

# OPERATING ENVIRONMENTS

## Controlling printer output

The batch file I'm using to control my new sheet-feeder ends with the command

```
ECHO ^L PRN
```

Although no carriage-return/line-feed pair follows this statement, the feeder is somehow receiving such a sequence. I had experienced a similar problem when attempting to send a form-feed from QuickBASIC, until I put a semicolon after the offending command to terminate the problem. Hoping for the same effect, I even added a ^Z to the end of my batch file, but it made no difference. What's wrong?

Virgil V. Perkins



Your difficulty stems from the ECHO command itself, not from the presence (or absence) of a carriage-return/line-feed (CR/LF) at the end of the line. ECHO always sends a CR/LF so that, if used repeatedly, its output will appear on separate lines. QuickBASIC's PRINT does the same unless you tell it otherwise by following the command with a semicolon.

A simple DEBUG session provides one solution to your problem. Enter the command `DEBUG FORMFEED.DAT`. DEBUG will respond 'File not found' and

present its hyphen prompt. Type `E 100 0C` (0C is the form-feed character represented in hexadecimal). Press the Enter key and DEBUG will store 0C at memory location 100 and display the hyphen again.

Type `RCX` and, after you press the Enter key this time, DEBUG will display `CX nnnn` (where `nnnn` is a four-digit hex number that shows the contents of the processor's CX register). Then, on a new line, DEBUG will present a colon prompt. Type `1`, press the Enter key and you'll be back at the hyphen. Now type `W` and press the Enter key, and DEBUG will write your 1 stored byte (0C) to the file `FORMFEED.DAT`. Quit by typing `Q` and hitting the Enter key.

Now any time you want to send a form-feed to the printer — but no CR/LF — use the command `COPY FORMFEED.DAT PRN`.

Neil Rubenking

## DOS's TRUENAME command

I recently discovered DOS 5.0's TRUENAME command, which — when issued without parameters — returns the current drive and path.

Enter a filename as an argument and you'll get the full pathname back. If, for example, `TRUENAME` alone yields `C:\DOS`, then `TRUENAME FDISK.COM` would produce `C:\DOS\FDISK.COM`.

Unfortunately, my manual fails to document this command. What purpose does it serve?

Jim Zarifis



The internal DOS function invoked by TRUENAME has been around since DOS 3.0 and the command itself appeared — undocumented — in DOS 4.0. TRUENAME provides a way to see through the false names created by the DOS commands SUBST, ASSIGN, and JOIN.

SUBST allows a subdirectory to pose as a drive, the ASSIGN command lets one drive pretend to be another, and JOIN makes one drive appear to be a subdirectory of another drive. TRUENAME exposes this subterfuge.

If, for example, you've used a command like `SUBST I: C:\PROGRAMS`, the command `TRUENAME I:` will return `C:\PROGRAMS`. `TRUENAME I:\WHEREIS.COM` will return `C:\PROGRAMS\WHEREIS.COM` — regardless of whether WHEREIS.COM actually exists!

TRUENAME also cleans up the filename you pass it, forcing all characters in the name and extension into uppercase and stripping off any extras. For example, the command `TRUENAME c:\dos\waytoolong.Thistoo` returns `C:\DOS\WAYTOOLO.THI`.

Neil Rubenking

# PCs

## Shocking your system

I've experienced intermittent problems with static electricity in my computer. Am I correct that zaps from my hands could be the cause of hardware malfunctions, and if so, what can I do to prevent them?

David Jacobson



Yes, static electricity can wreak havoc on the insides of your computer. While there is little power behind the shocks, the thousands of volts contained in these sparks can jolt the sensitive electronic components, sometimes causing permanent damage. The problems are usually most severe in cold weather when the heat is on. Increasing humidity and getting rid of carpeting will solve the problem, but these aren't al-

ways practical solutions. Fortunately, there's a much simpler answer. Take a bottle of fabric softener and dilute it with about 10 parts of tap water. Put the mixture in a spray bottle and apply it to the carpet around your work area. You may find the fragrance a bit strong at first, but it soon fades. One application lasts about six months. You can buy sprays designed specifically for this purpose, but the fabric softener works just as well for only a fraction of the price.

Alfred Poor

## Quieter fans

The typical desktop computer has relatively few mechanical components that can wear out with use, but one of the most annoying is the cooling fan in the power supply. When the fan's bearings start to go,

they can make a rumbling sound that rivals a Boeing 747 on takeoff. The fan itself is a relatively low-cost item, but you typically have to replace the entire power supply to fix the problem, which can cost \$150 or more, depending on the power supply's size.

There's another way to solve the problem — at least for the short term — for much less. Open the case and remove the machine screws that hold the power supply in place. Then reinstall the screws, placing rubber grommets between the power supply and the case. This will absorb most of the vibrations and will reduce the sound level significantly. You should still plan on replacing the power supply, since your system will overheat if the fan stops, but this will let you work without earplugs.

Alfred Poor

## SPREADSHEETS

## Interpolating lookup values in Excel

I have created a macro that improves upon the Excel lookup functions by interpolating values when necessary. I sometimes need to send material to the US so I need to convert to degrees Fahrenheit. Suppose you are doing research in which you have to measure temperatures but are using a thermocouple. The thermocouple gives an output in millivolts, which you must look up in a table and convert to degrees Fahrenheit.

The following abridged table will help demonstrate:

Millivolts	Temperature
-0.463	10
-0.442	10.1

If your thermocouple reading is -0.451 and you use the standard VLOOKUP function, Excel returns 10. With my macro, a thermocouple reading of -0.451 returns 10.0571429, a value interpolated between 10 and 10.1.

The macro, named Intlookup and listed in Figure 2, is a user-defined function requiring three arguments. The first argument is the location of the lookup table. The next argument is the value you would like to seek out. This is -0.451 in the example above. The third argument is the column where the interpolation is to occur. In the example above, this would be 2. This argument is included so that you don't have to build separate tables when there are more properties, such as pressure or density, which are also dependent upon millivolts.

So in the example above, if the lookup table were named Table, you could find the temperature corresponding to -0.451 millivolts by entering

```
=INTER.XLM!Intlookup(Table
-.451,2)
```

It's very important for the first column of the table to be sorted in ascending order. The macro uses a binary search, which means it starts by setting pointers to the beginning and end of the first column of the table and then calculates a midpoint. If the search value (the second argument) is greater than the value contained at the midpoint, then the lower pointer takes on the value of the midpoint. Otherwise, the higher pointer takes on the value of the midpoint, and the search continues.

The biggest drawback to the macro is that it operates slowly. But it works, and it's much faster than doing the calculation by hand.

Jason Wessels

	A
1	Intlookup
2	=ARGUMENT("table",8)
3	=ARGUMENT("value")
4	=ARGUMENT("which")
5	=IF(OR(value<INDEX(table,1,1),value>INDEX(table,ROWS(table),1)),RETURN("Not in Table"))
6	=IF(VLOOKUP(value,table,1)=value,RETURN(VLOOKUP(value,table,which)))
7	=SET.NAME("Low",1)
8	=SET.NAME("High",ROWS(table))
9	=SET.NAME("Midpoint",INT((High-Low+0.5)/2)+Low)
10	=WHILE(NOT((AND(INDEX(table,midpoint,1)<value,INDEX(table,midpoint+1,1)>value))))
11	=IF(INDEX(table,midpoint,1)<value,SET.NAME("Low",midpoint),SET.NAME("High",midpoint))
12	=SET.NAME("midpoint",INT((High-Low+0.5)/2)+Low)
13	=NEXT()
14	=INDEX(table,midpoint,1)
15	=value
16	=INDEX(table,midpoint+1,1)
17	=INDEX(table,midpoint,which)
18	=INDEX(table,midpoint+1,which)
19	=RETURN(A17+(A18-A17)*(A15-A14)/(A16-A14))

Fig 2: You can use the Intlookup function this macro creates to interpolate Excel lookup table values

	A	B	C
1	Intlookup		
2	=ARGUMENT("table",64)		
3	=ARGUMENT("value")		
4	=ARGUMENT("which")		
5	=IF(VLOOKUP(value,table,1)=value,GOTO(A24))		
6	=SET.VALUE(B6,1)	2	<---- low value
7	=SET.VALUE(B7,ROWS(table))	4	<---- high value
8	=SET.VALUE(B8,INT((B7-B6+0.5)/2)+B6)	3	<---- midpoint
9	=IF(INDEX(table,B6,1)=value,RETURN(INDEX(table,B6,which)))		
10	=IF(INDEX(table,B7,1)=value,RETURN(INDEX(table,B7,which)))		
11	=IF(AND(INDEX(table,B8,1)<value,INDEX(table,B8+1,1)>value),GOTO(A18))		
12	=IF(AND(B8+1=B7,B6+1=B7),RETURN("Not in table"))		
13	=IF(INDEX(table,B8,1)<value,GOTO(A14),GOTO(A16))		
14	=SET.VALUE(B6,B8)		
15	=GOTO(A8)		
16	=SET.VALUE(B7,B8)		
17	=GOTO(A8)		
18	=INDEX(table,B8,1)		value1
19	=value		value2
20	=INDEX(table,B8+1,1)		value3
21	=INDEX(table,B8,which)		value4
22	=INDEX(table,B8+1,which)		value5
23	=RETURN(A21+(A22-A21)*(A19-A18)/(A20-A18))		
24	=RETURN(VLOOKUP(value,table,which))		

Fig 3: This faster variation of the macro in Fig 2 eliminates some repetitive checking



Lookup tables are typically used in situations where interpolation would not be appropriate. For example, the VLOOKUP function is often employed in payroll worksheets to calculate withholding tax. The withholding tables issued by the ATO consist of a series of threshold values. If wages are greater than  $x$  but less than  $y$ , the amount withheld is  $z$ . You certainly don't want to do any interpolating in this context; you want to withhold the lower-threshold amount.

In situations where two sets of values have a perfectly linear relationship to one another, you don't need a lookup table at all. For example, you don't need

VLOOKUP to convert Celsius temperatures to Fahrenheit; a simple formula will do the job.

But for certain kinds of engineering problems, where the relationship between input and output is not definable by formula but based on experimentally derived values, an interpolating lookup function, such as Mr Wessels' Intlookup, can be quite useful.

The macro does its binary search routine until it has found the highest lookup-table number less than the search value and the lowest lookup-table value greater than the search value. It gets the numbers that VLOOKUP would return for each of these positions in the lookup table, then does

# Windows XP home

Rose Vines reveals her top tips to keep Windows XP running smoothly.

## Remove, don't delete!

One of the most common causes of system instability is improperly uninstalled applications. If you wish to uninstall a program, never delete the program. Instead, check your Start menu to see if the program has its own uninstaller (you'll find it listed on the program's submenu, if available). If not, use Control Panel's 'Add or Remove Programs' applet.

1. Click Start → Control Panel → Add or Remove Programs.
2. Click the program in the list and click Remove.

If you're asked whether to keep or remove shared files, here's a useful rule of thumb: if the file is stored in the Windows, Windows\System or a 'common' folder (such as Borland Common Files or Microsoft\Shared), keep it; if the file is stored in the program's own folder, such as \winTack or \Program Files\Gemsoft, remove it. This will result in some useless clutter in your Windows folder, but it will prevent you from removing a file essential to Windows' operation. One exception to this rule: when a filename clearly identifies a

you're uninstalling (such as \Windows\System\winTack.dll), delete it regardless of its location.

3. If the uninstall routine is unable to remove all files associated with the program — it will usually give you a message indicating this is the case — you'll need to finish the job manually. To do so, reboot your computer, open Windows Explorer, locate the program's folder (usually within C:\Program Files) and delete it and its contents.

## Defragging successfully

Is Windows slowing down over time? Perhaps it's time to defrag. The Disk Defragmenter clears out space on your hard disk and speeds up program operation by placing each file into a single location, and consolidating all files into a single block.

Defrag works most efficiently when your drive has ample space for its operations. If you run Defrag with a drive that's filled to the brim, it has to juggle bits and bytes to clear enough space to start writing files. So, it pays to delete all unnecessary files before you start defragging: uninstall unwanted programs, archive old data, delete unwanted backups, and then run Disk Cleanup (Start → All Programs → Accessories → System Tools → Disk Cleanup).

Defrag also works best when completely uninterrupted. Background programs such as Task Scheduler and antivirus software can cause Defrag to stop and restart repeatedly. To avoid such interruptions, do a clean boot before running Defrag.

1. Click Start → Run, type **msconfig** in the Open box and click OK to open the System Configuration Utility.
2. On the General tab, click Selective Startup and remove the checkmarks beside 'Process System.ini file', 'Process Win.ini file' and 'Load Startup Group items'.
3. Click OK and allow your computer to restart.
4. Click Start → All Programs → Accessories → System Tools → Disk Defragmenter.
5. Click the drive you wish to defragment and then click the Defragment button.
6. After Defrag has finished, run msconfig once more, click Normal Startup on the General tab, click OK and reboot.

## Creating boot floppies

It's always handy to have a boot disk on hand in case things go really wrong with your system and you can't get into Windows. In fact, it's a good idea to have both an MS-DOS startup disk and a Windows startup disk (the former lets you load DOS; the latter loads a Windows 'loader' program from the floppy disk and then loads the rest of Windows from the hard disk). Here's how to create the MS-DOS boot disk.

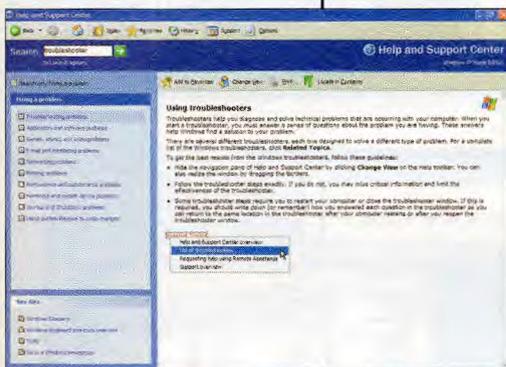
1. Place a blank floppy in the drive.
2. Click Start → My Computer.
3. In My Computer, right-click the floppy drive icon and select Format.
4. In the Format dialog box, enable the 'Create an MS-DOS Startup Disk' option.
5. Remove the disk from the drive, label it and put it somewhere safe.

The following will create a Windows startup disk.

1. Place a blank floppy in the drive.
2. Click Start → My Computer, right-click the floppy drive icon and select Format.
3. Format the floppy without enabling the MS-DOS Startup Disk option.
4. Click Start → Run, type **CMD** in the Open box and click OK to open a Command Prompt window.
5. At the prompt, type the following commands, pressing Enter after each one.

```
CD \
ATTRIB -s -h boot.ini
ATTRIB -s -h -r ntldr
ATTRIB -s -h -r ntdetect.com
COPY boot.ini A:
COPY ntldr A:
COPY ntdetect.com A:
ATTRIB +s +h boot.ini
ATTRIB +s +h +r ntldr
ATTRIB +s +h +r ntdetect.com
```

6. You should also copy bootsect.dos and ntbootdd.sys to the floppy disk, if they exist in the root folder. To check whether they do, type the following commands (press Enter between each):
- ```
ATTRIB bootsect.dos
ATTRIB ntbootdd.sys
```



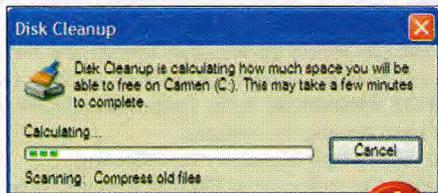
Don't forget to check the step-by-step troubleshooters in XP's Help And Support Center.

## TOP TIP

### Use the troubleshooters

Windows XP's help is far better than that available in previous versions, so use it. Particularly handy are the troubleshooters. There's one for startup and shutdown problems, one for printing, another for modems, file and printer sharing, Outlook Express, and more. Click Start → Help and Support → Fixing A Problem → Troubleshooting Problems, and take a look at the offerings.

STEP BY STEP: WHEN DISK CLEANUP FREEZES



**1** Disk Cleanup (Start → All Programs → Accessories → System Tools → Disk Cleanup), the program that lets you clean out temporary, old and unused files from Windows, sometimes has a tendency to freeze up when you try to get it to compress old files. When you run Disk Cleanup, you see the message: 'Disk Cleanup is calculating how much space you will be able to free on (C:). This may take a few minutes to complete. Scanning: Compress old files.' On a large, crowded hard disk, you can expect to wait several minutes for this process to complete and the progress bar won't change for some time. But if your system stalls for a very long time, you can work around the problem by editing the Registry (don't do this if you're unfamiliar with using the Registry Editor).



**2** First, back up the Registry key you're going to change. Click Start → Run and type `regedit`. Navigate to: `HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Explorer\VolumeCaches`. To make a backup of the key before you make any changes, right-click the VolumeCaches key, select Export from the pop-up menu, click Desktop in the 'Save in' box, type `VolumeCaches` in the 'File name' box and click Save. If you run into any problems after making the following changes, or if you want to re-enable the compressed files option, you can always restore your Registry by double-clicking the `VolumeCaches.reg` file on your desktop.

**3** Still within the Registry Editor: Click the (+) sign beside the VolumeCaches key to expand it. Right-click the subkey Compress Old Files, select Delete from the pop-up menu, and respond Yes to the prompt. Close the Registry Editor, reboot and rerun Disk Cleanup.



If `bootsect.dos` exists (in which case, you will not see a File Not Found error message), copy it to the floppy with the following commands, pressing Enter after each.

```
ATTRIB -s -h bootsect.dos
```

```
COPY bootsect.dos A:
```

```
ATTRIB +s +h ntbootdd.sys
```

Similarly, if `ntbootdd.sys` exists, copy it to the floppy using the following commands.

```
ATTRIB -s -h ntbootdd.sys
```

```
COPY ntbootdd.sys A:
```

```
ATTRIB +s +h ntbootdd.sys
```

7. Type `EXIT` and hit Enter to close the Command Prompt window.

USB failures

When a USB device stops functioning, don't rush to uninstall and reinstall the driver. Instead, unplug the device, wait a few seconds, then plug it back in. Very often, that's all that's needed to get a USB scanner, PDA, digital camera, or whatever, working again. One other piece of advice: don't use long cables with USB devices. Anything over 3m can cause problems.

Help and Support problems

XP's Help And Support Center seems particularly susceptible to problems, making it inaccessible. If you try to access Help And Support and can't, first make sure the Help And Support Service is running.

1. Click Start → Run, type `services.msc` in the Open box and click OK.
2. In the Services window, scroll down to Help And Support and make sure its Startup Type is set to Automatic and its status is Started. If not, double-click the service and make the necessary adjustments on the General tab of the Help And Support Properties dialog.
3. Click OK and close the Services window. If that doesn't solve your problem, try re-registering the Help Center program.

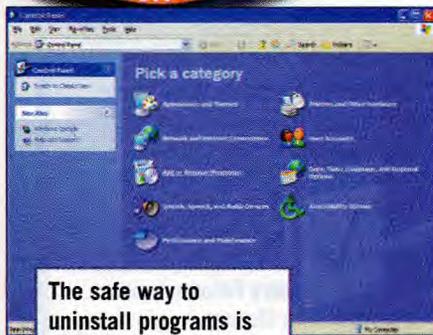
1. Click Start → Run.
2. Type `helpctr -regserver` in the Open box and click OK.
3. Click Start → Run once more, then type `CMD` in the Open box and click OK to open a Command Prompt window.
4. At the Command Prompt, type `regsvr32 /u hhctrl.ocx` and press Enter.
5. Type `Exit` and press Enter to close the Command Prompt window.

If you still have problems accessing Help And Support, try reinstalling it. Make sure you have your Windows XP Setup disc handy, then open the `C:\Windows\inf` folder. Right-click the `pchealth.inf` file and select Install from the pop-up menu.

Repair XP

If your XP system has become unstable and you can't pinpoint the problem, try repairing your >>>

**TOP TIP**  
**Rollup! Rollup!**  
 Microsoft has issued dozens of updates since Windows XP Service Pack 1. Finally, it has released Update Rollup 1 for Windows XP, which gathers all those patches, until the end of September 2003, into one megapatch. You can install it via Windows Update, but if you need to install it on multiple PCs or you wish to burn a copy to CD for future use, download the complete Rollup from <http://tinyurl.com/v4lh>.



The safe way to uninstall programs is via the 'Add or Remove Programs' applet in Control Panel.

## TOP TIP

### Reinstall, then uninstall

If you removed an application by deleting it instead of using the 'Add or Remove Programs' applet in Control Panel and then encounter problems, you may be able to fix your problems by reinstalling the application, rebooting, and then uninstalling the program properly via Start → Control Panel → Add or Remove Programs.

## TOP TIP

### Fast Knowledge Base access

Microsoft's site is home to some of the best troubleshooting information for Windows XP, housed in the extensive Knowledge Base. If you know the identification number of a Microsoft Knowledge Base article, the fastest way to access the article is to type the following into your browser's address box: <http://support.microsoft.com?kbid=n>, where *n* is the article number. Otherwise, just head over to <http://support.microsoft.com>.



Windows installation. This will roll back your system, so you'll have to reinstall any service packs or patches you've installed once the repair completes. Also, although a repair shouldn't affect any applications or data, back up anything you want to save before proceeding.

1. If your PC can boot from the CD-ROM drive, boot with the Windows XP CD. If your PC can't boot from the CD-ROM, boot with a Windows 98/Me Startup floppy with CD-ROM support.
2. Log on to your CD drive, navigate to the i386 folder and run the program `winnt.exe`.
3. Press Enter when the message 'To setup Windows XP now, press Enter' appears.
4. Do not press R to open Recovery Console.
5. Press F8 to accept the licence agreement.
6. Be sure your current installation of XP is selected, press R to Repair Windows XP, and follow the prompts.

## Folder settings

XP lets you customise the way each folder appears, and normally remembers the settings you've selected for each folder. However, when you've customised 400 folders, Windows starts to become forgetful.

If you find Windows is no longer remembering folder settings and you work with a lot of folders, try upping the number of 'bags' it uses to store these settings. You can increase it to 8,000. This involves editing the Registry, so don't attempt this unless you're familiar with the process and the risks.

1. Click Start → Run and type `regedit`.
2. Delete the following Registry subkeys.  
HKEY\_CURRENT\_USER\Software\Microsoft\Windows\ShellNoRoam\BagMRU  
HKEY\_CURRENT\_USER\Software\Microsoft\Windows\ShellNoRoam\Bags
3. Navigate to:  
HKEY\_CURRENT\_USER\Software\Microsoft\Windows\Shell
4. Right-click the right-hand pane and select New → DWORD Value. Name the new value **BagMRU Size**.
5. Double-click the new BagMRU Size value and set its decimal value to **8000** (or hexadecimal **1f40**).
6. Navigate to:  
HKEY\_CURRENT\_USER\Software\Microsoft\Windows\ShellNoRoam  
Add a new DWORD value called **BagMRU Size**, and set the value to **8000** decimal (**1f40** hex).
7. Navigate to:  
HKEY\_CURRENT\_USER\Software\Microsoft\Windows\CurrentVersion\Policies\Explorer  
Add a DWORD value called **NoSaveSettings**, and set its value to **0**.
8. Exit the Registry Editor and reboot.

## Missing updates

The Windows Update option (Start → All Programs → Windows Update, or accessible directly via your browser at [www.microsoft.com/windowsupdate](http://www.microsoft.com/windowsupdate))

allows you to keep your operating system up to date with the latest fixes, improvements and security patches. However, sometimes Windows Update itself fails to work.

If you can access the Windows Update site, but you can't download updates, click Start → Run, type `regsvr32 wintrust.dll` in the Open box and click OK. Then try accessing the updates.

If you still have problems, try the following.

1. Click Start → Run, type `CMD` in the Open box and click OK.
2. At the Command Prompt, type the following lines, pressing Enter after each line.  
`NET STOP cryptsvc`  
`REN %systemroot%\system32\catroot2 oldcatroot2`  
`NET START cryptsvc`  
(Note that you can type in upper or lower case)
3. Type `EXIT` and press Enter to close the Command Prompt window. Now try the Windows Update site once more.

If you want to be able to access updates you've previously installed, do the following.

1. Click Start → Run, type `CMD` in the Open box and click OK.
2. At the Command Prompt, type `DEL /q "%SystemRoot%\System32\Catroot2\Edb.log` and press Enter.
3. Type `EXIT` and press Enter to close the Command Prompt window.

## Unnecessary updates

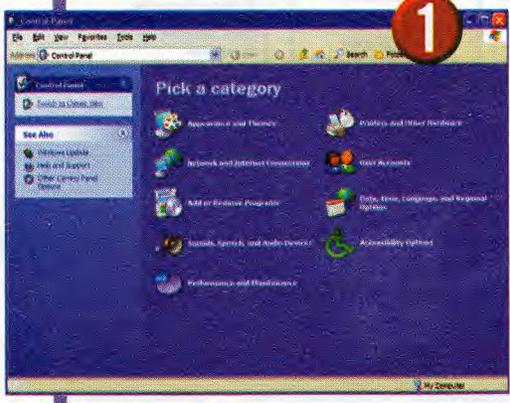
The reverse problem of Windows Updates failing to download is when Windows Update insists on displaying updates you have already installed.

You have two options when this happens. The first is to reinstall the updates from the Windows Update site, reboot your computer, and then check the site once more. If that fails, you'll need to delete the Registry key associated with the update (only do this if you know the risks of editing the Registry).

1. Visit the Windows Update site and click 'Scan for updates'. Jot down the Microsoft Knowledge Base article number associated with the problem update(s), and then close the Windows Update page.
2. Click Start → Run, type `regedit` in the Open box and click OK to open the Registry Editor.
3. Navigate to:  
HKEY\_LOCAL\_MACHINE\SOFTWARE\Microsoft\Updates\Windows XP\SP1
4. Locate the subkey that corresponds to the Knowledge Base article you wrote down in step 1 and right-click this key. From the pop-up menu, select Delete and respond Yes when prompted.
5. Repeat this procedure for all affected updates, and for any within the SP2 key (if it exists) as well.
6. Exit the Registry Editor and reboot.
7. Return to the Windows Update site and reinstall the update(s).
8. Reboot once more.

If you're still having problems with Windows Update, try the Windows Update Troubleshooter at <http://v4.windowsupdate.microsoft.com/troubleshoot>.

# STEP BY STEP: QUICK ACCESS TO CONTROL PANEL APPLETS



1

**1** The Control Panel lets you adjust and tweak all sorts of Windows settings. It's often an invaluable tool when you're trying to troubleshoot your system. By default, Windows XP Home Edition displays the Control Panel in a 'friendly' category view.



2

**2** By clicking the 'Switch to classic view' command in Control Panel's task pane, you can view all the individual applets, similar to the old Windows 9x view.

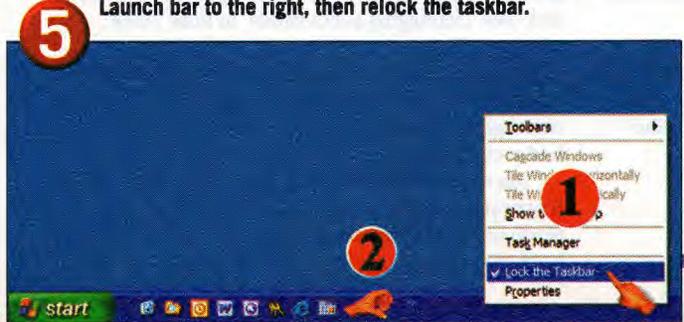


3

**3** Some Control Panel applets are so useful, it's a good idea to make them more accessible. For example, you'll

save a lot of time uninstalling programs if you stick the 'Add or Remove Programs' applet on your Start menu. Open Control Panel in Classic View then drag the 'Add or Remove Programs' applet onto the Start button, wait for the Start menu to pop open. Next drag the applet onto the top section of the left-most section of the Start menu. Wait a second and it will appear in the list. Use the same technique to add other frequently used applets to the Start menu.

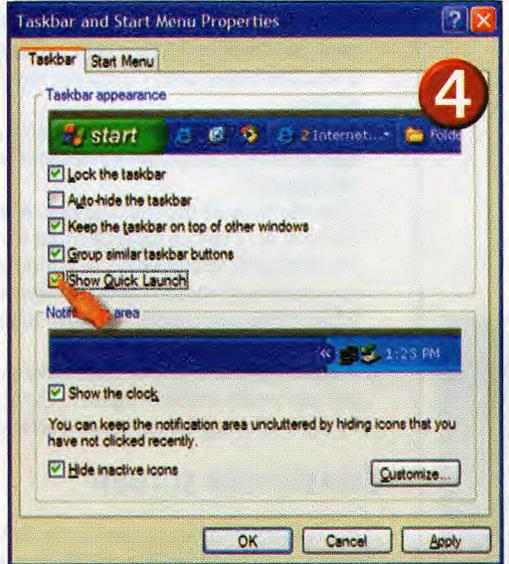
**5** To add the applet to the Quick Launch bar: Open Control Panel and drag the Folder Options applet onto the Quick Launch bar. If you can't see the icon in the Quick Launch area, right-click an empty space on the taskbar, select 'Lock the taskbar', drag the resizing handle at the right edge of the Quick Launch bar to the right, then relock the taskbar.



5

1

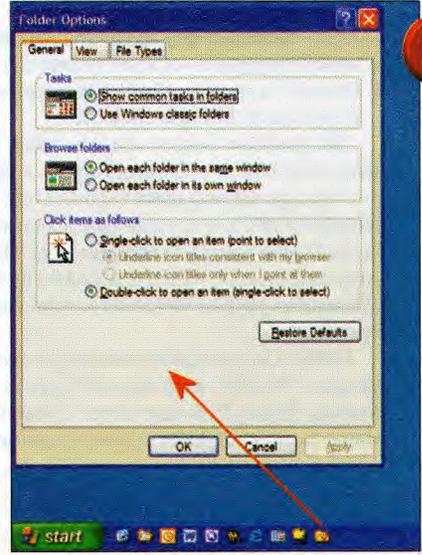
2



4

**4** You can gain even faster access to Control Panel applets by sticking them in your Quick Launch bar. A great candidate for this is the Folder Options applet. First, if the Quick Launch bar (immediately to the right of the Start button) is not visible,

activate it this way. Right-click the Start button. Select Properties from the pop-up menu. Click the Taskbar tab, tick the 'Show Quick Launch' option and click OK.



6

**6** Now, if you ever need to adjust folder properties or change file associations, it's all just a single click away via the Folder Options icon in your Quick Launch bar.

We'll be exploring the Control Panel in a lot more detail next month. **PCU**

# Windows 2000/XP Pro

Link Harris  
helps you  
troubleshoot  
Windows 2000/  
XP Pro.



**Figure 1.** If you think a piece of hardware is causing Windows headaches, try disabling the device (Windows 2000 shown).

## Disable rogue hardware

If Windows starts to play up after you've installed new hardware, try disabling the device. This has the same effect as uninstalling the hardware, but is easier to reverse.

1. Right-click My Computer and select Properties → Manage → Device Manager (in the System Tools tree). In Windows XP, first click the Start button if you don't have a My Computer icon on your desktop.
2. Double-click the type of device (such as Modems), right-click the particular device and select Disable (see figure 1).
3. Click Yes to clear the warning box. A red cross over the icon for a device indicates that it's disabled. This happens straightaway in Windows XP, but you may have to reboot to clear the device drivers from RAM. In Windows 2000, you have to reboot before the device is actually disabled.
4. If disabling the device doesn't solve the problem, you can easily enable it again in Device Manager by right-clicking the device and selecting Enable.

## Unwelcome screen

If you resume from your screensaver in Windows XP and it suddenly displays the Welcome screen instead of your desktop, it's probably because you were initially the only user (except for Guest) and you've added one or more user accounts. Here's how to make your screensaver dump the Welcome screen and resume straight to your desktop.

1. Right-click an empty space on the desktop and select Properties → Screen Saver tab.
2. Untick 'On resume, display Welcome screen' in the Screen Saver box and click OK.

This problem only occurs when Fast User Switching (Start → Control Panel → User Accounts → 'Change the way users log on or off') is enabled. When you add one or more user accounts, the option in the Screen Saver box changes from 'On resume, password protect', which is unticked by default, to 'On resume, display Welcome screen', which is ticked by default.

Unlike 'Use Fast User Switching', which applies to all users of the PC, each user will have to untick 'On resume, display Welcome screen' if they want to be able to jump straight from their screensaver to the desktop.

## Shifty System Restore

Windows XP's System Restore (Start → All Programs

→ Accessories → System Tools → System Restore) allows you to roll back your system files and settings to what they were at a previous date and time. However, the utility's not a silver bullet, so here are some traps to watch out for.

1. **Partial programs.** Although System Restore doesn't uninstall programs, it will trash them by removing their DLL and EXE files. To avoid leaving a mess, before running System Restore you should uninstall (not delete) any programs installed after the restore point you're rolling back to. If you want to keep a program, reinstall it afterwards.
2. **Zapped user account.** If a user account was created after the restore point you're rolling back to, System Restore will delete the account (but not any data files created by the user) without warning you. This means the user can't log on.
3. **Safe, but sorry.** From Safe Mode, you can roll back your system with System Restore, but it won't create the usual safety net that allows you to undo the restore operation. Unless you're desperate, always boot to Windows in normal mode before running System Restore.
4. **When rollback means roll over.** If you use Recovery Console to change Windows system files and then use System Restore to roll back your system, this could create a mess. That's because System Restore doesn't monitor changes to system files made from Recovery Console.
5. **Disable... not.** There's no way to temporarily disable System Restore. If you click Start, right-click My Computer and select Properties → System Restore tab and tick 'Turn off System Restore' for any or all drives, this wipes out forever all currently saved restore points for those drives.

## Check your disk

Before the clean boot prior to defragging your hard disk (see 'Defragging successfully' in Rose Vines' Windows XP Home troubleshooting tips on page 48), you should run Check Disk. This is the Windows error-checking tool that helps rid your hard disk of two types of file trashers: errors in the file system and bad sectors.

You can run the GUI version of Check Disk, but it operates in a vacuum and doesn't give you any feedback on what it has found or fixed. Instead, go hard core and run the Command Prompt version.

### TOP TIP

#### Run as another user

If you're a member of the Administrators group, but have logged on as a member of another group to fix something on someone else's account, you could find you don't have access to the tools you need. If this happens, hold the Shift key while you right-click the program's icon and select 'Run as'. This opens a dialog box where you can enter your user name and password, but you'll stay logged on as the other user. You can do this with any icon that represents the program, including one on the Start menu, the desktop, a toolbar or in My Computer. In Windows XP, you can sometimes get the 'Run as' option without pressing Shift.

If you ask Check Disk to repair any errors it finds, it can take a while, even if there aren't any errors to fix. You also have to reboot to run Check Disk in repair mode for either the boot disk (the one where Windows is installed), the system disk (the one that holds Boot.ini and other startup files) or any drive that holds a paging file.

To save yourself needless hassle, first run Check Disk in report-only mode. Only if this indicates problems should you ask it to run in full repair mode for that drive.

1. Log on as a member of the Administrators group.
2. Click Start → Programs (All Programs in Windows XP) → Accessories → Command Prompt and type **chkdsk C: /r**. This displays a report on the drive, repairs minor errors and lets you know whether anything major needs fixing.
3. If necessary, type **chkdsk C: /r**. This tells Chkdsk to fix errors in the file system, locate and mark bad sectors and save recoverable information in CHK files.
4. Repeat step 2 (and step 3, if necessary) for each of the other drives you want to defrag.

## Speed into Safe Mode

If Windows won't start after you've added new hardware or software, try using Safe Mode to sort out the problem. This temporarily reconfigures Windows with only the basic hardware and no startup programs, and loads only those services and drivers essential for starting the operating system.

You can select Safe Mode (or 'Safe Mode with Networking', if you need the connection) from the Advanced Options menu. To display this, restart your PC and press F8 while the Boot Options menu is onscreen (or after your PC finishes displaying startup messages, but before Windows starts).

If you're a tinkerer that frequently uses Safe Mode, you can avoid the F8 countdown and speed into Safe Mode by adding it as a selection on your Boot Options menu. Here's how to do it.

1. Open Boot.ini as explained in 'Boot Options' below (step 3 for Windows XP; step 4 for Windows 2000), but don't delete any lines.
2. In the [Boot Loader] section of Boot.ini, note the text to the right of 'Default='.
3. Move to the [Operating Systems] section, select the entire line that begins with the text from step 2, and copy the line to the bottom of the section. It will look something like **multi(0)disk(0)rdisk(0)partition(4) \WINDOWS="Windows XP Professional" /fastdetect**.
4. Edit the text to the right of **WINDOWS=** in the copied line to **"Windows XP Professional - Safe Mode" /fastdetect / safeboot:minimal /sos /bootlog** (replace **minimal** with **network** if you want Safe Mode to load networking drivers when it starts).
5. Save the edited Boot.ini as explained in 'Boot Options', at right.
6. If you're multibooting, you can repeat the above steps for the other operating systems listed in the [Operating Systems] section of Boot.ini.

Note: the **/sos** switch displays the name of each driver as it loads. The **/bootlog** switch saves a list of

all drivers and services that are either loaded or not loaded to Ntbootlog.txt, located in the folder where Windows is installed.

## Boot Options

Recovery Console is a text-based, command-driven interface, similar to Command Prompt. It gives you access to FAT, FAT32 and NTFS partitions

for repairing your boot sector or Windows files.

You can start Recovery Console by booting with the Windows CD, which is your only option if your PC won't boot from the hard disk.

However, if you regularly run Recovery Console, you should add it to your Boot Options menu, which displays after your PC has run through its startup messages. Starting Recovery Console from there is less hassle and much faster than booting from the Windows CD.

1. Log on as a member of the Administrators group and put your Windows CD in the drive.
2. Click Start → Run, type **D:\i386\winnt32.exe /cmdcons** and press Enter (where D: represents the letter for your CD-ROM drive) and follow the prompts.

You can't use 'Add or Remove Programs' to uninstall Recovery Console, so removing it involves manually deleting a file and folder, and editing the file Boot.ini.

1. In My Computer, click Tools → Folder Options → View tab and be sure 'Show hidden files and folders' is selected and 'Hide protected operating system files (Recommended)' are unticked.
2. Delete the folder C:\Cmdcons and the file C:\Cmdldr.
3. To edit Boot.ini in Windows XP, do the following.
  - a. Click Start, right-click My Computer and select Properties → Advanced tab → Settings button in 'Startup and Recovery' box → Edit button (see figure 2).
  - b. In Boot.ini, delete the entry C:\CMDCONSOLE\BOOTSECT.DAT="Microsoft Windows Recovery Console" /cmdcons.
  - c. Click File → Exit → Yes (to save changes), then OK twice.
4. To edit Boot.ini in Windows 2000, take the following steps.
  - a. Make a backup copy of C:\Boot.ini.
  - b. Right-click C:\Boot.ini, select Properties, untick 'Read-only' and click OK.
  - c. Double-click C:\Boot.ini to open it in Notepad and delete the entry in step 3b above.
  - d. Save your changes and quit Notepad. >>>

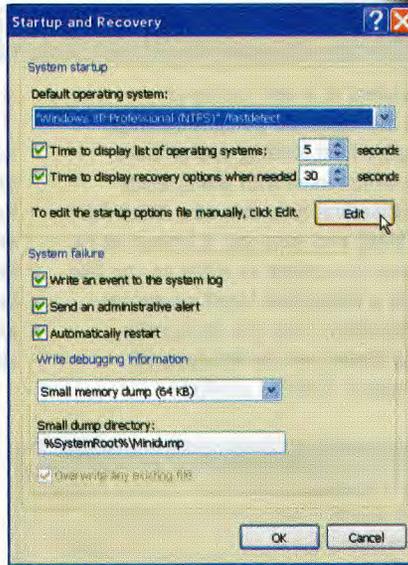


Figure 2. Windows XP makes it easy to change your Boot Options menu by editing your Boot.ini file.

## TOP TIP

### No reboot

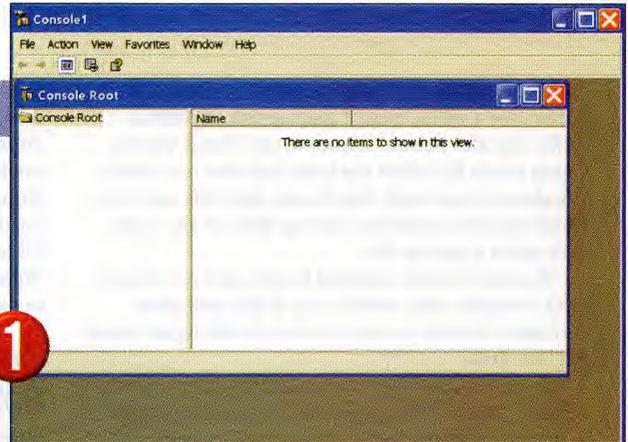
When Windows crashes and displays a blue screen with a Stop message, the next thing you know, the PC has rebooted. This is usually the best bet for an isolated, random Stop error, but you'll have better luck troubleshooting a persistent one if your PC doesn't automatically reboot after the blue screen. Here's how to change this setting.

1. Log on as a member of the Administrators group
2. Right-click My Computer and select Properties → Advanced tab → Settings button ('Startup and Recovery' button in Windows 2000) in the 'Startup and Recovery' box (see figure 2).
3. Untick 'Automatically reboot' in the 'System failure' box and click OK twice.

## STEP BY STEP: CREATING AN MMC CONSOLE

This is the first instalment of a new series on mastering Microsoft Management Console (MMC), which is a customisable host holding one or more administrative tools. When used with MMC, each individual administrative tool is known as a 'snap-in'. The combination of MMC and snap-ins is known as an MMC console, and you can create as many as you like. The idea is to provide a consistent interface across a selection of administrative tools you frequently use. The screenshots shown are for Windows XP Professional, but Windows 2000 is similar.

**1** To open MMC with no snap-ins, click Start → Run, type `mmc` and press Enter. This brings up the empty MMC shell shown.



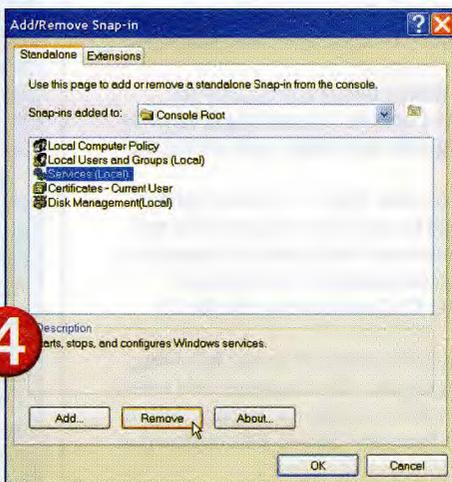
**2** Click File (Console in Windows 2000) → Add/Remove Snap-in → Add button. This opens the 'Add Standalone Snap-in' dialog box shown in step 3, at right.



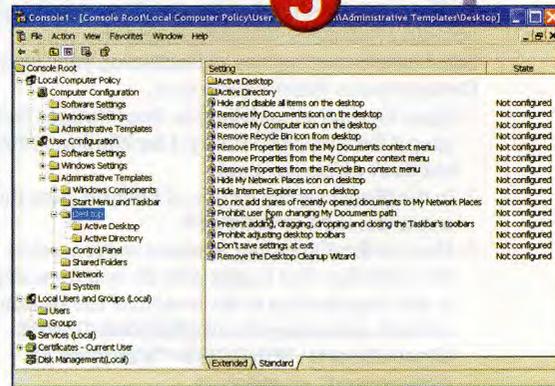
**3** Scroll through the list to find the snap-in you want to add. To find out what a snap-in is supposed to do, select it and read the Description box at the bottom. Click Add → Finish to include that snap-in in the MMC console. Repeat this step for other snap-ins you want to add, and click Close after adding the final one.



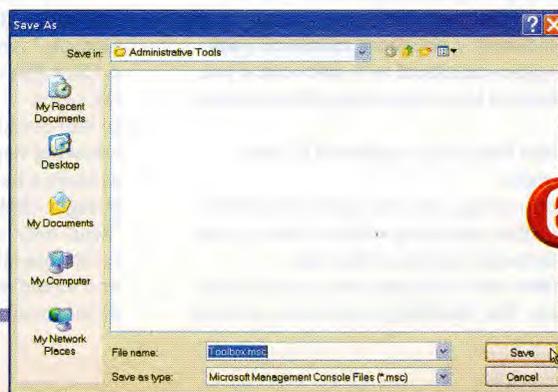
**4** Clicking Close in step 3 returns you to the 'Add/Remove Snap-in' dialog box, listing all the snap-ins you have just added. You can click the Add button to return to step 3 or select a snap-in to read about it in the Description box. Once selected, you can scrub a snap-in by clicking the Remove button. When you're happy with the collection, click OK.



**5** The new console with the five snap-ins just chosen is shown with some of its folder trees expanded. The best way to get a feel for what's available is to browse. Usually, double-clicking an item in the right pane describes the item and lets you configure it.



**6** Click File (Console in Windows 2000) → Save so you can use the console again without having to reconfigure it. If you save it as `Toolbox.msc`, for example, you can open the MMC console by clicking Start → All Programs (Programs in Windows 2000) → Administrative Tools → `Toolbox.msc`. **PCU**



# Windows 98/Me

Rose Vines reveals her most valuable troubleshooting tips.

## ON THE CD



As well as drivers, updates and patches, your troubleshooting toolkit should include a few utilities that have become classics. On this month's CDs, we've included our all-time favourites.

- **Tweak UI** can repair broken icons, corrupt file associations and a whole lot more, while **RegClean** checks on your system Registry's health.

- **Mike Lin's StartupMonitor and Startup Control Panel** make it easy to control the programs loaded when Windows runs, and check when programs try to load themselves by stealth.

- **CDCheck**, free for nonprofit use, allows you to see whether all those backups you think are safely stored on CD are still readable.

- **Karen Kenworthy's Registry Pruner** eliminates orphan entries in the Registry and removes phantom entries in the Add/Remove Programs list. It requires **Visual Basic Runtime 6**; versions 3 to 6 to 5 of Runtime are also on the cover discs, as they are often required to run other utilities.

## Preventative maintenance

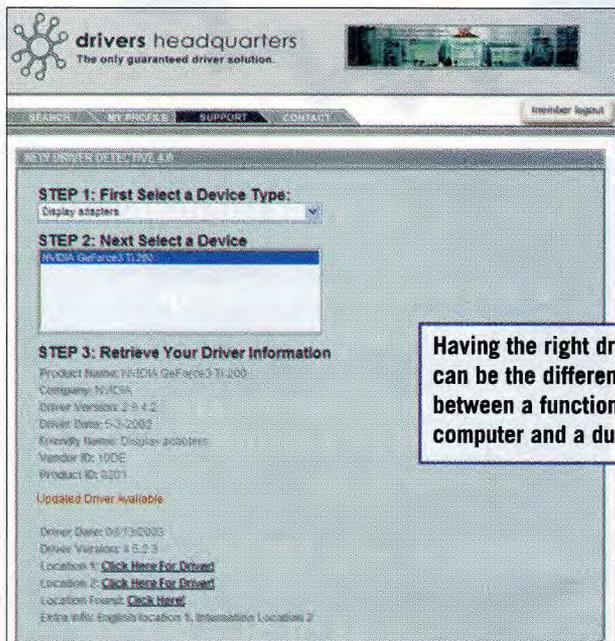
You can avoid trouble before it strikes by keeping your computer system in good physical shape. Here are some tips.

- **Don't turn your computer on and off frequently** as this stresses the components. However, if thunderstorms threaten, it's better to turn off your computer and unplug it from the power point before you leave it unattended.
- **Don't cover the PC** with material while in use. At the back of the system unit is a cooling fan, which needs proper air circulation to operate correctly.
- **Don't pile peripherals on top of each other.** If you have an external modem, hard drive, USB hub and so on, give each component enough room for air to circulate.
- **Avoid eating and drinking** around your computer. If you pour coffee or soft drink into your keyboard, it's unlikely to recover.
- **Keep your computer as dust and smoke-free** as possible. Floppy disks are especially susceptible to dust and smoke.
- **Make sure your mouse is on a clean surface.** If your mouse contains a roller ball and it starts acting sluggish or erratic, it may be due for a clean. Turn it over and see whether it has a little ball in the centre with a removable cover. If it has, carefully remove the cover and the ball. Clean the ball and use a cotton bud dipped in surgical spirit to clean the little rollers the ball runs against. Then replace the ball and fasten the cover.
- **Store removable disks and CDs in a safe, dry place**, such as a disk storage box, and keep them out of direct sunlight.
- **Make sure you don't touch** the actual surface of a floppy disk (hidden behind the sliding metal plate on the disk) and take care not to smudge or scratch CDs.
- **Don't put floppy disks anywhere** near magnetic fields, such as those found in phones and modems.

## Housekeeping

As well as ensuring the physical wellbeing of your computer, you should regularly perform basic housekeeping tasks. These will ensure your computer works well and will act as an insurance policy should something go wrong.

- **Make sure you always create backup copies** of the data on your hard disk and put these copies somewhere safe, away from your computer.
- **Create an emergency startup disk.** Click Start → Settings → Control Panel, double-click Add/Remove Programs, click the Startup Disk tab and



Having the right driver can be the difference between a functioning computer and a dud.

follow the instructions.

- **Buy and use antivirus software**, and ensure you keep it up to date. 'Up to date' in this context means downloading daily updates or, if you only occasionally use the Internet, at least weekly updates.
- **Clean up unwanted files and free up disk space** by using Disk Cleanup. Click Start → Programs → Accessories → System Tools → Disk Cleanup.
- **Run ScanDisk and Defrag once a month.** Click Start → Programs → Accessories → System Tools → ScanDisk/Disk Defragmenter.

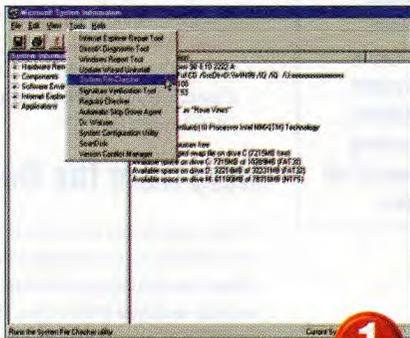
## A working startup disk

You most likely have an emergency Windows startup disk, but do you know if it works? Before disaster strikes, check yours out.

1. Place the startup disk in the floppy drive and restart your system. Your system should boot from the floppy into DOS mode (indicated by a black screen with an A:> prompt). If your system reboots straight into Windows, you need to change the boot order of your drives contained in your system's BIOS (Basic Input/Output System). To do this, reboot the system and, during the initial booting, press the key indicated to enter your BIOS setup routine. The key is usually F2 or F1; if not, it should be indicated onscreen, or you'll find it in your computer or motherboard manual. Once in the BIOS, look for a setting such as Boot Order or Startup Order, and change it so that the system checks the A: drive followed by the C: drive.
2. If your system boots from the floppy into DOS,

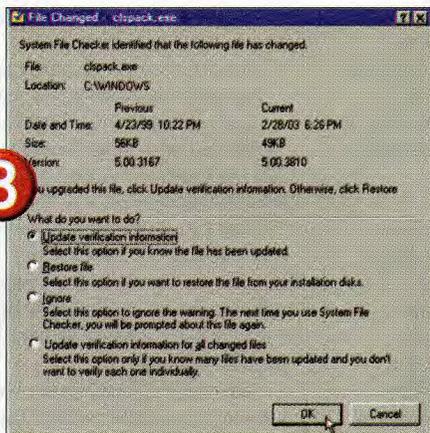
## STEP BY STEP: USING SYSTEM FILE CHECKER

**1** If your system seems unstable and you suspect one of your system files has been damaged, Windows 98 has a useful tool called the System File Checker (SFC), which allows you to check the integrity of system files. To

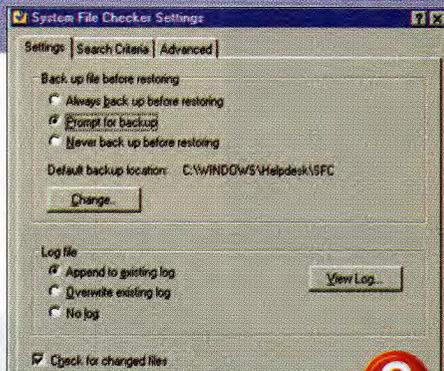


use it, make sure you have your Windows 98 Setup disc on hand, then click Start → Programs → Accessories → System Tools → System Information, then click Tools → System File Checker.

**3** Make sure the 'Scan for altered files' option is selected and click Start. Windows will scan your system files, report any discrepancies and let you replace changed files with the originals.

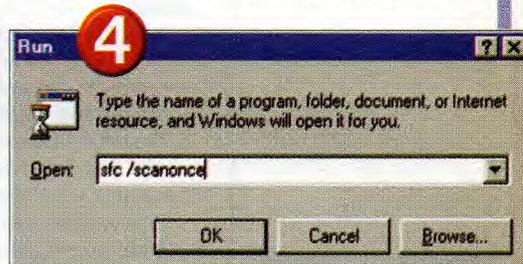


**2** In the SFC, click the Settings button, tick the 'Check for changed files' and 'Check for deleted files' boxes and click OK.



**4** Windows Me uses a variety of techniques called Windows File Protection to prevent system files from becoming damaged in the first place, instead of SFC. These automatic measures should keep your system files intact, but if you strike problems, you can run SFC from a command line. To do this, click Start → Run, type `sfc /options` in the Open box and click OK.

The following are the most useful options.  
`sfc /scannow` scans all protected system files immediately.  
`sfc /scanonce` scans all protected files the next time you reboot your system.  
`sfc /scambot` scans all protected files every time your computer reboots.  
`sfc /cancel` cancels all scheduled scans.  
`sfc /quiet` replaces all incorrect file versions without prompting you.



check you can read your CD drive by typing `DIR D:` and pressing Enter, where **D** is the drive letter of your CD drive. Note that in Windows 98/98SE — but not in Windows Me — the drive letter gets bumped up one, because a special diagnostic virtual drive created by the Startup floppy grabs the CD's usual letter. So, under Windows 98, if your CD drive is normally D:, it will now be E: and you should type `DIR E:` in the above command.

## System Restore won't work

System Restore is a save-your-bacon tool in Windows Me that introduces an element of time travel into computing life. It allows you to roll back your system to a state before a particular point in time. System Restore's phoenix-like abilities deal with hardware installations that go wrong, some virus infections, and even the gradual decay of a system into instability.

To use System Restore, click Start → (All) Programs → Accessories → System Tools → System Restore. System Restore is activated by default in Windows Me, but if your system contains

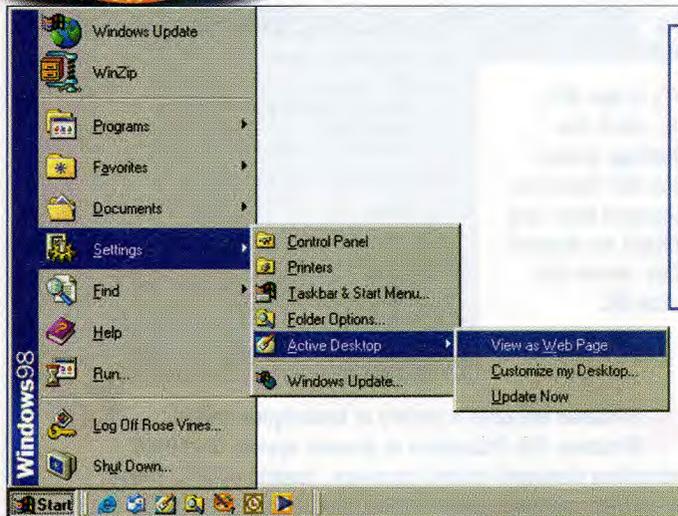
insufficient disk space, it will automatically be switched off. In that case you'll need to clean out some disk space and activate System Restore manually.

1. Right-click My Computer, select Properties, click the Performance tab, then click File System.
2. Click the Troubleshooting tab and remove the tick beside 'Disable System Restore'.

Here's how to change the amount of space System Restore requires.

1. Right-click My Computer, select Properties, click the Performance tab, and click File System.
2. On the Hard Disk tab, adjust the System Restore Disk Space Use slider as required and click OK twice.

System Restore also gets antsy when it has consumed 90% of its allotted size. Say, for instance, you have a 10G drive with 12% (1.2G) allocated to the Data Store. Once System Restore has filled about 1.08G, it starts flushing out older restore points until the Data Store is reduced to 50% full. System Restore works on what's called a FIFO principal: first in, first out. That means the earliest restore point created is the first to be dumped from the system and thus no longer available. >>>



The Active Desktop is often the cause of system instability, including kernel32.dll errors.



## Create an updates library

Windows Update installs all operating system patches on the fly; no copies are saved to your hard drive. That leaves you with no backup copies. If you ever have to reinstall Windows (and you will), it makes life much easier if you keep all these updates on hand.

1. Go to the Corporate IT Managers site at [www.microsoft.com/windows98/downloads/corporate.asp](http://www.microsoft.com/windows98/downloads/corporate.asp) and download everything except Windows Media Player 6 and NetMeeting.
2. To save the files, click each in turn, save the page that describes what the update does and save any linked Knowledge Base articles. For example, the Windows 98 Second Edition Shutdown Supplement has a link to a Knowledge Base article on troubleshooting Windows 98 shutdown problems; if you check that out, you'll find another link to a more comprehensive article about Windows 98 shutdown problems. Save all this documentation by clicking File → Save As in Internet Explorer, and saving all the pages into a Windows Updates folder.
3. Once you've stored the documentation for an update, click Next, accept any licence terms, and when the File Download dialog box appears, click Save (not Open!) and save the update to your Windows Updates folder. As you save each file, give it an identifiable name. For example, the Windows Script Support file is called ste50en.exe. When you click the Save button, give the file a more descriptive name, such as 'Windows Script Support ste50en.exe'. That way, you can identify the file in future and you've also preserved the original name.
4. After downloading everything at the Corporate IT Managers site, visit the Internet Explorer site and grab your preferred copy of Internet Explorer and any updates. If you're happy using IE6 or later, you can probably skip this step, but if you wish to continue using IE5.01 or IE5.5, hit the Internet Explorer 5.x downloads page at [www.microsoft.com/windows/ie/downloads/archive/default.asp](http://www.microsoft.com/windows/ie/downloads/archive/default.asp) and also check out any pre-

IE6 downloads on the Internet Explorer Critical Updates page at [www.microsoft.com/windows/ie/downloads/critical/default.asp](http://www.microsoft.com/windows/ie/downloads/critical/default.asp).

5. Visit Mr Scary's at <http://members.bellatlantic.net/~mrscary/post98se.htm> and grab anything that wasn't included in the other sites, such as DirectX 8.1, the Visual Basic Runtime libraries, and DCOM version 1.3.

## Help from the Doc

When problems strike your Windows system, turn to Dr Watson for a diagnosis. It is a utility that logs Windows activity and takes a snapshot of the system to help analyse problems. If you encounter frequent problems, put a shortcut to Dr Watson in the Startup Group, so he's on hand every time you boot.

1. Open your Windows folder (usually C:\Windows) and locate the file drwatson.exe.
2. Right-click and drag the file from the Windows folder onto your desktop to create a shortcut. Drag the desktop shortcut onto your Start menu, then Programs, and Startup to place the shortcut in your Startup Group.
3. Double-click the shortcut to start Dr Watson immediately. An icon will appear in your system tray letting you know the doctor is on hand.

You can also start Dr Watson by clicking Start → Programs → Accessories → System Tools → System Information → Tools menu → Dr Watson.

Right-click the Dr Watson icon in the system tray and select Options. Click 'Open new windows in advanced view'. This option will let you view information about your Windows installation and running programs, as well as the diagnosis of any problems found.

When a problem occurs, double-click the Dr Watson icon in the system tray to create a system snapshot. On the Diagnosis tab, you'll see a list of problems and possible solutions in the top section. Take a note of anything amiss — if there are a number of things wrong, you can print out a list. The printout will include the diagnosis as well as all system information displayed in the other tabs.

If you plan to get help from technical support, type in an account of what you were doing when the problem occurred in the bottom section of the Diagnosis tab. Then save a copy of the snapshot by clicking File → Save (it will have a WLJ extension). If you add your own notes to the diagnosis, using File → Print will include these notes.

## Kernel32 errors

If your system starts throwing up kernel32.dll errors, any one of the following may be at fault.

- RAM.** Insert the following command in your CONFIG.SYS file (in the root folder) and then reboot: **DEVICE=C:\WINDOWS\HIMEM.SYS /TESTMEM:ON.** If HIMEM reports unreliable memory, you may need to replace a stick of RAM. The unreliable RAM may take several days to show up.
- Video drivers.** Make sure you have the latest drivers for your card.
- Graphics acceleration.** Right-click My Computer, select Properties from the pop-up menu, click the

### TOP TIP

#### Track down drivers

Need to track down a hardware driver? You can try a free site such as [www.driversplanet.com](http://www.driversplanet.com) or [www.driverguide.com](http://www.driverguide.com), but nothing compares to Drivers Headquarters ([www.drivershq.com](http://www.drivershq.com)). For a one-time fee of \$US29.95, you get the most reliable source of drivers for all your Windows operating systems. The free Driver Detective scan will even check your system and let you know which drivers are installed and what updates are available. Money well spent.

## TOP TIP

Say no to  
startup disks

Each time you reinstall Windows, it insists on creating a startup disk. If you already have one, you don't need another. Here's how to skip making the disk.

1. Install Windows in the usual fashion and follow the prompts.
2. When prompted to create an emergency boot disk, click Next.
3. When prompted to insert a floppy disk, but not before, click Cancel.

The disk creation routine will be cancelled; the rest of setup will proceed normally.

Performance tab and then the Graphics button. Move the Hardware Acceleration slider down a notch, reboot and see how things go. If you still have problems, repeat the process and try even less acceleration.

**The Active Desktop.** If you have the Active Desktop enabled, try disabling it. Click Start → Settings → Active Desktop and, if there's a tick beside 'View as Web page', click to remove it.

**Animated mouse cursors and mouse trails.** Click Start — Settings → Control Panel, and double-click the Mouse applet. On the Pointer Options tab, disable pointer trails, and on the Pointers tab, substitute static cursors for any animated ones you have selected.

**An overheated system.** Overheating may occur as a result of deliberately overclocking your system, because your central processing unit (CPU) or power supply fans are dirty, or simply because the weather is extreme. If you've overclocked your system, you run a good chance of encountering kernel errors, as well as numerous other problems. The solution is to stop overclocking.

If your fans are dirty, you can clean the CPU fan with a can of compressed air; a technician can clean your power supply fan for you (a dangerous procedure if you don't know what you're doing).

Finally, if you're boiling or freezing at your desk, your computer is suffering, too. Provide a fan or

heater to make things more comfortable for both of you.

## Duelling devices

Sometimes, two pieces of hardware simply will not get along together. You can still use both devices, but only one at a time. To do so, you need to create multiple Hardware Profiles; one for each device. You can then use one of the problem devices at a time by loading the appropriate Hardware Profile.

1. Select the device you wish to disable in Device Manager (right-click My Computer, select Properties from the pop-up menu, and click the Device Manager tab in the System Properties dialog, then select the device), click Properties, and on the General tab, tick 'Disable in this Hardware Profile' and remove the tick beside 'Exists in all Hardware Profiles'.
2. On the Hardware Profiles tab in the System Properties dialog, click the Original Configuration profile, click Copy, and provide a name for your new profile.
3. Reboot. When Windows prompts you to choose which Hardware Profile you wish to load, select the new profile.
4. Now use the procedure in step 1 to disable the other conflicting device (and make sure the original device is now enabled in the new profile). >>>

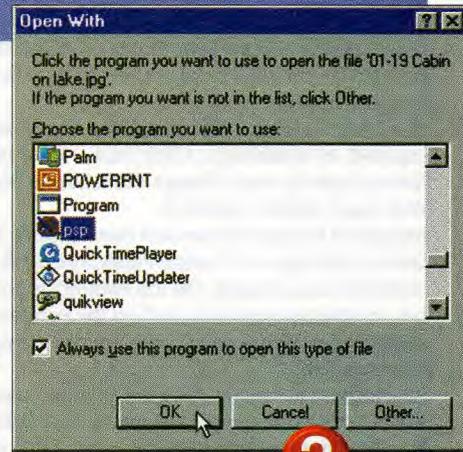
STEP BY STEP: WHEN GOOD ASSOCIATIONS GO BAD

**1** When you double-click a file in Windows, the file opens in an application associated with that file type. For example, if you double-click an XLS file, it opens in Microsoft Excel; if you double-click a BMP file, it opens in your default graphics editor and so on. When file associations work well, they fade into the background and become something you barely notice.



1

**2** When file associations go bad — as they may do when a newly installed program hijacks an existing file type for its own use — things can get very frustrating. Luckily, it's usually not too hard to get things back on track; you even have a choice of methods for fixing things. This is the simplest (an alternative is via the Folder Options in Windows Explorer).



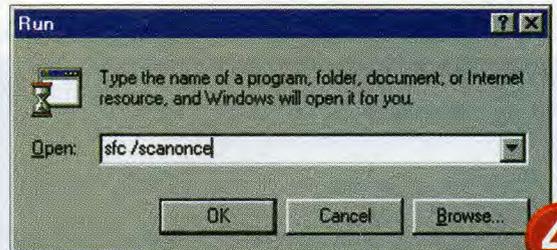
2

**3** If the program you want to use is not listed in the Open With dialog, click the Other button and search for the appropriate application. Chances are you'll find it in a subfolder of the Program Files folder.

3



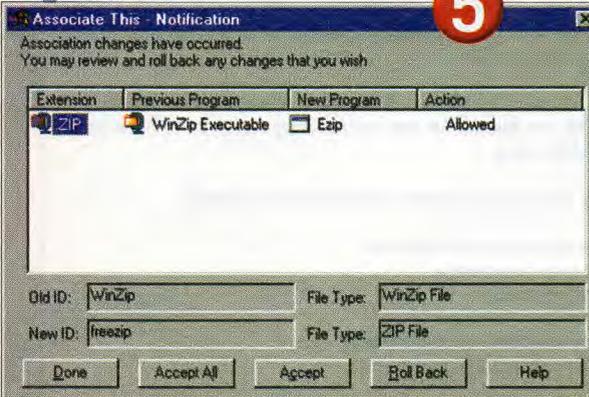
**4** Windows gets very picky when you try to change file extensions (the characters after the full stop in the filename), because it uses them to recognise



4

**5** If you frequently install and uninstall programs and get tired of having to fix broken associations, give Associate This! a try (we've included a copy on this month's cover discs). This shareware program keeps a vigilant eye on your file associations and can block any attempts to hijack existing associations, or warn you and let you make the choice.

5



file types. For instance, if you create a document in Word, WordPad or Notepad and try to save it with an unknown file extension, the programs will automatically append their usual file extension (DOC, RTF and TXT, respectively) to the filename. For example, if you try to save a file as test.foo, Word will name the file test.foo.doc. You can get around this restriction by putting the whole filename in quotes when you're using the Save As dialog box: "test.foo".

**6** If you really want to gain control over file types, file extensions and associations, you need to dig into the Registry. The Registry contains information about each file type, its associated program(s) and the commands that appear in the pop-up context menu whenever you right-click a particular file. We'll explore the interaction of the Registry and file types next month.



6

# Browsing and email

## Default to Outlook Express

If you want to use Outlook Express as your default email client but can't seem to get it to 'stick', try this.

1. Close Outlook Express.
2. Click Start → Run, type "**C:\Program Files\Outlook Express\msimn.exe**" /reg in the Open box and click OK. This assumes you have Outlook Express installed in the default location; if it isn't, you should change the command to reflect its correct path.
3. Click Start → Settings → Control Panel and double-click Internet Options. If you're using Windows XP, it's Start → Control Panel → Switch To Classic View (if you're not already in it) and double-click Internet Options.
4. In the Internet Properties dialog box, click the Programs tab. In the E-mail drop-down list, select Outlook Express and click OK.
5. Open Outlook Express and click Tools → Options.
6. At the bottom of the General tab, if it says 'This application is not the default mail handler', click the 'Make Default' button and click OK.

## Wayward IE windows

Occasionally, Internet Explorer gets shunted off the edge of the screen, hiding its controls. Here's how to get it back to centre stage.

1. Close Internet Explorer.
2. Click Start → Run, type **regedit** in the Open box and click OK.
3. Navigate to the key:  
HKEY\_CURRENT\_USER\Software\Microsoft\Internet Explorer\Main  
To do so, click the plus sign beside HKEY\_CURRENT\_USER, then beside the subkey Software, then Microsoft, then Internet Explorer and finally click Main.
4. In the right-hand pane, right-click the Window\_Placement value, select Delete from the pop-up menu, respond Yes to the prompt, then close the Registry Editor.

## Handle bulky email

Almost all Internet Service Providers (ISPs) have some sort of limit, both on the size of individual emails and on the overall size occupied by all your incoming email on the mail server. That's why it's important to download your email regularly if you receive large amounts, so your server-based mailbox doesn't become clogged. The per-item limit is usually about 2M with a total allowance of about 10M, but it differs from ISP to ISP. Even if your ISP has a more generous limit, you should remember that your recipients might not be so fortunate.

If you need to send a large file attachment, one way to get around the problem is to break

the attachment into smaller parts using a program such as Dariolius File Splitter from [www.kanastacorp.com/dariolius.html](http://www.kanastacorp.com/dariolius.html) (also on this month's cover CDs). This utility allows you to split files into any number of parts and all you do is drop the file onto the Dariolius window and select the number and size of the segments. The program not only creates the file segments, but also a small program that lets you recombine the parts to create the original file without the need to have Dariolius on the receiving computer.

Break the files into segments of about 1M to 1.5M — that should be small enough to get past most ISP limits — then send each segment plus the recombining program to your recipients. The first time you do this, make sure you tell your recipients how to deal with the program and file segments.

## Local PDFs

Viewing Adobe PDF files on the Web is a slow business, especially if you have a dialup connection and the document is large. A better alternative is to download the PDF and then view the saved copy. You'll still have to download the entire file, but it's usually faster than loading it into your browser online. Also, it makes navigating through a long document much faster, and if you need the document for future reference, you have a copy on hand. To download a PDF, instead of clicking its link, right-click the link and select 'Save target as' from the pop-up menu. Then save the file to your desktop or any other handy place.

You can use a similar technique to save other files, such as audio files, or select the 'Save picture as' option from the pop-up menu to save images.

## Break out of constricting frames

Some Web sites display content in a frame, with other frames occupying the top or side of the screen. A notable example is About.com, which contains a lot of useful information, all of it maddeningly stuck within its frames. Even if you click on a link to an outside site, About keeps its frames in place, corralling the information and cluttering up the screen.

Microsoft produced a neat set of utilities called Web Accessories for Internet Explorer 5, which includes a tool that can break you free from frames such as these. It has never made available an equivalent set of tools for Internet Explorer 6 (IE6), but despite claims to the contrary, many of the Web Accessories work perfectly in IE6. Most importantly, the frame-busting tool does.

So, grab a copy of the tools from [www.microsoft.com/windows/ie/previous/webaccess/ie5wa.asp](http://www.microsoft.com/windows/ie/previous/webaccess/ie5wa.asp), or from our cover discs, and install them. Whenever you need to break out of a frame, right-click >>>

**Rose Vines** offers her best Internet-related tips to save you time and trouble online.

### TOP TIP

#### Eliminate ISP branding

Many Internet Service Providers and some Internet programs brand your copy of Internet Explorer, replacing the animated icon in the top right corner with their own. If you'd like to return your IE icon to its former state, click Start → Run, type **rundll32 edkcs32.dll, Clear** in the Open box and click OK.

### ON THE CD

On this month's cover discs you'll find Dariolius File Splitter, Web Accessories for Internet Explorer 5 (also works on IE6), PureText, IrfanView and FreeZip.



the link and select 'Open frame in new window' from the pop-up menu.

Other Web Accessories that work in both IE5 and IE6 are Quick Search, which allows you to create shortcut searches for your favourite search engines; the Links List, which creates a page containing all links on the current page; and the text highlighter, which is useful for reading long documents.

## Back up your Favorites

When doing a system backup, it's easy to forget to include your Internet Explorer Favorites. Here's an easy way to ensure you have a copy of your Favorites.

1. In Internet Explorer, select File → Import and Export. This loads the Import/Export Wizard.

Click Next.

2. Select Export Favorites from the list and click Next.

3. To export your entire collection of Favorites, leave the Favorites folder selected and click Next.

4. Select 'Export to a file or address' and either type in the name of your backup folder, or click Browse to search for it. To ensure your Favorites are backed up when you do a complete system backup, it's a good idea

to place the Favorites backup in a subfolder of your My Documents folder; for example, My Documents\Backup\Favorites. Then click Next and Finish.

Note: this method does not duplicate the original Favorites folder. Instead, it creates a file (by default, called bookmark.htm) in the selected folder that contains an HTML list of your Favorites. You can open this file as you would any other Web page to view all your Favorites, or you can use the 'Import and Export' option on Internet Explorer's File menu to import your Favorites directly from this file. You can also take this file with you on the road so you have your Favorites list at hand wherever you go.

## No more squinting

If your mouse has a scroll wheel, there's an ultra quick way to change the size of Web page fonts on the fly: press the Ctrl key and then scroll the wheel downwards to increase the font size and upwards to decrease it. This is not only useful when a page uses small print that is hard to read, but also when you want to reduce the font size so you can fit more on the screen at one time.

Note: if you're not using a mouse with a scroll wheel, you're depriving yourself of one of the handiest browser tools available. Once you've used a wheel mouse, there's no going back.

## Nothing but the text

When you want to copy information from a Web

site to Microsoft Word or another program, you can select the info, copy it to the clipboard and then paste it. But chances are you'll get all sorts of extraneous material — links, graphics, strange formatting — coming with the text. If all you want is the pure, unadulterated text, use PureText, a utility that cleans up text on the clipboard.

Once installed, copy text to the clipboard in the usual manner, click the PureText icon in the taskbar, and then paste the contents into your document. We've included a copy of PureText on this month's cover discs, or you can download it from [www.stevemiller.net/puretext](http://www.stevemiller.net/puretext).

## Restrict Explorer's options

You can restrict access to a number of Internet Explorer's options by editing the Registry. This is handy when you have a computer with public access, or when you share a computer and someone keeps changing settings. It also comes in handy, in reverse, if you find yourself locked out of some of Explorer's options, as may happen when a site 'hijacks' your browser. In that case, you can check the Registry to see whether any of these options are in effect, and disable them if they are.

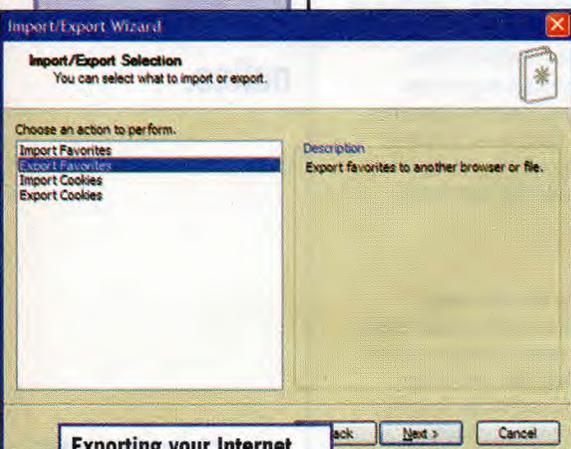
The following instructions assume you wish to enforce (or disable) restrictions for everyone who uses a computer; if you merely want to disable options for the currently logged on user, perform the adjustments in the identically named subkey of HKEY\_CURRENT\_USER instead of within HKEY\_LOCAL\_MACHINE.

Here's how to restrict changes to the toolbars for all users.

1. Click Start → Run, type **regedit** in the Open box and click OK.
2. Navigate to:  
HKEY\_LOCAL\_MACHINE\Software\Policies\Microsoft\Internet Explorer\Toolbars\Restrictions  
If the Toolbars or Restrictions keys don't exist, you must create them. To do this, right-click the Internet Explorer key, select New → Key from the pop-up menu and name it Toolbars. Then right-click the new Toolbars key, select New → Key and name the new key Restrictions.
3. Right-click the Restrictions key, select New → DWORD Value from the pop-up menu and name the new value **NoToolBarOptions**.
4. Double-click NoToolBarOptions and set its value to 1 (a value of 1 enables an option; 0 disables the option). Enabling this option will prevent users from choosing which toolbars are displayed.
5. Add any of the following DWORD values to the Restrictions key and set each to 1 to enable it.  
**NoAddressBar** — disables the address bar  
**NoToolBar** — disables the toolbar  
**NoLinksBar** — disables the links bar

You can gain even more control by adjusting settings in the key:  
HKEY\_LOCAL\_MACHINE\Software\Policies\Microsoft\Internet Explorer\Restrictions

Once again, you may need to create the Restrictions subkey within the Internet Explorer key before you add any of the settings (note that this is



Exporting your Internet Explorer Favorites not only provides you with a backup, but also lets you take them on the road.

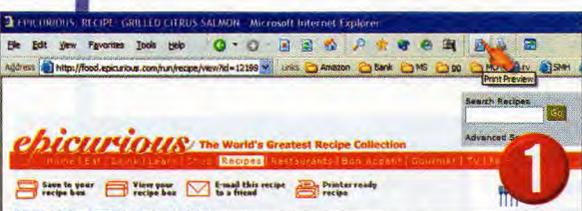
## TOP TIP

### Window size and position

Internet Explorer sometimes seems to have a mind of its own about where and how big its windows should be. Here's how to ensure IE opens in a window of your choosing.

1. Close all Internet Explorer windows except one.
2. Resize this window and position it to suit. Don't maximise the window (unless that's what you want).
3. Close the window and then relaunch Internet Explorer.

# STEP BY STEP: PRINTING ONLY WHAT YOU NEED



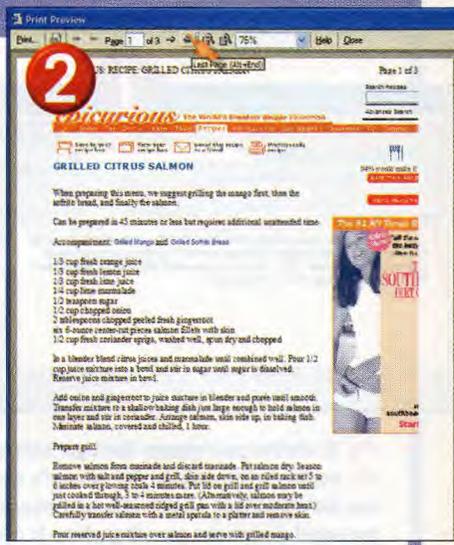
**1** The not-so-old saying that we'll get the paperless office at about the same time we get the paperless loo rings particularly true when printing Web pages. It always seems there's just enough text to cascade onto the first line or two of the final page. Usually, that text is nothing but a page footer or something else not worth printing. Avoid this wastage by making it a habit to use Print Preview instead of Print. Open the page you wish to print and click the Print Preview button on the Internet Explorer toolbar (it shows a page with a magnifying glass).

**2** In Print Preview mode, click the Last Page button, or press Alt-End to move quickly to the final page.

**3** Note whether there's anything on that final page you wish to print and note its page number. Then click the Print button in the Print Preview window.



**4** If you don't want to print the last page, click the Pages button in the Page Range section and type 1-n where n is one fewer than the number of the pages in the document. For example, if the document is nine pages long and you don't wish to print the last page, type 1-8, then click the Print button. Pages one to eight will be printed and that last page won't.



not the same as the Toolbars\Restrictions key above). Within the Restrictions subkey, add any of the following DWORD values and set them to 1 to enable the setting; 0 to disable the setting.

- NoBrowserContextMenu** — disables the right-click context menu.
- NoSelectDownloadDir** — disables file downloads.
- NoBrowserClose** — prevents users from closing IE.
- NoBrowserOptions** — disables the Tools → Internet Options command.
- NoFileNew** — disables the File → New command.
- NoFileOpen** — disables the File → Open command.
- NoOpeninNewWnd** — disables 'Open in new window' command.
- NoBrowserSaveAs** — disables 'Save As'.
- NoFavorites** — disables Favorites.
- NoNavButtons** — disables the Forward and Back navigation buttons.
- NoPrinting** — disables printing and print preview.
- NoViewSource** — disables the ability to view the source HTML.
- RestGoMenu** — disables Mail and News on the Go menu.

## Repair IE6

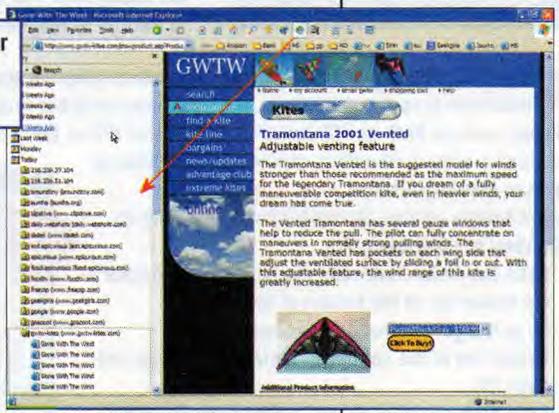
If Internet Explorer 6 starts to act up under Windows XP, try the following to repair your installation (make sure you have your Windows XP setup disc on hand).

1. Click Start → Search and type **ie.inf** in the 'All or part of the file name' box.
2. In the Look In box, select the drive where Windows is installed (usually C:).
3. Click 'More advanced options' and tick 'Search hidden files and folders', 'Search system folders' and 'Search subfolders'.
4. Click Search.
5. In the results pane, locate the ie.inf file (there may be more than one; choose the one in the Windows\

### Access the Explorer Bar by clicking on the History button.

Right-click the file and select Install from the pop-up menu, then follow any onscreen prompts.

**6.** Reboot your computer.



## History to the rescue

It happens all the time: you find a wonderful site, but three days later when you want to revisit it, you can't for the life of you remember its address or name. The solution: click the History button on the toolbar to display the Explorer Bar on the left-hand side of the browser window. In the Explorer Bar, you'll find all the pages you've visited within the last couple of weeks, neatly categorised.

To change the number of days of history stored, go to Tools → Internet Options and adjust the 'Days to keep pages in history' setting on the General tab. To eliminate the history list altogether, set this value to 0; to keep the maximum number of days in history, set it to 99. >>>

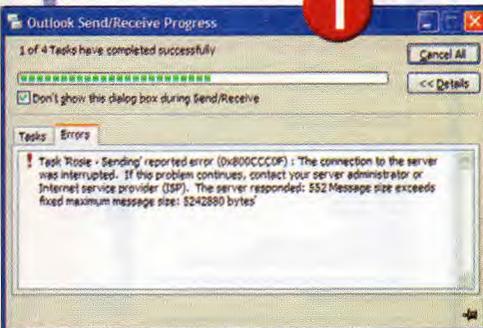
## WARNING

**Editing the Registry**  
A number of these tips entail editing the Windows Registry. Don't do this unless you know the dangers involved, have backed up your Registry, and know how to restore your Registry from the backup if things go wrong.



## STEP BY STEP: AVOIDING PHOTO BLOCKAGE

1

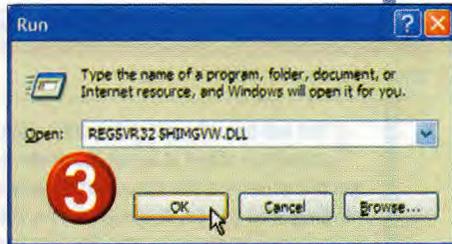


1 Sending photos by email is easy, but there are plenty of pitfalls for the inexperienced. The key thing to keep in mind is that most digital photos take up a lot of room. Even quite small photos may occupy several megabytes of disk space. If you send someone an email stuffed with photos, chances are it will exceed their mailbox restrictions (or yours — the restrictions apply to outgoing email as well) and the email will be bounced. That is, you'll get a message from the Internet Service Provider saying the email was too large to deliver and the recipient won't get a copy. The really frustrating thing about bounced mail is that you waste time uploading the email and it's not until you've completed the process that your ISP will inform you it failed to work.

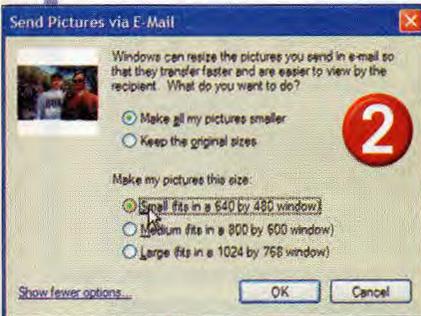
2 To ensure your photos don't get bounced, you could use Darilius File Splitter mentioned earlier in this article. But often it's easier to just limit the size of your photo attachments: use low-resolution photos, use compressed formats (JPG or GIF), or limit yourself to one photo per email (and make sure that photo is not too large).

If you're using Windows XP, restricting the photo size can be done automatically.

- Open the folder that contains the photos you wish to send.
- Select the photos (hold down the Ctrl key while clicking to select multiple files), then click 'E-mail the selected items' in the task pane.
- In the 'Send pictures via e-mail' dialog box, click the 'Show more options' link, select the size that suits and click OK. The smaller the image, the smaller the file you'll attach to the email.
- XP will add the resized image to a new message. Check the attachment line to see the size of the image. Then fill in the rest of the message and click Send.

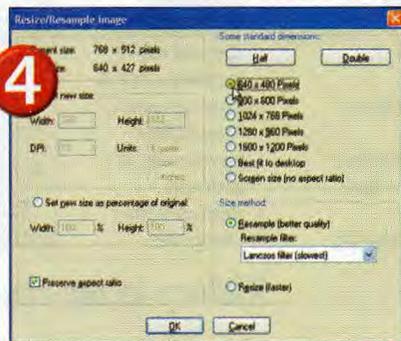


3 Tip: if XP's image resizing appears to be disabled, try this. Click Start → Run, type **REGSVR32 SHIMGVW.DLL** in the Open box and click OK.



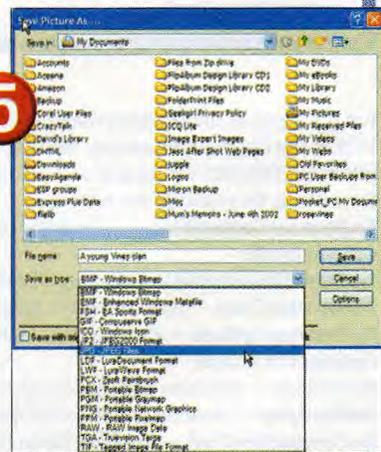
4 If you're not using Windows XP, use a graphics program such as Paint Shop Pro or the freeware IrfanView to resize the images. You can also use these programs to convert images in bloated formats such as BMP or PCD into the compressed JPG or GIF format (the former is preferable). We've included a copy of IrfanView on this month's discs, or you can download it from [www.irfanview.com](http://www.irfanview.com). Here's how to change the resolution of a picture in IrfanView or Paint Shop Pro.

- Open the picture and note the current dimensions in the status bar at the bottom of the window.
- Go to Image → Resize/Resample.
- Select any of the options to resize your image and click OK.
- Go to File → Save As and either keep the same name (to overwrite the original image) or save the photo with a new name in order to keep both the original and the resized image.



6 If you want to send a lot of small images in one email, you can make it easier on the recipient by zipping all the photos into a single archive file using a compression program such as the freeware FreeZip (included on this month's discs, or available from <http://members.ozemail.com.au/~nulifetv/freezip>). If you don't have a zipping program installed, in Windows XP, you can use the built-in Compressed Folders feature instead — just select the files, right-click any of them and select Send To → Compressed Folder.

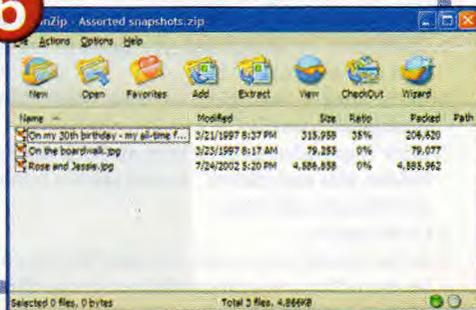
Note that zipping already compressed file formats such as JPGs will usually not result in any further compression and occasionally results in a larger ZIP file. The benefit of zipping in this case is that it makes it easier to handle a lot of smaller files. If you do need to send images in BMP format, using a zipping program will dramatically reduce the size of the files. **PCU**



5 Here's how to change the format of a picture in IrfanView or in Paint Shop Pro.

- Open the picture.
- Go to File → Save As.
- In the Save As dialog, select JPEG or JPG (not JP2) in the 'save as type' box and click Save. You'll now have two copies of the picture: one in its original format and the second in JPG format. Use the latter whenever you're emailing it.

6



# Linux troubleshooting

## Recovery tools

Linux is legendary for its stability. Once set up correctly, a Linux box, left to its own devices, will run trouble-free for a long time. Most problems arise soon after installation or major configuration changes and are the result of misconfiguration, typographical errors or the occasional hardware failure.

However, accidents do happen from time to time and the best way to minimise the impact of those unforeseeable events is to prepare for them by assembling the recovery tools in advance. Here are some of the best tools.

- **Tom's Root Boot Disk (tomsrtdt).** An essential part of every Linux professional's bag of tricks, this tiny (by today's standards) package unpacks to create a 1.722M floppy disk that is a complete Linux distribution with a selection of recovery tools. An alternative version comes in El Torito (bootable CD-ROM) format. You can download tomsrtdt from [www.toms.net/rb](http://www.toms.net/rb).
- **KNOPPIX.** This is a popular Linux distribution, based on Debian, which boots and runs entirely from a CD-ROM. It is popular for demonstrations or for letting interested users get a taste of Linux without having to install a distribution on the hard drive, but it is also incredibly useful as a system repair tool. You can download it from [www.knopper.net/knoppix/index-en.html](http://www.knopper.net/knoppix/index-en.html) (read the notes on software patents, then click on the KNOPPIX link — despite the warnings, it's still there).
- **mkbootdisk.** Most Linux distributions have a command to build a bootable floppy disk, which can be used to repair a system. Red Hat Linux, for example, has the `mkbootdisk` command. In order to use this, you only need to know the desired kernel version to write to floppy, and you can find the current kernel version with the `uname -r` command: `mkbootdisk 2.4.20-8` or `mkbootdisk `uname -r``. In general, `mkbootdisk` and similar utilities will read various configuration files, such as `/etc/fstab` and `/boot/grub/grub.conf`, in order to work out the root file system, any required kernel command line arguments, and the drivers that will need to be loaded from the generated RAM disk image. One useful but not widely known option for `mkbootdisk` is the `--iso` option, which makes a bootable CD image. This can then be updated with additional utilities, if required.
- **Other Boot Disks.** Most Linux distributions allow you to boot from the first installation CD in a system repair or 'rescue' mode. For Red Hat, for example, using the first CD to boot with the command `linux rescue` will boot the system and then attempt a number of basic repairs automatically. The repair script will attempt to

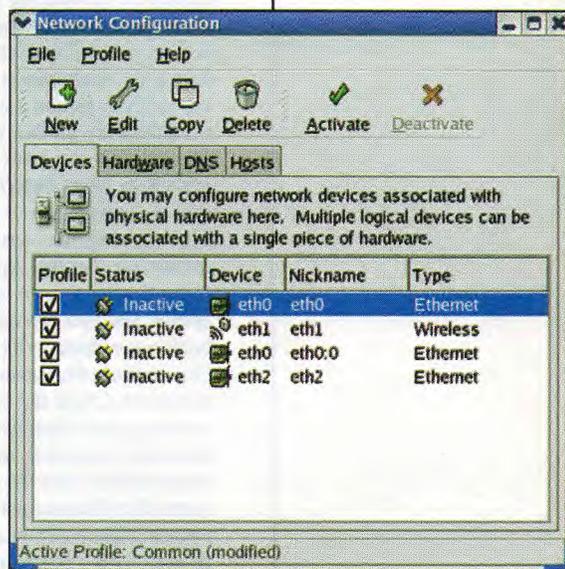
identify all of the Linux partitions on your hard drives and mount them in the correct location. At the end of this process, you should wind up with the system completely assembled and mounted under `/mnt/sysimage`. Red Hat Linux Professional boxed sets of recent vintage also include a rather neat credit card-sized rescue CD, and similar CDs are sometimes available from Linux-related company stands at trade shows.

## Can't boot?

Watch the system closely as it boots, and take note of any error messages that appear. If the system complains that it is unable to mount the root file system, for example, this can be for any of several reasons.

- **The BIOS cannot find the boot loader.** This sometimes happens after you've installed Linux to dual boot with Windows, but have asked the install program to place the boot loader in the Linux root (or `/boot`) file system to avoid misconfiguration. The problem is that the BIOS can't see it there unless you make that the active partition. The simplest fix is to reinstall Linux and this time let it place the LILO or GRUB boot loader into the Master Boot Record. Don't worry, the Linux boot loaders are automatically set up to let you choose Linux or Windows at boot time. It is possible to perform a more complex fix, such as by copying the Linux boot loader sector into a file and setting up the Windows NT/2000/XP boot loader to chain to it, but that is too complex to describe here (see [www.lesbell.com.au/Home.nsf/web/Using+the+NT+Boot+Loader+to+Boot+Linux?OpenDocument](http://www.lesbell.com.au/Home.nsf/web/Using+the+NT+Boot+Loader+to+Boot+Linux?OpenDocument) for a longer article on how to use the NT boot loader to boot Linux).
- **The kernel doesn't have a device driver to access the hard drive** (for example, a SCSI drive). This usually happens because you've built a new kernel and slightly messed up the configuration. Fix it by using the `mkinitrd` script to build a new `initrd` file that contains the correct drivers, or recompile the kernel to include the driver code.
- **The kernel doesn't have a file system driver** >>>

Accidents do happen, even in the best regulated environments. Les Bell shows how to prepare in advance.



Graphical configuration utilities are a useful check on network configuration.



to access the root partition. For instance, if the root file system is formatted with ext3, then you will need the ext3 and jbd modules in the `initrd` or compiled into the kernel. Fix as for the previous problem. Again, this usually happens after building a new kernel.

- **The partition table has been modified by the installation of another operating system,** for example. In this case, edit the kernel command line (in `/etc/lilo.conf` or `/boot/grub/menu.lst`) and the contents of `/etc/fstab` to contain the correct entries.
- **File systems are corrupted due to a power failure or system crash.** Generally, after a system crash or power outage (what, no UPS?), the system will come up and repair itself. If you are using a journaling file system like ext3fs, jfs, xfs or resiserfs, it will usually perform a roll-forward recovery from its journal file and carry on. Even with the older ext2fs, the system usually runs an fsck (file system check) on the various file systems and repairs them automatically. However, manual intervention is occasionally required; you might have to answer 'Y' to a string of questions (answering 'N' will get you nowhere unless you intend to perform really low-level repairs yourself in a last-ditch attempt to avoid data loss). In the worst case, you might have to reboot from rescue media and manually run the e2fsck (or similar) command against each file system in turn. For example: `e2fsck -p /dev/hda7`. If the program complains that the superblock — the master block that links to everything else — is corrupted, it is useful to remember that the superblock is so critical that it is duplicated every 8,192 blocks through the file system and you can tell e2fsck to use one of the backups: `e2fsck -b 8193 /dev/hda7`
- One or more file systems cannot be found and mounted. Check the contents of `/etc/fstab` — in making quick alterations here, typographical errors are common. You can use the `e2label` command to view the label of each file system as some distributions set these to the mount point so you can figure out what is what.

In each case, you will need to boot from some kind of rescue media, then work at the command line to repair the damage. If you boot from `tomsrtbt` or `KNOPPIX`, you will have editors and other utilities available. If you boot from the Red Hat installation CD in rescue mode, you will need to change the root directory so the various system directories and file systems are in the correct locations:

`chroot /mnt/sysimage`

See the 'The chroot command' on the opposite page for details of why and how this works.

## Forgotten root password

If you have — really have — forgotten the root password for your system, it is still possible to log in

and fix this in many cases. On some distributions, you can boot in single-user maintenance mode (runlevel 1) by appending a `1` or `single` on the end of the normal kernel boot command line.

With the LILO boot loader, for example, you can type `linux 1` to boot this way. With GRUB, it's a little more complex: you have to choose the boot menu item you want to use, then press E to edit it, move to the kernel command line and press E to edit it, append the `1` at the end of the line, press Enter to terminate editing, and then press B to boot it.

However, some distributions will still request the root password in runlevel 1. For those, you should append the option `init=/bin/bash` to the kernel command line; for example, `linux init=/bin/bash`.

Now, instead of running the `init` process to kick off all the startup scripts, the kernel will simply run a bash shell. Since the startup scripts have not run, you may have to mount other file systems manually, and you will certainly have to remount the root file system read-write with the command `mount -o remount,rw /`.

Now you can set about removing the root password. To do this, simply edit the `/etc/shadow` file and remove the encrypted password field from the file — it's usually the second field of the first line. You can now reboot, log in as root and use the `passwd` command to reset the password.

However, be warned: now that everyone knows this tip, you should take care to set a LILO or GRUB password to stop an attacker from editing the boot command line and breaking into your system this way. Of course, an attacker could also remove the root password by booting from a floppy or CD, so you should set the system to boot from hard drive first, and then password protect the BIOS settings, too!

## Full file systems

Is a file system full? This can show up in lots of different ways: being unable to save files, print jobs not spooling correctly (especially on Samba print/file servers), and so on. Use the `df` command to see available space.

```
[root@freya home]# df -H
Filesystem      Size  Used Avail Use% Mounted on
/dev/Volume00/LogVol00 520MB 254MB 240MB 52% /
/dev/hda3       128MB  2 1MB 101MB 17% /boot
/dev/Volume00/LogVol03 2.2GB 134MB 1.9GB  7% /home
/dev/Volume00/LogVol05 520MB  8.5MB 485MB  2% /opt
none            264MB  0 264MB  0% /dev/shm
/dev/Volume00/LogVol02 1.1GB  36MB 969MB  4% /tmp
/dev/Volume00/LogVol01 4.3GB  3.0GB 1.1GB 75% /usr
/dev/Volume00/LogVol06 1.1GB 101MB 903MB 11% /usr/local
/dev/Volume00/LogVol04 3.2GB  2.3GB 756MB 75% /var
/dev/hda1       16GB  13GB 2.8GB 83% /mnt/winc
```

Remember that a file system can fill up either because almost all of its data blocks are used up (some are reserved for the root user, just to get out of trouble), or because all its i-nodes (there is one of these per file) are used up.

If you need to make space by deleting some large files, use the command `ls -lS` to get a directory listing sorted by file size. To scan an entire file system (for

example, /home or /var) for the largest files, use the command `du | sort -n`. The largest files will be at the end of the listing.

## Add another drive

Sometimes, the growth of a file system — particularly /home — means it is necessary to find it a new home; in other words, add another physical disk and relocate the file system to its new home where there is room to grow. Here is the procedure for adding another drive, with a single partition, which will become the new /home file system (I'm assuming fdisk has already been used to partition it).

As root:

```
# mkdir /mnt/newhome
# mkfs -t ext2 /dev/hdb1
# mount /dev/hdb1 /mnt/newhome
# (cd /home && tar cf - .) | (cd /mnt/newhome && tar xpf -)
```

Then:

```
# cd /
# mv /home /home.old
# mkdir /home
# umount /mnt/newhome
# mount /dev/hdb1 /home
```

Once the new /home directory tree has been checked out, you can then safely use the following to clean up.

```
# cd /home.old
# rm -rf *
# cd ..
# rmdir /home.old
# rmdir /mnt/newhome
```

## Network problems

Use the `ifconfig` command to check whether an interface has been configured and is up. For example, if the system seems to stop for 30 seconds or more while starting — particularly when starting network daemons like sendmail or NFS — then the problem is likely to be either DNS misconfiguration, a DNS outage, or no network connection at all. Check that /etc/resolv.conf contains the correct DNS addresses, check that /etc/hosts contains the correct IP address and names for this machine, and then check that the network interface is up.

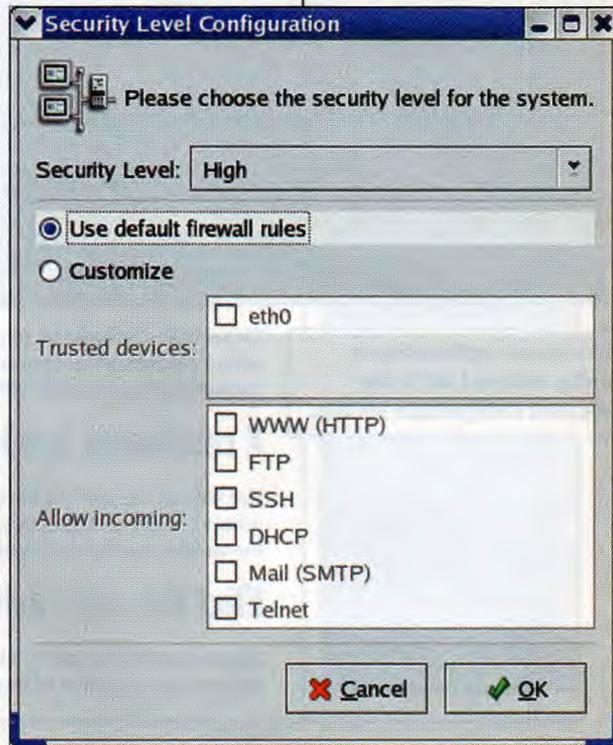
## Debugging clues

Use the log files as they are the primary source of debugging information and clues. You can examine the main log file with the command `tail /var/log/messages` and you can watch it continuously by running the command `tail -f /var/log/messages` in a window while you work. For security and login-related problems, check the file /var/log/secure. There are other log files and directories that relate to different subsystems in /var/log, and you should never overlook them. If you're trying to resolve boot time problems, use the command `dmesg | less` to review the kernel ring buffer.

## Getting help

If you are stumped, talk the problem over with a colleague or friend. They may not have the perfect solution, but often, their suggestions can trigger a new line of thinking or remind you of something you have overlooked. If you don't have someone you can talk to, use online resources.

Get to know how to perform searches at [www.google.com/linux](http://www.google.com/linux) and how to search the comp.os.linux and similar newsgroups at <http://groups.google.com>. On many occasions, I've turned up answers online after exhausting my own ideas. It also helps to compare similarly configured systems, if you have them. Often, you can see obvious differences in the configuration files between a working system and the >>>



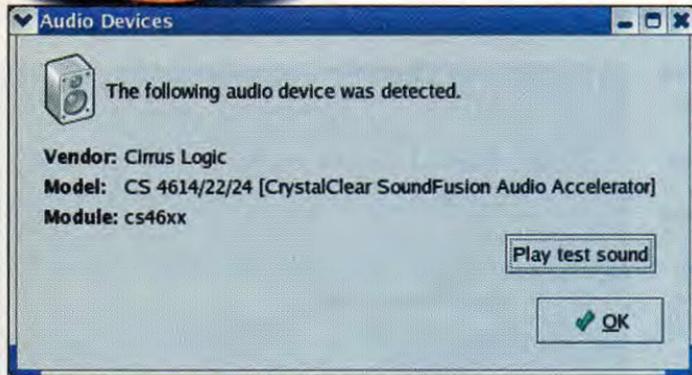
If you're unable to connect to network services, check that your firewall rules are not too strict.

## THE CHROOT COMMAND

The `chroot` command is extremely useful for both system security and for system repair. Its basic syntax is: `chroot new-root-dir [command ...]` and its purpose is to run the specified command with the root directory changed to new-root-dir. If no command is specified, the default behaviour is to run an interactive shell (usually a bash shell). For example, the command `chroot /var/ftp` will run a command shell in /var/ftp. However, note that the behaviour is to change the root directory first and then try to invoke the command or shell, so there had better be a file /var/ftp/bin/bash (which there would be, on many systems). In addition, the command will usually need to be statically linked, otherwise it would attempt to load libraries from /lib, which is now /var/ftp/lib.

The `chroot` command is often used to start network daemons on servers. This is so that if an attacker manages to compromise the daemon, perhaps through a buffer overflow, they are unable to navigate around the entire system directory tree, but are instead constrained within a 'chroot jail'.

A major use of the `chroot` command is to change the root directory of the system after booting from a repair floppy or CD. For example, if you boot a Red Hat installation CD with the command `linux rescue`, the root file system is actually a RAM disk, and the root file system on your hard drive is mounted as /mnt/sysimage. Commands you give will load programs from /bin and /sbin on the RAM disk, which is obviously limited. To get access to those directories on the hard drive, you will need to change your root directory with the command `chroot /mnt/sysimage`.



Soundcard configuration is tricky, and best left to the supplied configuration utilities.

The simplest solution is to use the distribution's own sound configuration command. For Red Hat, this is [redhat-config-soundcard](#).

## X resolution too low or too high

Use the left Ctrl and Alt keys with the plus (+) and minus (-) keys on the numeric pad to cycle through the various resolutions available on your system.

## Find the right driver module

You can make the system attempt to load every device driver module of any given type in turn by



broken system.

## No sound

Sound configuration is fairly tricky unless you know exactly what type of sound hardware you have — the chipset, not the brand of card.

using the command `modprobe -i type \*`, where **type** is the name of a directory under `/lib/modules/kernelver/kernel`.

## Avoid problems

It's always better to try to avoid problems in the first place. These techniques will help you do so, or at least make it easier to recover when things go wrong.

- Keep a system change log. Whenever you make changes to the system, write them into the log. In general, if you never make changes to a system, it will just keep running. So, if the system breaks, the problem is usually related to recent changes.

- Before making changes to critical system configuration files, make a backup copy that you can restore if everything goes wrong.

For example:

```
cp /etc/fstab /etc/fstab.good
vi /etc/fstab
```

- There is no substitute for learning as much as possible about how the system works and the role of the various configuration files in `/etc`, the daemon start/stop scripts in `/etc/rc.d/init.d`, how the init process works, and so on.

- And, of course, the most important system administration rule of all: never make changes after 3pm on a Friday! **PCU**

# Web authoring

## Absolute positioning

To place an image in an absolute position on a Web page, use CSS positioning code. For example, the following code added to your document will place the image mypic.jpg at a position 190 pixels from the top of the browser window and 250 pixels in from the left of the window. The image size of 33 by 50 is fixed in the code, so the image will appear at this size.

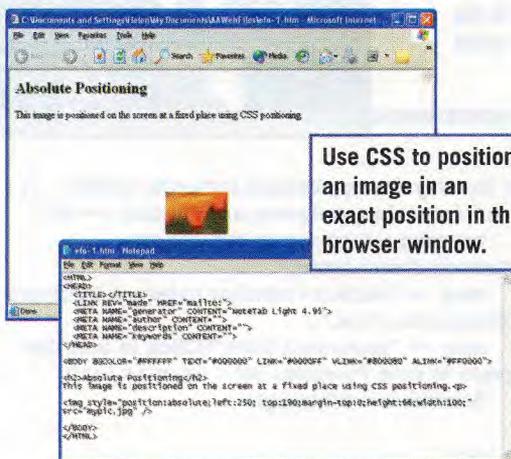
```

```

To make the image resize so it's always 50% of the window size, for example, but so that its top left corner remains at the position 250 from the left and 190 from the top, use the following code:

```

```



## Format a list

In plain HTML, lists are very plain, but you can soup them up using a CSS style rule. Here is a sample style rule applied to a list by placing the list between a set of DIV tags with the rule applied to it. Place the style in the document head and the rest of the code in the document body.

```
<style type="text/css">
<!--
#mylist {
border: 1px dotted #ff00ff;
width: 250px;
padding: 5px;
margin: 20px;
}
-->
</style>
<P>
<div id=mylist>
<ul> <li>First list point</li>
```

```
<li>Second list point goes here</li>
<li>Third list point - notice that if the
point is very long it will wrap around.</li>
<li>Final list point</li></ul>
</div>
```

The list has a purple dashed border around it, and the border is fixed at 250 pixels wide.

## Navigate using radio buttons

It's often useful to use radio buttons to navigate from one page to another. Following is a JavaScript solution that takes your visitor to the selected page when they click on the radio button. To configure this code for your own use, alter the reference to [page001.htm](#) and [page002.htm](#) to the pages you want to move the visitor to and alter the text **Home** and **Photos** to describe the pages you are directing them to. Copy and paste either of the lines beginning with `<input` up to and including the `</br>` tag to create multiple radio buttons. Remove the `</br>` tags to line up the radio buttons across one line, rather than down the screen. Place the script text in the document head and the Form text in the document body.

```
<script language="JavaScript"><!--
function gotoAddress(url) {
parent.location.href = url;
}
//--></script>

<form>
<input type="radio" name="nav" onClick="
gotoAddress('page001.htm');">Home</br>
<input type="radio" name="nav" onClick="
gotoAddress('page002.htm');">Photos</br>
</form>
```

## Question and answer

Use an HTML form to create a simple online quiz. Set it up using radio buttons for the multiple choice answers and an input box to display whether or not the answer is correct. Here's code for one question:

```
<H1>What is the capital of France?</H1>
<form>
<input type="radio" name="france" onclick="
this.form.france1.value='wrong'"
value="1">New York</input>
<input type="radio" name="france" onclick="
this.form.france1.value='wrong'"
value="2">Madrid</input>
<input type="radio" name="france" onclick="
this.form.france1.value='correct'"
value="3">Paris</input>
<input type="radio" name="france" onclick="
this.form.france1.value='wrong'"
value="4">Berlin</input></br>
<input type="text" name="france1"
value="Click an answer"><p>
<input TYPE="reset" NAME="Clear" >>>
```

Helen Bradley helps you improve your Web authoring skills with some great tips

### TOP TIP

#### Add help to a link

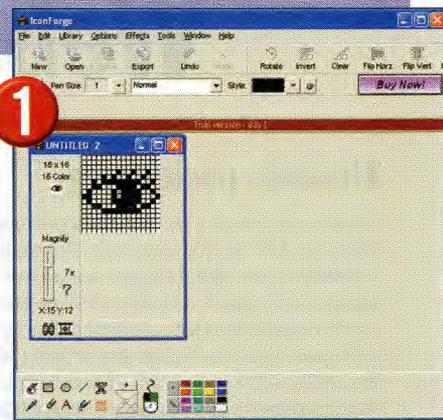
If your visitors use Internet Explorer, you can show them information about a link using the `title` attribute for the anchor element. This will be rendered as a tooltip, which displays when your visitor holds their cursor over the link. Place your title text in quote marks like this:

```
<a href="photos.htm" title="These are photos from my trip to Paris in 2003">Photos</a>
```

STEP BY STEP: SETTING UP A FAVORITES ICON

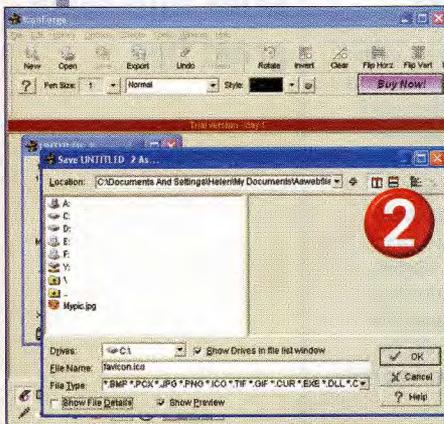
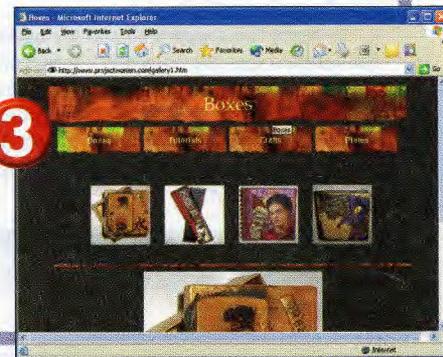
When you check your error logs and see the entry 'Favicon.ico not found', you might think you've made a mistake with something on your Web site. However, a favicon.ico file is a very small version of the Web site logo or some part of it, and is sized to 16 by 16 pixels and 16 colours. Internet Explorer goes looking for the file when someone creates a bookmark to your site. If Internet Explorer finds it, the icon is used to display in the visitor's Favorites list. If it's not there, you'll see an error in your logs and your visitor will be none the wiser. Here's how the favicon.ico file works and how to create one.

**1** Using a tool like IconForge (you can download this from [www.cursorarts.com/ca\\_if\\_d.html](http://www.cursorarts.com/ca_if_d.html)), create a new file for your icon, selecting the '16 by 16, 16 colour' option. Use the tools in the program to create your icon. You can also copy and paste an icon from another program, such as Microsoft Word, as we did here.



**2** Save your icon file by clicking File → Save As and typing the name `favicon.ico` in a folder of your choice. You can now upload this icon file to your Web site and store it in the site's root folder. From here, it will be accessible to all your pages.

**3** To test the icon, open a page from your site in Netscape 7 or Internet Explorer 5. If you're using Internet Explorer 6, open a page and add it to your Favorites. You will see the icon in the Favorites list, and when you select it from here, you will see the favicon displayed to the left of the address in the browser's Address bar when the page opens.



```
VALUE="Clear Form and Start Over">
</form>
```

Place the code in the body of your page and test it. You can then duplicate the lines for the question, radio buttons and answer box to create more questions. Ensure the name property for each set of radio buttons is different. Also set the name property for the answer input box to a different name for each question. You will use the name you have set for the answer box in the onclick event for the corresponding set of radio buttons to ensure the answer appears in the correct position. If you're unsure, check the

example to see where the names `france` and `france1` have been used — these are the entries you will alter for each question.

```
if ((navigator.appVersion.indexOf("MSIE") > 0)
&& (parseInt(navigator.appVersion) >= 4)) {
var msg = "<u><span style='color:
maroon;cursor:hand;";
msg += "onclick='window.external.AddFav
orite(location.href, ";
msg += "document.title);>Click to add this
page to your Favorites list </span></u>";
document.write(msg);
}
//-->
</script>
```

Use some simple code attached to the onclick event for a form element to set up an online quiz.

Adding your page to Favorites

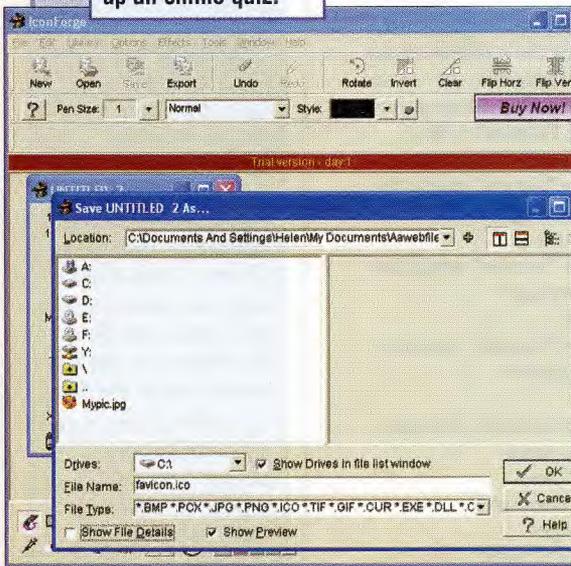
Make it easy for a visitor to add your page to their Favorites list with a simple link they can click on to add it. This link appears when a visitor is using Internet Explorer only and won't appear if they're using Netscape. Add it to the head of your document: `<script>`  
`<!--`

Track responses

When you're sending out offers via email to your visitors or customers, you can track the responses if you divert replies to a particular page on your site. For example, duplicate the page that you want the recipients of the message to view and give it a new name. Load it onto your site and then add a link to this page in your email message. Because the page has a different name to the regular page, you can track the number of visitors who enter your site via this page and thus track how successful your mailing has been. In addition, because it is a duplicate of an existing page, the links to other pages will work just fine.

FrontPage extensions

When you're using FrontPage, you need to be aware of which components require the server extensions and what version of these is required. This way, you can ascertain whether the hosting service you're using has



what you need for the elements you plan to use.

Many sites don't offer the extensions at all and those that do may not offer the 2002 version (they may only offer the 2000 extensions). To check out what is needed for which feature, visit <http://support.microsoft.com/?kbid=281532> and check out the list. Then check out your hosting service to see which version is being used. Match the lists and you'll know what FrontPage tools you can and can't use on your site.

You should also be aware that Publisher uses FrontPage extensions to publish a Web site and manage forms. To see if any version of the FrontPage extensions are available on your site, go to Start → Run and type [http://<server name>/<path>/\\_vti\\_inf.html](http://<server name>/<path>/_vti_inf.html) into the text area, replacing `<server name>` with the name of your own server and `<path>` with the path used by your site's files (if any). Press Enter and you'll see either an error (there are no extensions available), or a FrontPage Configuration Information screen indicating that at least one version is available.

## Make files available for download

Whenever you put a link to a file on your Web site that a visitor's browser 'knows what to do with', the browser will perform that action on the file. So, for example, if you place a TXT file on a site, the browser will open and display that file. This prevents your visitor from easily downloading the file. If you want to make the file available for download, place it in a ZIP file. When a browser encounters a link to a ZIP file, it opens a File Download dialog, which gives your visitor the choice to Open or Save the file. To add a link for this download to a page, just include the filename in a regular anchor element like this.

```
<a href=mytextfile.zip>download mytextfile.zip</a>
```

## Dreamweaver rollovers

To create a rollover in Dreamweaver, use the Swap Image action to replace one image with another. To set this up, begin with two images the same size, then go to Insert → Image and insert the first image into your Web page. In the Properties area, type a name for the image. Now select this image and open the Behaviors panel (Window → Behaviors).

Click the plus (+) button and select Swap Image from the menu. From the Images list, click the image that you want to change. Next to the 'Set source to' area, click the Browse button and choose the image to swap it with, and click OK. Select the Preload Images option so that the swap image will be preloaded into the visitor's browser cache when the page loads, and there won't be a delay while it loads later on. Click OK and then save the page and preview it in your browser. The image will swap out when your mouse is positioned over it, and when your mouse is moved away, the original image will be restored.

By default, the events tracked are the OnMouseOver and OnMouseOut events, but you can change these. For example, attaching OnMouseDown to Swap Image and OnMouseUp to Swap Image

Restore will let you view the swap image only when you hold your mouse over the original image and press the left mouse button.

## Dreamweaver does photo albums

To create a photo album in Dreamweaver, begin with an open page — just a blank page will do — and go to Commands → Create Web Photo Album. Type a title for your album. You can then add up to two other lines of text, if desired, in the Subheading info and Other info areas.

Click the Browse button to the right of the 'Source images' folder area and choose the folder containing your images. All of the images that Dreamweaver recognises in this folder — which includes GIFs and JPEGs — will be included in the album. If desired, you can create a folder for your images before you begin and move them into it. Use the Browse button to the right of the Destination folder to select the folder to contain the photo album images, and the files containing the album page code. You can click the New Folder button if you wish to create a special folder for these files.

Now, back in the Create Web Photo Album dialog, choose the thumbnail size from the drop-down list. If you want the image's filename to appear below its thumbnail, click the Show Filenames checkbox. Select the number of columns for the table that Dreamweaver will create to hold the thumbnails (three or four is ideal), and choose a format for the thumbnails from the Thumbnail Format list. A good choice is GIF WebSnap 128, which creates the thumbnails as GIFs with a Web adaptive palette of up to 128 colours.

From the Photo Format list, select the format to use for the regular-sized images, which can be different to the format used for the thumbnails (the better-quality JPEG option is best). You can also choose a Scale percentage, which will be used for large images (if you set this to 100%, images won't be resized; if you set it to 50%, the images will all be scaled down to half their original size). However, be aware that if your images start out at different sizes, the scaled results will also be different. So, if you want images that are the same size, you'll need to edit them first to make sure they start out the same size.

If you enable the 'Create navigation page for each photo' option, then each photo will be placed on its own page with a set of Back, Home and Next links. If you don't enable this, the thumbnails will link directly to the larger images and your visitor will have to use the browser Back button to return to the main album page each time. For this reason, enabling the 'Create navigation page for each photo' option is recommended.

When you're done, click OK to finish. Fireworks will be launched automatically and it will create the thumbnails and larger images for you (the original images are not used as the final images). When the process is complete, Dreamweaver will be activated and an Album Created dialog will appear. Click OK and you'll see your album page displayed. Click the 'Preview/Debug in Browser' icon and select the browser to use to test your new album. >>>

## TOP TIP

### Tab order for links

The relatively new HTML `tabindex` attribute can be added to any link or form element to specify the order in which it is visited when a visitor presses the Tab key on a Web page. Use low values (from zero up) for the first links to be visited and higher numbers for later links. Here's an example used on an input element:

```
<INPUT name="lastname" type="text" tabindex="1">
```

### STEP BY STEP: IMPORTING A WEB SITE

When you move from one site editor to another, in addition to learning how to use your new editor, you'll probably want to import your existing Web site into it so you can perform routine maintenance tasks. When

you do, chances are your software has special tools to do this for you. To demonstrate, we look at how to import a Web site into FrontPage and how to import a FrontPage Web site into Dreamweaver.

### Import a FrontPage site into Dreamweaver



**1** You can import your FrontPage Web site into Dreamweaver easily, but parts of it won't work because of the programs' differences. Dreamweaver doesn't support FrontPage Web bots and it doesn't have the equivalent of FrontPage extensions. To use a FrontPage Web site in Dreamweaver, you have to remove these elements. To help you do this, there are two Dreamweaver extensions you can download from [www.macromedia.com/software/dreamweaver/product\\_resources/migration\\_kit.html](http://www.macromedia.com/software/dreamweaver/product_resources/migration_kit.html). You will also need to download and install the Extension Manager if you haven't already done so.



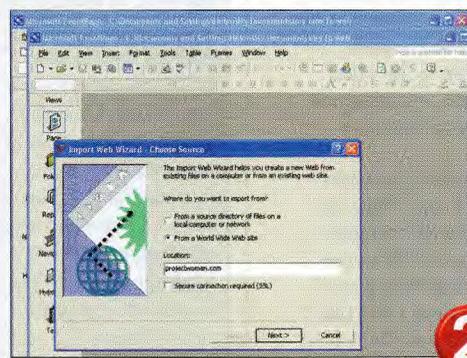
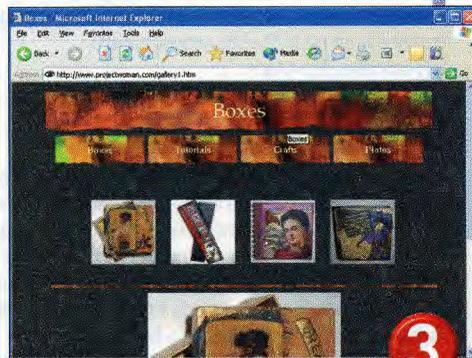
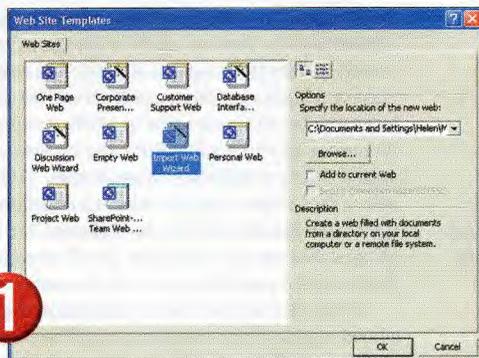
**2** The Import FrontPage Site Wizard tool helps import a site and set up the Remote Publish feature. Before you use it, duplicate your FrontPage site using Windows Explorer or Dreamweaver will make the changes to the original copy of your site and it won't work in FrontPage any more. Next, open Dreamweaver with the extension installed and go to Site -> Import FrontPage Site. Type a name for your site and select its current location on your hard drive. You'll need to close Dreamweaver and open it again before your site will be available. Then, click the Files panel, go to Site -> Edit Sites, choose your newly imported site and click Done.



**3** The Clean Up FrontPage HTML Sitewide extension strips special FrontPage code from your site to make it easier to work with in Dreamweaver. It also gives you a chance to check problems with your site and get these listed in the form of a report. To run this extension on your newly imported file, go to Commands -> Clean Up FrontPage HTML Sitewide. Select to clean up a page or the entire site (the latter is recommended) and choose any items to report on. Click Run to run the report.

### Import a site into FrontPage

**1** To import a site into FrontPage, use the Import Web Wizard, as it will do most of the work for you. Begin by launching FrontPage and clicking File -> New -> Page or Web. When the task pane appears, select Web Site Templates (from the 'New from Template' options), then locate and select the Import Web Wizard. During this process, FrontPage adds its own features so you can work with it.



**2** To the right of the screen you'll see the prompt 'Specify the location of the new Web'. Click the Browse button and locate or create a folder to store your new Web site. Click OK and a Choose Source dialog will appear. Select the location of your Web site, either on disk or on the Web, and then in the Location area, type the URL or disk folder that contains your current Web site. To ensure you use the most recent version of your site, it is recommended you import it from the Web, then click Next.

**3** If you're importing a site from a folder on your disk, you can now choose to exclude any files from the import process. If you're importing a site from the Web, you can choose how much of the site to import and the maximum size of the files to import. To import it all, disable all the checkboxes, then click Next and then Finish. Wait as the site is imported and it will then show in FrontPage, so you can begin working on it. **PCU**