



PC fix-it guide

No matter how well you look after it, Sod's Law dictates that your PC is bound to go wrong at some point – almost certainly when you're depending on it the most. Whatever afflicts your ailing system, Tom Gorham shows you how to make a simple diagnosis and provides a cure that's easy to implement

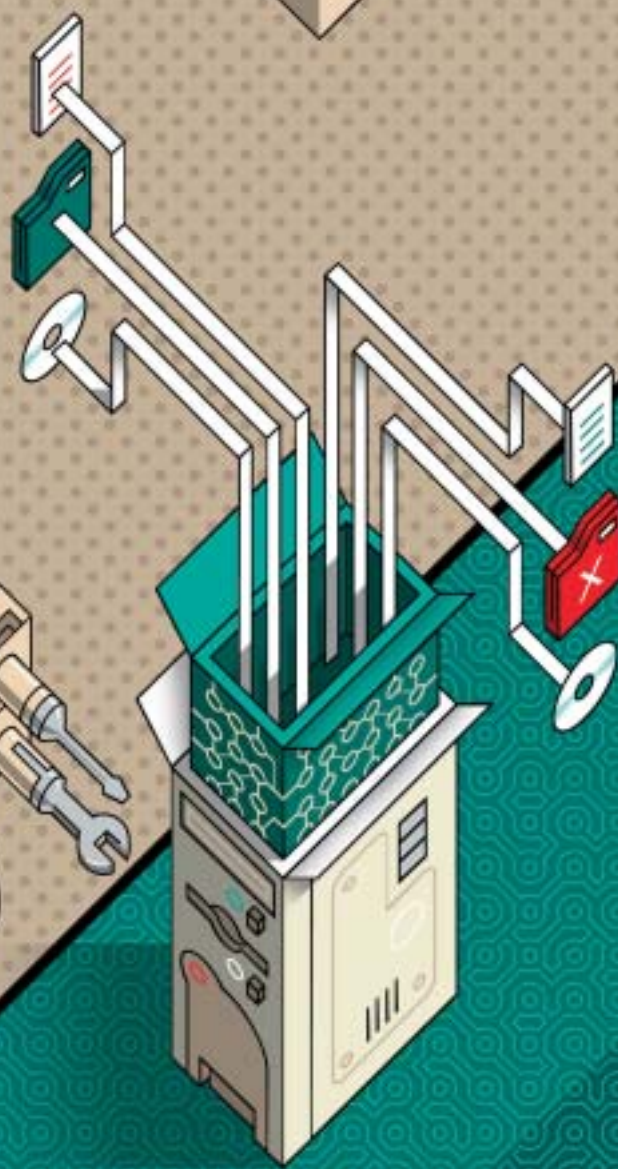
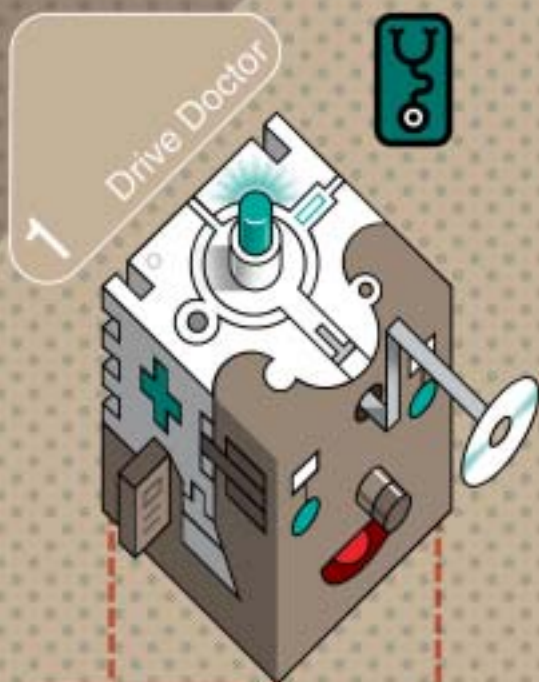
Using a computer can sometimes feel rather like directing a shopping trolley down a supermarket aisle. In both cases the thing you're operating seems to have a mind of its own and you're never sure what will greet you around the next corner. And whatever you do eventually meet, you can lay a fairly safe bet that there will be an unavoidable crash somewhere along the line. In fact, erratic PC behaviour appears to follow death and taxes as one of the three certainties of life.

Despite the daily unpredictability of PCs, the same small band of suspects is often to blame for its quirks and oddities. But diagnosing whether your computer is suffering from conflicting drivers, a hardware failure or a

malicious attack from someone over the internet can prove an arcane art form. Sometimes the cause of the problem will be immediately apparent. If your PC started behaving oddly right after you opened an email attachment from a friend then you can isolate the problem easily.

At other times your PC can play up for no apparent reason and determining the cause of its unreliability can be a trial-and-error affair, while repairing the problem is an added complexity.

Here we've gathered together some of the main reasons your PC might go awry. We'll show you how to diagnose and repair those faults and give you some tips on how to keep your system in fighting-fit condition so that the risks of unreliable behaviour are kept to a minimum.



○ General hardware niggles

The most important first stage in PC or peripheral problem diagnosis is to start from the blindingly obvious and move slowly upwards in complexity. You would be surprised how often truly simple things turn out to be at the root of a PC's troubles. One PC reseller recently told us that around one in five of the callouts he receives to revive lifeless PCs is resolved by inserting its plug in the socket.

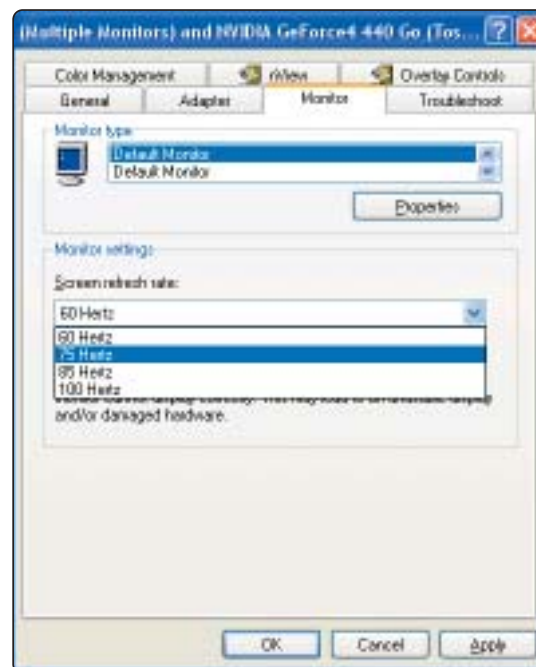
Apply the same approach to peripherals: check first that they are correctly connected both to the power supply and the PC before you take diagnosis further. If a recently added hardware component such as a graphics or sound card doesn't appear to work, make sure it is seated correctly in its motherboard slot. And when examining an apparently dead monitor, don't fall into the common trap of failing to check that its brightness setting isn't at its minimum.

When diagnosing hardware issues it's a good idea to pare down your system to the minimum in order to isolate the number of potential conflicts. If necessary, remove all peripherals such as printers and external drives one at a time. If that doesn't isolate the problem remove the sound card and modem.

You should even check the position of your PC. Apparently indiscriminate crashes and other occasional faults such as a jumpy mouse are often blamed on viruses, hard disk errors or a dirty mouse ball but they can just as easily be the result of your computer overheating. Remember to check that the cooling fans are working correctly.

Equally, if Windows reports a random 'Fatal Exception' error message, the

→ Headaches and eyestrain can be the result of a low refresh rate. Set your monitor to support the highest setting



problem might be due to faulty RAM even if this memory worked perfectly in previous Windows versions.

In the driver's seat

Peripherals frequently fail to work either because their driver isn't properly installed or it's incompatible with the version of Windows you're trying to run it on. With components such as graphics or sound cards a misbehaving driver can prevent the PC booting up properly as they are loaded during startup.

Fortunately, bad drivers are one of the easiest PC problems to diagnose and track down. Right-click My Computer, choose Properties and click on the Device Manager tab. (In Windows XP, open Control Panel and double-click on the System icon. Select the Hardware tab and choose Device Manager.)

A hardware conflict is indicated by a yellow warning icon next to the device in question while a red cross means the device isn't functioning at all. Double-click the icon to see details of the conflict. Sometimes removing the driver (select Add New Hardware in Control Panel and follow the instructions) and reinstalling it will solve the problem. However, check the manufacturer's website to see whether there are updated drivers.

Monitor the situation

Some hardware issues are more long term. If the monitor's refresh rate is set too low, for example, you might notice the screen flickering perceptibly as well as resulting headaches or eyestrain. The lowest bearable refresh rate is 75Hz.

Change it to the highest supported setting.

Windows 98 and Me automatically select the optimal refresh rate for every available resolution while Windows XP can have a default refresh rate as low as 60Hz. To manually adjust the settings, right-click anywhere on the desktop and, under Properties, choose Settings, Advanced (Windows 98 or earlier) or Monitor and the refresh rate you want to use.

You can set refresh rates above those supported by the hardware by unchecking 'Hide modes that this monitor cannot display' (Windows 2000) or, in 95 choosing 'Show all refresh rates'. If you force the monitor to display too high a setting it might not display anything and you'll need to reboot in Safe mode to change it back.

Another surprisingly frequent hardware frustration is spilling tea or coffee on your keyboard. Don't despair: you might be able to salvage the keyboard by washing it gently with warm soapy water (after disconnecting it from your PC) and leaving it in a warm cupboard to dry out fully.

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○ Windows & other computing woes

The most frequent Windows complaint is that an error message appears during startup, usually complaining of a missing file or a driver loading failure. You have two options: if you recognise the program with which the missing file is associated, attempt to uninstall the application and then install it again properly. If a driver won't load it could mean it's corrupted or the device that the driver controls isn't functioning properly. See *In the driver's seat* on page 90.

The alternative to a reinstall is to remove unnecessary files or drivers that automatically load when Windows launches. As a first step, clean out the Windows Start folder in the Start menu. Incorrect installations can affect the Windows Registry too and a plethora of unwanted Registry entries are sometimes a source of conflict.

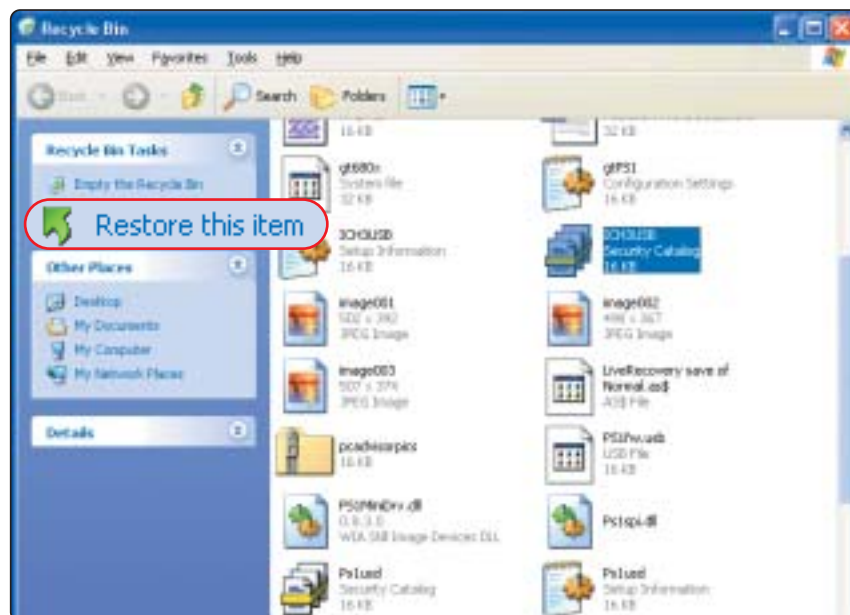
Editing the Registry manually is possible (go to Start, Run and type regedit) but if you're not sure what you're doing you can create more problems than you solve. Novices should leave Registry cleaning to a dedicated application such as V-Com Software's SystemSuite (www.v-com.com), a downloadable \$59.95 general maintenance and utility application that includes a tool to edit and repair Registry entries quickly and easily.

Of course, you might not need it – the System Restore utility in Windows XP stores a copy of your Windows Registry every 24 hours, so Registry problems can more easily be reversed.

Another frequent but easily solved Windows niggle is a disappearing Taskbar. Inexperienced users tend to panic if the Taskbar disappears from view but the solution is usually simple: move the mouse to the bottom of the screen until it changes shape, then drag upwards.

If your PC won't respond to input, the chances are an application has frozen. You can use the three-fingered salute to force the program to close by pressing the Ctrl, Alt, Del keys together and selecting End Task in the Close Program dialog box.

You have more control in Windows XP by right-clicking the Windows Taskbar and selecting Task Manager from the resulting menu. Click on the Processes tab then the



column head labelled Image Name to sort the list of running processes. Right-click the application to exit and select End Process from the drop-down menu.

Turn back time

At some stage, we've all kicked ourselves having accidentally deleted a file or folder. Annoying just isn't the word. In general, overwriting an item – that is, replacing it with one called the same thing – is difficult to undo, but if you've just deleted a file the chances of recovery are much higher. If you accidentally drop a file or folder in the Recycle Bin, simply open it, right-click the relevant file and select Restore from the drop-down menu

But even if you empty the Recycle Bin it should still be possible to recover your file. Deleting a file doesn't actually erase it, it just removes the reference to it in Windows File Allocation Table which keeps track of the location of files on your PC. The data is still in place but if you save any more documents on your PC you run the risk of overwriting the very file you want to recover. The sooner you realise you've mistakenly deleted a file the better.

You'll need file recovery software to retrieve files. Ontrack EasyRecovery DataRecovery Lite (www.ontrack.com/easyrecoverydatarecovery) is a £49 utility that works with Windows 95 upwards and has an excellent record in recovering lost

↑ Recovering files from the Recycle Bin is simple enough

or deleted data as long as the target drive is still functional. DataRecovery Lite limits you to 25 files per recovery, however, while more thorough file reclamation is significantly pricier.

A freeware alternative is PC Inspector (www.pcinspector.de/file_recovery/uk/welcome.htm), which can recover files

Even if you empty the Recycle Bin it should still be possible to recover your file

and folders on drives that haven't suffered mechanical failure.

Recovering accidentally deleted or unreadable digital camera images is more tricky. You'll need a CompactFlash reader, so that Windows can see the memory card as a hard drive, plus specific image-recovery software. DataRescue's \$50 PhotoRescue (www.datarescue.com/photorescue) isn't cheap but you can download a trial version that will at least let you see what images can be retrieved.



PC maintenance

It's unlikely there will ever be hardware or software that completely prevents the risk of crashing or system failure, but a few simple tasks will lessen the possibility of this happening and keep damage to a minimum if it does.

- Keep a check on your hard disk's performance While some PC users recommend reformatting your hard disk every few months and reinstalling Windows to defragment and rid the disk of extraneous files, it should be enough to regularly run diagnostic tests on the hard disk. Windows Task Scheduling feature (A) can automate the process. Use Windows ScanDisk (B) or Chkdsk in Windows XP to scan for and correct basic hard disk problems.

- Play nicely with Windows Always uninstall software using that package's own uninstaller. If you simply delete an application file from the Programs folder it leaves irritating detritus that can affect startup. Its entry can also remain in the Add/Remove Programs listing.

- Look after your system The debate about whether leaving your PC on all the time or shutting it down imposes more strain on your hard disk will probably never die down, but one fact is indisputable: keeping your PC free of dust and in a well-ventilated space will help prevent it overheating.

- Keep drivers up to date Track manufacturer's websites for updated drivers and be wary of upgrading your system until you're sure your vital peripherals are supported. After all, there's no point appreciating the stability of Windows XP if you can't use any of your peripherals with it.

Inevitably, older devices will be left behind by software developments and sometimes it's not worth the chase. For cheaper products such as scanners and inkjet printers it might be more cost effective to replace the hardware with a model you know will be supported.

- Keep Windows up to date Microsoft regularly issues updates and patches that usually make your PC more stable and secure. You can manually update Windows by selecting Windows Update from the Start menu (C). In Windows XP you'll need to select All Programs, Windows Update.

Windows Me and XP, however, have the ability to perform this OS update check automatically. You can add this ability to earlier versions of Windows but you will first need to download the Windows Critical Update Notification from www.windowsupdate.microsoft.com (D).

- Remember to back up Whether your computer problems are caused by hardware or software issues, it's essential you implement a backup strategy and ensure you back up before major updates or installations.

A further safety net is Windows XP's System Restore utility (E), also available in Me, which can return your PC to a determined point in time. By default, Windows creates a restore point when you first install the operating system. If your PC is stable you might want to create a new restore point from it.

Select Start, All Programs, Accessories, System Tools, System Restore. Choose Create a Restore Point and click Next. Give the restore point a description then select Create. You will now be able to select that restore point when you boot up in Safe mode (press F8 at bootup).



↑ The Scheduled Task Wizard automates disk maintenance



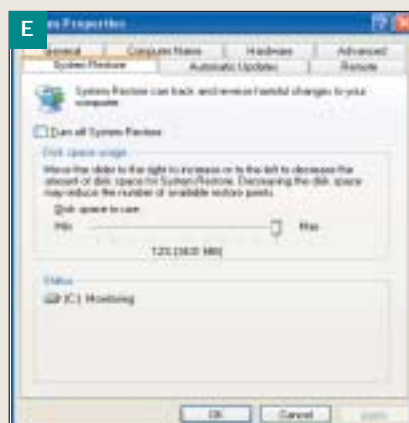
↑ ScanDisk can help keep your hard disk in order



↑ Updating Windows is only a menu selection away



↑ Install the Critical Update Notification patch for automatic downloads



↑ Windows XP includes its own System Restore option

○ Crash recovery & data retrieval

What can you do when your computer has crashed so badly that it resists your initial attempts to revive it? First, try booting up in Safe mode by holding down F8 when you reboot. Safe mode launches Windows with a basic video driver and no network connections. This should allow you to diagnose potential troubles or reverse any action that might have caused the fault.

If your PC refuses even to get that far and you have Windows 95, 98, 2000 or Me installed, attempt to launch using the emergency floppy disk. If you haven't already done so, create such a disk by inserting a blank floppy into your PC and, in Control Panel, double-click the Add/Remove Programs icon. Select the Startup Disk tab then click on the Create Disk button.

If you don't have a boot disk, either borrow a PC running the same version of Windows and create a boot disk from that or visit a website offering a downloadable version. You can grab emergency files for Windows versions up to XP from www.mybootdisks.com. XP users can also try to restore normality with the Recovery Console (see XP Advisor on page 118 for more info).

Note that while the Windows emergency disk holds generic CD-ROM and mouse drivers, which should allow you to load a Windows install or repair CD, other vital files such as autoexec.bat, config.sys, win.ini and system.ini aren't included on the disk. Copy these files from your PC on to the emergency floppy disk if possible.

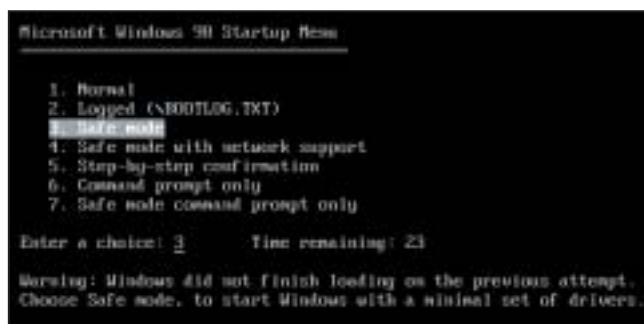
Symantec's \$29.95 GoBack (www.symantec.com/goback/index.html) incorporates a rollback feature that tracks your hard disk for changes and allows you to quickly recreate the content of your hard disk as it was in the past.

Total failure

Perhaps the most terrifying problem a Windows owner can encounter is a failed hard drive. A PC's hard drive has a finite lifespan: sooner or later it is bound to fail, which is why a backup strategy is a must (see *Preventative measures* on page 95).

While there are a number of signs of impending hard drive failure – increased disk access times, ticking noises and freezes – the finality of a failed drive is jarring. A dead hard drive prevents you starting up Windows and, even if you manage to boot from an emergency disk, you won't be able to retrieve precious files.

↓ Start up in Safe mode by holding down F8 as your PC boots



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A failed hard drive doesn't mean the end of your PC. Replacements aren't expensive – you should be able to pick up a high-capacity drive for around £50 – but this is no consolation for losing vital data.

The only option for a seriously damaged hard drive is a specialist data recovery service. In the past, these outfits had a reputation for charging the earth for their

services but competition has meant that prices have dropped. Even so, recovering data isn't cheap and you'll have to measure its cost against the value of the files you're trying to recover. Look in particular for services that won't charge if they're unable to recover your files.

Backtrack Data Recovery (www.backtrackdata.com), for instance, levies

a flat fee of £280 for a hard disk recovery or £35 for repairing a floppy on a no-recovery, no-fee basis. Ontrack (www.ontrack.co.uk/dataarecovery), meanwhile, offers a backup service that can repair damaged partitions remotely, saving you the inconvenience of having to wait several days while the company attempts to restore your files.

Antivirus and security

There's an ever-expanding range of viruses on the loose, making diagnosing an infection difficult. Equally, there are any number of holes that viruses can exploit in order to access your PC, commonly through email attachments, infected files distributed on peer-to-peer file sharing utilities or via malicious websites and hacker attacks.

There are important telltale signs of infestation. If PC performance suddenly drops, you see odd dialog boxes – especially after you've opened an email attachment – or files go missing without good reason, a virus is a likely candidate.

A decent antivirus program such as Norton AntiVirus (www.symantec.com, £33 ex VAT) will recognise such signs of viral



↑ An antivirus tool is a must-have for a stable system



↑ If you run regular virus checks, make sure the virus definitions list is up to date

infection, you'll find free tools to disinfect them at Symantec's website (www.symantec.com/avcenter/tools.list.html). An even better option is an online virus scanner called HouseCall (<http://housecall.trendmicro.com>), which can scan your PC for infection without the risk of becoming infected itself.

Infection protection

If you're worried about receiving or passing on email-borne macro viruses, take simple precautions. An extreme example is to disable HTML support in your email application, which will prevent viruses coded into HTML from infecting your machine. If in doubt, check your susceptibility to email viruses at www.gfi.com/emailsecuritytest.

A different approach is to use an email client such as the lightweight Popcorn (www.ultrafunk.com/products/popcorn) that lets you manage and delete mail on the server before it gets to your hard drive – most mail delivered using the POP3 mail system must be downloaded to your hard disk first. As the program requires no installation and no information

is stored locally aside from a small INI file, it can easily be put into action, alongside your standard email client, to remove suspect messages.

Viruses attached to a file or delivered by an email attachment are well-known methods of bringing your PC to its knees, but they are not the only ones. Trojan horses, innocuous-looking files that can be placed on your PC by an intruder, exploit

↓ You can test the vulnerability of your email client over the web



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activity for you. If you haven't installed antivirus software or it isn't loaded, your first course of action should be to run the program from its install or rescue disc.

If it reports a virus it can't fix, visit the manufacturer's website to download the latest virus definition list then run the software again. Viruses only protect against those risks identified at the time of the program's release, so ensure your virus definitions list is up to date.

Even if an antivirus program isn't to hand on your PC, there are web-based alternatives. If you can identify the virus



Power saving

Power cuts to the national grid might not be the sort of everyday occurrence they were 30 years ago, but electrical outages are a continuing risk to your data. If your electricity supply is broken, even for a few seconds when the power supply is pulled out of the socket, the impact on your PC can be catastrophic. Results can include corrupted files and irretrievably damaged hard disks.

A UPS (uninterruptible power supply) will protect from short-term power cuts. A good budget UPS device such as APC's Back-UPS CS 500Ei (www.apc.com, £65 ex VAT) makes a handy standby solution. Once hooked up, your PC runs as normal off the standard mains supply. Only when the supply is cut will an inverter be triggered on the UPS allowing its

battery to take over as the power source while you shut down your PC safely.

More common are power surges – fluctuations in the voltage or frequency of the electricity supply. Surge protector strips simply guard against fluctuations in voltage, but as they contain up to six extra power points they also remove the need for standard power point extensions. You can pick up a surge protector strip for less than £10 so its extra protection isn't going to break the bank.



the holes that your system leaves open when it is connected to the internet.

When hackers attack

To secure your PC against hacker attack at the very least you should install a firewall – a mechanism that acts as a barrier between your PC and the outside world. In fact, you may already have a firewall without knowing. If you use a broadband cable modem and router combination, for example, a hardware firewall managed from your web browser is frequently part of the package, so check with the manufacturer.

If you're hooked up to the internet via a standard modem connection, you'll need third-party firewall software. There are some powerful packages available, particularly Zone Labs' ZoneAlarm Pro (www.zonelabs.com). One of the most effective software firewalls we've seen, ZoneAlarm also flags and isolates email-borne viruses and prevents pop-up ads in Internet Explorer. See *Installing a firewall* on page 102 for more information.

Don't overlook Windows XP's built-in firewall utility. To enable it, select Start, Control Panel and double-click Network Connections. Choose the type of connection to protect and, under Network Tasks, click on 'Change settings of this connection'. Under the Advanced tab select 'Protect my computer and network by limiting or preventing access to this computer the Internet'.

Preventative measures

Over a PC's lifetime it's almost certain that a serious crash or virus infection will cost significant amounts of data. Here are our tips for data backup and storage.

Handy hardware

- **Data backup** For safekeeping important files, 1.44MB floppy disks are of limited use. CDs are your best bet, particularly as CD-rewritable drives are now almost ubiquitous PC features.
- **System backup** Storage requirements increase if you're looking to replicate an entire hard disk for restoration in the case of a total system failure. The two most suitable choices are tape drives, which copy data on to large-capacity cassettes, and external hard drives.

Tape drives offer greater security and more scope for regular backups. Exabyte's Ecix VXA-1 (www.ecix.com), for example, can store 33GB on a single tape – enough to hold a sizeable PC partition. Changing

the backup tape every day gives a higher chance of full data recovery, especially if your PC has a problem that has gone undetected for days.

Removable hard drives allow faster crash recovery than tape. Maxtor's OneTouch (www.maxtor.com, £210 ex VAT) is a 250GB external FireWire and USB 2.0 device that also functions as a standard drive for everyday use.

- **Location, location, location** However you choose to archive data, backups should be stored offsite where they're safe from fire, theft or damage. This makes online data storage a good option. Datafort (www.datafort.com) offers a service that backs up a 100MB compressed archive for £9.95 per month, while Xdrive (www.xdrive.com) gives 75MB of storage for \$4.95 per month.

Storage software

- **PowerQuest Drive Image 2002** This program enables you to restore your PC to its original state after a serious crash or mechanical failure by copying the contents of your hard drive or partition to an external drive (www.powerquest.com, £32 ex VAT).
- **Windows Backup** Both Windows 2000 and XP Pro have a built-in backup utility. Access it by clicking Start, All Programs, Accessories, System Tools, Backup. XP Home users also have access to a backup utility, although it isn't installed by default. Find it on XP Home's installation CD under the Valueadd directory. ■

↓ Windows' Backup utility isn't terribly versatile, but it's better than nothing

