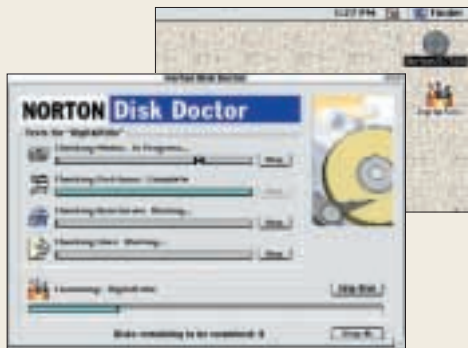
use a simple Batch file

Windows 98 can use simple MS-DOS based scripts, called Batch files, to execute commands to help you kill those dastardly Temp files. You can create a simple Batch file using almost any text edi-

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should make a startup disk (CD, Zip, Jaz, floppy, etc.) containing a System Folder plus the Norton Disk Doctor and Speed Disk modules.

You will also have to include Norton Shared Lib file on the startup disk or Disk Doctor and Speed Disk will not work. Install



Norton Utilities first on your hard drive and then drag Norton Shared Lib from the hard drive's System Folder/ Extensions to the startup disk's Extensions folder within the System Folder.

If you start from a CD, insert the disk, restart and hold C on the keyboard until you see the "Welcome to Macintosh" screen. If you start from any other external disk, hold down Command-Option-Shift-Delete. If your computer is completely frozen (meaning you cannot access the normal Restart menu or use the Power switch), all non-USB Macs can usually be restarted using the Command-Control-Power Switch key combination. Unfortunately this command doesn't



work any more on G3s and G4s, for which using the Restart button is your only choice.

Always run repair software first. Let it fix all fixable problems (almost all are). Once in a while you will come across a file which is too corrupt to be repaired. If it is data that you can delete (such as a Preferences file), do so.

If the System file or the Finder is beyond repair, then it may be time to re-install the system (although not before trashing Finder Prefs from your System's Preferences folder and restarting, which will sometimes cure an ailing Finder).

After repairs, run Speed Disk. This will optimize (defragment) a hard drive, consequently speeding up its performance and preventing crashes.

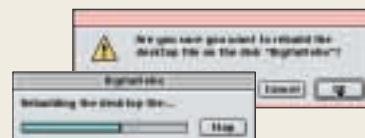
2

rebuild the Desktop after every crash

Not all crashes call for the immediate use of disk repair software; simply rebuilding the Mac desktop will sometimes resolve errors.

Restart with the Command and Option keys held down and hold them until you see the 'Are you sure you want to rebuild the desktop on the disk "[name of drive]"?' screen.

Desktop items (aliases, icons, the Trash, pull down menus) are most prone to corruption simply because they're used most often. Treat them like your favourite pen, pencil, address book and calculator — kept in an accessible place at the front of all data and preferably close to each other. Of course, some people keep their entire lives on a desktop — and these are also the people who experience crashes more often.

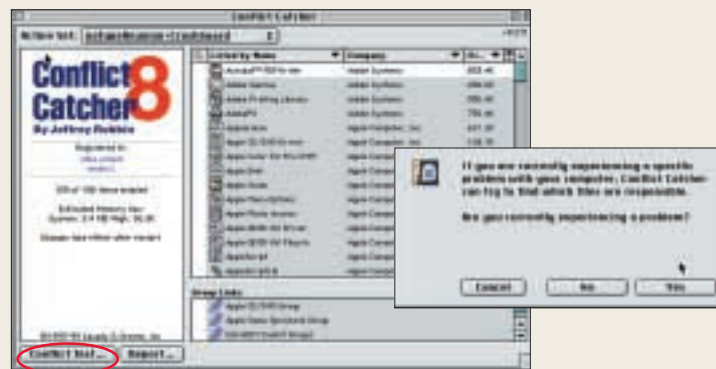


So keep your desktop clean — create Launcher and Apple Menu Items for items and aliases you need to access regularly.

3

identify extension conflicts: Extensions Manager and ConflictCatcher

One of the most common reasons for crashes is a conflict between Extensions and Control Panels; not all are fully Apple-compatible. Most are third party products, and although they're intended to provide useful ways to customize a system, they may also be old, poorly written or largely untested.



You should never add more than one extension or control panel at a time to the System Folder. But if you've already added a bunch of them and now you're fighting with crashes, there's an easy way to test if one of them is causing problems. Starting (or restarting) a Mac with the Shift key down disables them all. If your problem disappears, your headache was more than likely caused by an extension conflict. The Mac ships with Extensions



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tor — just save as plain text using the extension BAT. One use of these BAT files is to aid you in the battle to delete those Temp files. You can place a ‘shortcut’ to your BAT file in your startup folder to

delete Temp files before you start your work session (although we prefer to execute the BAT file).

3

automate maintenance through built-in system maintenance tools

You can set up Windows 98 to automatically run your maintenance utilities. In the Start menu in Programs>Accessories> System Tools, run Maintenance Wizard. With this you can schedule the Maintenance when your computer is idle.

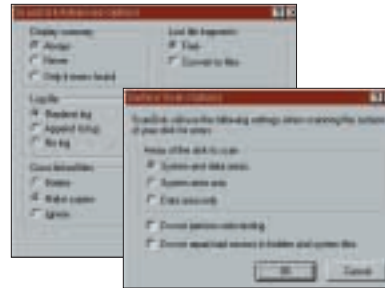
Remember to close all applications before performing disk maintenance.

Under the Start menu in Programs>Accessories>System Tools you’ll find three applications: Disk Cleanup, Disk Defragmenter, and Scandisk.

These are the basic tools to keep your system lean, clean and practically worry-free. Windows 98 includes the System Monitor and Maintenance Scheduler which can run these utilities at any-time you choose. You don’t have to be there, but your computer has to be turned on.

Disk Cleanup allows you to delete files that may no longer be required, such as temporary Internet files, downloaded program files (e.g. Java applets and ActiveX controls), files previously deleted but still residing in your Recycle Bin, temporary data files, and even some non-critical system files.

Scandisk checks files and folders for corruption. You can set it up to ask you whether to prompt you when it needs to fix a file or automatically fix it as it scans. An option in the Advanced Tab allows you to Free (delete) the Lost file fragments or Convert them to



98 structure, this can also make applications start up faster. To use this utility properly, the computer must be left alone for a while.

4

don’t overload your start-up folder

Do not load too many items in your Startup Folder (Start>Programs>Startup). Applications that stay resident (running) on your system (and are likely invisible to you), are called TSR applications. System resources are being taken up by these TSRs. Be cautious because some of these apps may help you work more efficiently and may even be ‘required’ by some other applications. So do not remove files unless you know positively what you are doing. Try not to delete them either — it’s best to back these files up!

As a rule, do not remove anything you are not sure about from the system.

5

Norton Utilities for Windows is a must

Third party utilities such as Norton Utilities for Windows by Symantec offer depth and efficiency to system checks. Norton is the most popular of these utilities; its interface is arranged in four different categories: “Find & Fix Problems”, “Improve Performance”, “Preventative Maintenance”, and “Troubleshoot”.

Find & Fix Problems. Norton Win Doctor checks your system for problems; Norton Crashguard monitors and recovers from crashes; Norton Disk Doctor helps you diagnose and repair problems on your disk; UnErase Wizard recovers files which have been erased by mistake; and Norton File Compare compares different versions of your files.



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Manager, a utility which allows us to turn extensions and control panels on and off one by one. But in real life, we usually have too many to figure out which one is really causing trouble.

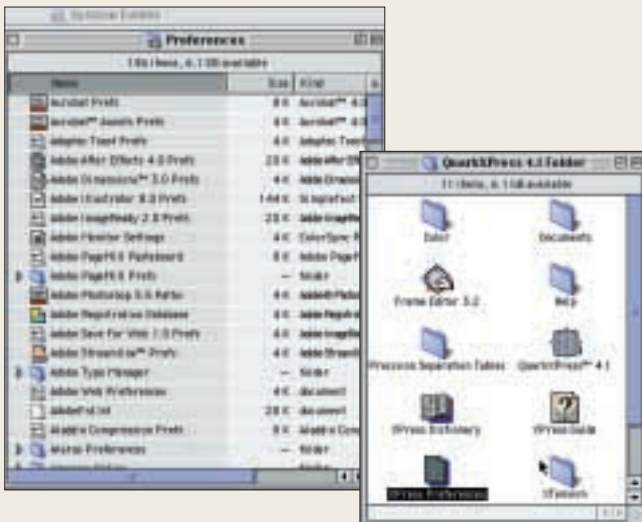
Fortunately there are more comprehensive diagnostic and repair products on the market (Cassady & Green's ConflictCatcher is one such software package). Just remember that you must remove the Extensions Manager control panel and EM Extension from the System Folder before installing another extensions manager.

ConflictCatcher not only lets us turn extensions on and off individually but it also runs tests to establish which extension is the culprit. All you have to do is restart your Mac, doing what you were doing when it crashed, and let ConflictCatcher know at startup whether the problem still exists. Once you know which extension or control panel caused the problem, think about whether you really, really need that item or not. If not, trash it. If, however, it turns out to be a vital extension (like ATM), let ConflictCatcher test further. It is possible that ATM is acting up only because of some other extension which you don't really need.

4 deleting Application Preferences File is often a quick fix

Applications' Preferences are very prone to file corruption. So if Photoshop suddenly starts crashing for no reason at all, simply locate its Preferences file and trash it. Don't worry, programs create this file again as soon as you load them the next time.

Most applications keep Preferences in the System Folder>Preferences folder (one exception is QuarkXPress which keeps its Preferences in its own folder).

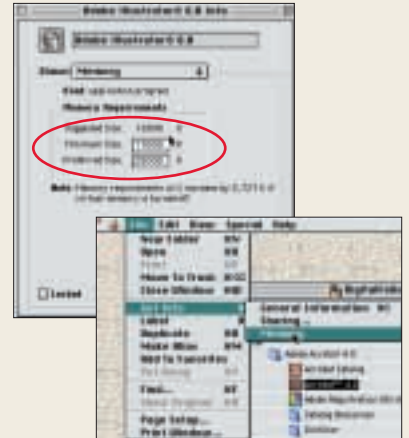


5 assign sufficient memory

How many times have you installed a new program and as soon as you begin really working in it you get a message saying there is "Insufficient Memory" to perform this or that operation? This happens because programs are almost always set to minimum memory requirements. This means that a program will open and let you perform simple tasks, but for real world work it needs more RAM.

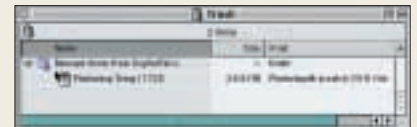
To assign more memory, quit the program, locate and select its icon on the hard drive, and choose File>Get Info>Memory (or Command-I). In the dialog window you will see three boxes: "Suggested size", "Minimum size" and "Preferred size".

Make sure Minimum size is set to no less than Suggested size. In Preferred size give it as much as you can, taking into consideration how much RAM you really have, how much of it is taken by the system (check the Apple menu/About This Computer), and how many programs you usually have open at the same time.



6 don't leave temporary files in the Trash

When a computer crashes while a file with unsaved changes is open, programs try to rescue this file. Generally they don't succeed and a temporary document is created and deposited in the Trash. This file will almost never open and/or function properly (Adobe Photoshop's temporary files can run to hundreds of megabytes). The best policy is to empty the Trash as soon as you see any "Items rescued from ..." sitting there.



7 zap the PRAM

If you are maintaining your computer properly and you have not installed anything new lately and crashes still occur, there is one last thing to do before you resort to a system re-installation. It's called zapping the PRAM: in other words, resetting Parameter

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RAM, or reverting to the default system settings.

Parameter RAM is a place where system preferences (settings for memory, mouse, monitors and sound, keyboard, AppleTalk, etc.) are stored. Like other Preferences files, this information also gets corrupted once in a while. We cannot trash it but we can re-set Preferences to their original default settings.

Make sure that the Caps Lock key is not engaged and zap the PRAM by restarting (or starting) a computer holding the Command, Option, P, and R keys on the keyboard (and yes, you'll almost certainly need both hands to do it). Let your computer chime five times, then release the keys and let it load.

8

when all else fails: reinstall the System

If all else fails, the final remedy is to re-install the system. If you have a backup of your System Folder, this may be just a routine exercise of starting from any external disk (or your original System Software CD) and replacing your existing System Folder with a backup copy.

If you don't have a backup copy, start from the System CD, trash your old Finder, rename the old System Folder (Macs understand the word "disabled") and then install the new system. Don't forget that you will have to go through your old System Folder looking for things like scanner drivers, printer drivers, and perhaps even monitor software and other pieces installed by various programs, and manually move them to your new System Folder to make your system and various peripherals work.

9

better safe than sorry — use anti-virus software

It is much more difficult to write a virus or a worm program for Mac than for Windows. Nevertheless, some bozos still manage to do so. Use anti-virus software, whether Norton Antivirus or Virex, and keep your Virus Definitions file updated all the time. There

are new updates available almost weekly, so bookmark your anti-virus program's site and go there often.

Just remember that when you are installing a new piece of software, you should turn anti-virus programs off. Most are installer-aware but precautions never hurt.

10

hardware can be broken too

So we've seen that software is easy to fix yourself — but hardware is usually another matter. The chances are reasonably good that if a hardware part goes, there's nothing you can do except replace it. Not only does this cost money but it also costs you in downtime. So here are a few basic points to keep in mind about keeping your hardware healthy.

A computer emits an electromagnetic field which attracts dust and smoke — and the combination is especially potent. Particles of dust embedded in oily nicotine can clog electronic parts and cut off connections, so don't smoke near your computer. Once in a while you should open the case and use compressed air to blow off the dust which accumulates inside.

Power surges are another thing that can upset your computer. The life of a monitor can be drastically shortened if your office is in an area where power fluctuates. A good power surge protector can remedy that.

But even a surge protector may not be enough when lightning strikes. Try not to work during lightning storms.

Get a static-draining touch pad, especially if your office is carpeted wall-to-wall. Computers don't like getting zapped any more than we do.

If you are running a Mac with SCSI devices attached, always turn the computer off before unplugging them. This of course doesn't apply any more with USB devices.

One last word of advice: when disaster strikes, it is good to have a printout of System Error codes on hand (available from various Macintosh resource web sites). True, the descriptions of most errors are cryptic but eventually you will acquire a sense of what is what and the guide will help you to troubleshoot better. **G**

MACINTOSH KEYBOARD SHORTCUTS

Disable all Extensions Start/restart holding Shift key.

Rebuild the Desktop Start/restart holding Command and Option keys.

Restart a frozen non-USB Mac Press Command, Control and Power Switch.

Restart a frozen USB Mac Press Restart button on hard drive casing.

Start/restart from a floppy disk Start/restart and put the

floppy disk in the floppy drive after you hear the chime. Your computer will automatically start from the floppy if it finds a System Folder there.

Start/Restart from a CD Put the CD into the CD-ROM drive and start/restart holding C key on the keyboard.

Start/Restart from any other external drive Start/restart holding Command, Option, Shift and Delete keys.

Zap PRAM Start/restart holding Command, Option, P and R keys. Let it chime five times, release the keys and let it load.

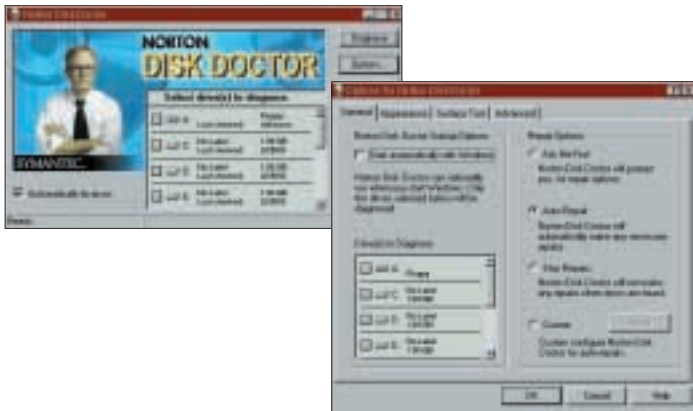


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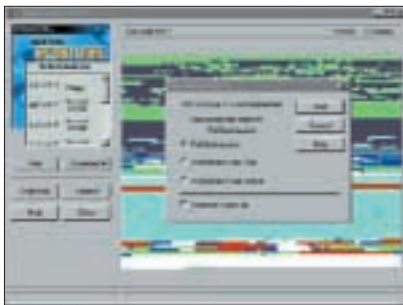
Improve Performance. Speed Disk is used to optimize your PC's hard disk; Norton Optimization Wizard fine tunes your PC to make applications load faster; Space Wizard helps you alleviate unneeded files and create more disk space.

Preventative Maintenance. Norton System Doctor continuously monitors your system for potential problems. Rescue Disk helps you save and restore your PC's critical setup data. Image saves a



snapshot of your hard disk's critical information. And Norton Registry Tracker tracks and restores changes made to critical files.

Troubleshoot. System Information reviews useful information about your PC. Norton Registry Editor helps you navigate and edit the Window's infamous Registry. And finally, Norton Web Services are Web-based utilities to enhance your PC.



Norton is an invaluable tool for professionals who need a little bit more diagnostic and repair capability. It is a highly comprehensive suite of Maintenance Tools that can help prevent most problems from occurring in the first place.

6 shut down properly

The proper way to shut down Windows 98 is to press the Start button and choose Shut Down at the bottom of the list. Windows will automatically shut down the power to your system if you have a motherboard that supports the latest ATA power supplies. If your motherboard doesn't support this, Windows will tell you when it is 'safe' to turn the Power Switch off.

If your system becomes unstable, or an application freezes, you may have to press the keyboard combination of Control-Alt-Delete. The dialog box will show you a list of applications running. If an application is 'not responding,' it will be shown. Here you may shut down the offending application then proceed with shutting down your system.

7 keep an Emergency Startup diskette

Windows makes it easy to create an Emergency StartUp Diskette. Go to the Control Panel and choose Add/Remove Programs and choose the Tab that says StartUp Disk. Then create the Diskette by inserting a blank/formatted 3.5" diskette and pressing the button. Make sure the 3.5" floppy is fully formatted and contains no files.

The Emergency Start-Up Disk is most useful when you experience a major system failure and cannot boot Windows 98 at all. You may be able to reinstall or fix the problem from the Command Line. Tools that are included with this Emergency StartUp Diskette include "Fdisk.exe" on the floppy itself, "Attrib.exe", "Chkdsk.exe", "Debug.exe", "Edit.com", "Ext.exe", "Format.com", "Scandisk.exe", "Mscdex.exe", "MS-DOS", and "Sys.com". They will be located in the temporary RAM drive created when you started up with this diskette. You can access all these utilities from the A: prompt.



- Fdisk.exe. Low-level formatting utility to help you set up hard drives on the computer.
 - Attrib.exe. Running this application enables you to change a file's Attributes.
 - Chkdsk.exe. If you run Chkdsk with 'switch /f' you can Scan your drive quickly and delete lost file clusters. (chkdsk /f).
 - Edit.com. This is a simple text editor.
 - Format.com. Use this to format an existing drive.
 - Scandisk.exe. This is a DOS-based disk drive diagnostic and repair tool.
 - Sys.com. This transfers system files to make a disk bootable.
- Additional advanced tools such as "Debug.exe", "Ext.exe", and "Mscdex.exe" are tools which help diagnose and solve those



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problems. For more information, see the text file “Readme.txt” on the Emergency Diskette itself.

ScanRegW, and ScanReg, are utilities created to Scan and Repair the Windows 98 Registry.

The Windows 98 Registry is a database located within your system folder that regulates how your computer functions. ScanRegW.exe can be found in your Windows folder, while “ScanReg.exe and ScanReg.ini” can be found in the Windows\Command folder. Finding them is easy if you right-click on “My Computer,” choose Find, and search your drive for “scanreg.” We recommend you copy these two files (ScanReg.exe and ScanReg.ini) onto your newly created Emergency StartUp Diskette. This will give you an additional tool to help you if your Registry has been corrupted.

8

learn how to use the Emergency StartUp tools

Emergency tools are provided to help solve major failures. When the system is started with the Emergency Diskette you have the choice of loading an appropriate CD-ROM driver or booting absolutely clean (without CD-ROM drivers). A temporary 2MB RAMdrive (using available RAM) is loaded and includes extra diagnostic tools. The RAMdrive may push your CD-ROM back one letter (e.g. if your CD-ROM was drive D:, it would now be drive E:).

Alas, there are times when you will be confronted by the “Blue Screen of Death”. If you have a major crash and the system doesn’t respond normally you might have to resort to the old CTRL-ALT-DELETE method of restarting your system.

If you need to start Windows 98 in SAFE-MODE to help repair your system you may have to hold the CTRL button (F8 in Windows 95) while booting up. This forces Windows 98 to load

with the Windows 98 Startup Menu, letting you start in SAFE-MODE. Then utilize the extensive Windows Help available.

9

how to deal with a major crash

If your system is forced to restart while processing a print file, a dialog box prompts you to either Attempt the Job again or to Cancel it. Always choose Cancel. These files were probably interrupted while they communicated with your printer. Important header information is probably lost. Resending the job is the safe way.

After a serious crash you’ll probably want to run Disk Clean Up (don’t forget to check the Temp Folder) and scan the Registry Database for errors. If your computer gets turned off improperly or if a major crash forces your computer to restart, Scandisk will automatically start. Norton Utilities 3.5 also automatically scans your hard disks after crashes or if your system was not properly turned off.

10

follow these general rules

- Backup important data regularly in case of computer failure.
- Keep your computer environment dust-free and away from magnetic fields.
- When running diagnostic utilities, close other applications.
- Use an Uninterruptable Power Supply (UPS) to help prevent crashes due to power failure.

Following these tips and techniques won’t guarantee that your system will never fail, but it can prevent many problems.

One last point: don’t forget that there are resources available to help with your system diagnosis. Access the Windows 98 Help files, the Windows 98 Resource Kit, and the Norton Utilities documentation to get more detailed information and techniques. **G**

TROUBLESHOOTING

When troubleshooting there are certain StartUp keys that can help you — you can prevent Windows 98 from booting directly into the GUI by holding down certain key combinations at startup.

To use the StartUp Menu, hold down the <CTRL> or <F8> keys. The menu will give you access to normal start up, Step-by-Step, Safe Mode, or even directly to the DOS command prompt.

ADVANCED USERS

TweakUI is a utility for advanced users that adjusts some of the settings for the Windows 98 GUI. You can find it on your original Windows 98 installation CD (\\Win_98\\tools\\reskit\\powertoy). To install TweakUI, right-click on the tweakui.inf file and choose Install.

ADVANCED DIAGNOSTIC TOOLS

MsInfo and MsConfiguration: To view technical information about your computer and operating system, click on the Start Menu and choose Run. Type “msinfo” into the dialog box and press Enter.

To modify the system configuration at a lower level than TweakUI, type “msconfig” into the Run Dialog box.



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