



# Trouble comes in **threes**

The three setup disks Andrew Ward has created are causing him trouble with NT installation, but help is at hand for this as well as problems you may have with the WinNT/95 registry.

**I**t seems that whenever I try to install Windows NT, I get problems. One of the most persistent troubles I encounter is the error message: "Setup is unable to locate the hard drive partition prepared by the MS-DOS portion of Setup". Like most of my problems, this one is of my own making. Specifically, it's the three setup disks that I've created from the CD-ROM by using the `winnt32 /o` command.

The reason I have to make the disks is because I am often given the CD-ROM for Windows NT only, rather than the complete kit including floppies. Fortunately, once you know what is the reason for the error message it's straightforward to fix.

When you run `winnt32 /o` to create the three setup disks, a file called `WINNT.SIF` is made that tells setup the location of the temporary files on your hard disk. Of course, if you then use these floppies on another system (which is what I do), those temporary files won't be there.

The answer is to delete the file `WINNT.SIF` from disk 2 of the three-disk set. Alternatively, if you create the floppies using `winnt32 /ox`, you shouldn't have the problem in the first place.

Setup is the cause of problems to many people, not just myself. Microsoft has recognised this and has provided a troubleshooting guide for setup problems on its web site at [www.eu.microsoft.com/support/tshoot/ntsetup.HTM](http://www.eu.microsoft.com/support/tshoot/ntsetup.HTM).

This troubleshooting guide is fairly tedious to work through — it's a step-by-step questionnaire. Consequently it takes up a lot of online time, but it is nevertheless very thorough and it has worked for me. For any setup problems that you encounter, I would advise you to take a look.

And while on the subject of setup, I have here a newly-assembled server happily running Windows NT 4.0. The other day I received the beta of Windows NT 5 and naturally wanted to have a go at installing it. Setup hardly gets anywhere before it reports that it cannot find the CD-ROM drive. Well, excuse me, but it's right there inside the machine and if NT 4 can find it, I don't see why NT 5 can't.

If I ever do get this sorted out, I'll let you know. For the time being, I've just copied the files to the hard drive and am trying to install from there: setup still fails halfway through, though.

## Playing the game

Now for a bit of light relief. More and more people are moving to Windows NT 4, and one of the topics that readers bring up with increasing frequency is games. The most recent message was from Darren Long who has sensibly written off his trashed Windows 95 installation and moved to NT 4 instead, but now wants to know what games will run.

I am pleased to report that the answer is, plenty. An increasing number of modern games will run happily under NT 4 — those that will not are becoming the exception. For myself, I have used Quake for some time under NT and it runs absolutely fine.

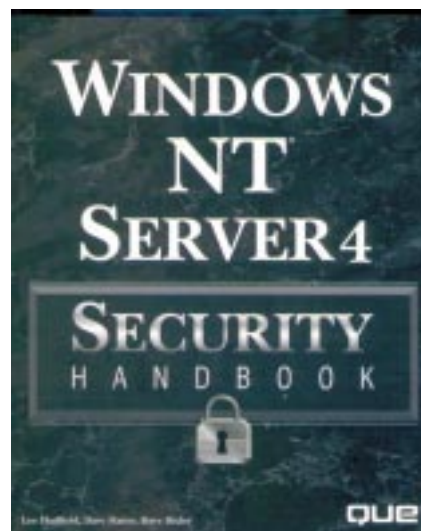
Other new games that will run without special treatment are Doom II for Windows 95, Ultimate Doom for Windows 95, and Obsidian. Many other games will run too, although some might need the odd tweak.

Really, the best thing I can do is to refer you to the web page, Dave's "Games under NT4", where you will find a list of which games do and do not run and links to many of the games themselves, as well as details

of any special instructions you need to follow to get them to work. Dave deserves a great deal of praise for his unstinting work on behalf of Windows NT games enthusiasts. [www.cris.com/~Dstaines/nt40games/](http://www.cris.com/~Dstaines/nt40games/).

## Security

Although it contains much useful information, I'm not sure that I'm entirely happy with the *Windows NT Server 4 Security Handbook*. There is plenty of detail on the security features of Windows NT 4



**Security is a must. What does Windows NT 4 offer, and does this book cover the issues?**

and how to use them, but not much about the more important issue of the security policies and procedures for which the technical knowledge is necessary.

Today, corporate data needs to be treated as importantly as any other asset — for some organisations, it is *the* most important asset — and you need someone

at board level to take responsibility for it. The next step is to carry out a risk assessment and then devise a security policy commensurate with that risk. There will always be security breaches, but you design your security policy to minimise the impact. It is not appropriate for the total responsibility of designing a security policy to rest with the intended audience of this book.

Having had my moan, I'll return to the book. It is comprehensive and points out a number of undocumented or frequently overlooked security holes. For someone who is implementing a security policy, or providing technical advice on what is and isn't possible, this is a useful aid.

Particularly useful are the sections which explain how things actually work, such as the challenge/response network authentication sequence. There are also clear flowcharts showing the way authentication is carried out for remote resources, and how share permissions combine with NTFS permissions to control access to directories. In fact, the diagrams are one of the nice features of this book.

Returning briefly to the (still-unsolved) problem of automatically creating individual directories with the appropriate permissions, this book does address the issue but glibly states that: "User Manager for Domains automatically...assigns the appropriate permissions". I wish.

Finally, it's worth pointing out that Service Pack 3 and subsequent patches tightened up many security areas of Windows NT 4, so some of the information in this book will now be out of date.

### Resource Kit Supplement 2

The Windows NT Server Resource Kit Version 4.0 Supplement 2, to give it its full title, is a two CD-ROM kit — there are no books included. Although you can use this

supplement on its own, it is intended as an upgrade for those who already have the original Resource Kit and you will get more value from it by first buying the full kit. The Resource Kit is pretty much essential reading, as it is to all intents and purposes the full manual for Windows NT.

One CD-ROM contains an updated version of the Resource Kit standard suite of software. It includes 14 new tools, one of these being reg.exe, a command-line registry manipulation utility that actually replaces eight previous utilities. The Service Monitor monitors services on both local and remote machines, and can even send Exchange an email or paging signal when a service starts or stops.

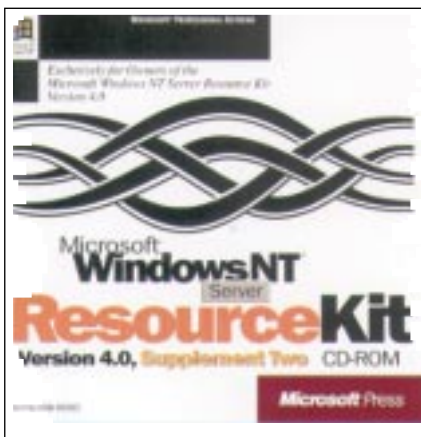
The other CD-ROM contains a February 1997 copy of TechNet which includes quite a lot of useful material including, oddly enough, the full text of the Windows NT 4.0 Resource Kit (both Server and Workstation). Additionally, there is the Windows 95 Resource Kit text and lots of technical information on BackOffice, MS Office and desktop applications.

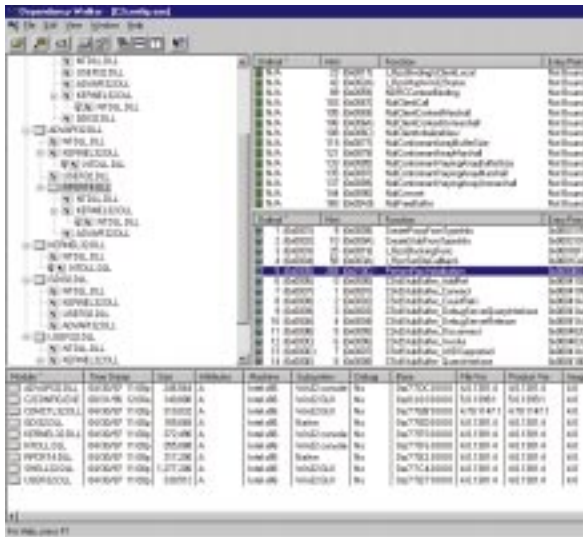
### Dependency viewer

One of the more interesting new utilities is the dependency viewer. Any NT user will find this helpful and it will also be useful to developers and those working in support departments. Using recursive scanning, the viewer shows a complete module-dependency tree diagram of the modules needed by an application.

It also shows two other types of information. For each module, it displays a list of all functions exported by that module (whether by name, ordinal or forwarding). Conversely, it shows all functions within a module that are actually called by other modules. Hence, it can be used to identify the minimum set of files you need for an application to run, to help understand why a particular module is loaded with a particular DLL and to resolve "dynamic link library could not be found" errors.

The scanning procedure will detect files that are missing, corrupt, or non Win32 compliant. It will also check that all functions imported to one module are actually exported from the dependent modules, thereby highlighting those problems that give rise to "the procedure entry point could not be located in the dynamic link library" errors. The time saved on chasing one DLL problem alone would justify the £46.99 price of this upgrade.



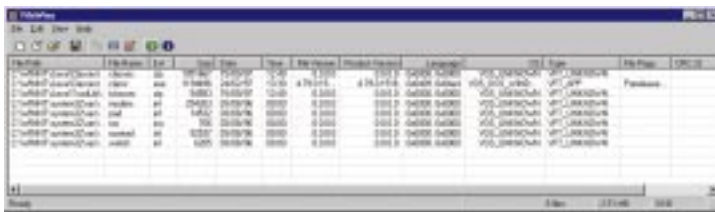


**Left** If you have ever had a DLL problem, this dependency viewer in the resource update is a must

themselves, and there is a valuable section on how to protect the NT registry and recover from a registry failure. A clear chart shows the differences between the capabilities of REGEDT32.EXE and REGEDIT.EXE. Additionally, there is a comprehensive section on using the system policy editor. The book

### Filewise

Filewise shows file version information, for an individual file or for all files within a folder. You can get at this information in other ways, but it's particularly convenient to be able to display it in tabular form for several files. You get pretty much the information you'd expect, like time and date, version, product version, language, operating system and hints on ISO 9660 compliance.



The Filewise viewer shows version information for files

And don't forget that one of the most useful features of any Resource Kit Supplement is the updated regentry.hlp file which gives up-to-date information on NT registry keys.

### Windows NT/95 Registry troubleshooting

As we're on the subject of the registry, the new SAMS book *Troubleshooting and Configuring the Windows NT/95 Registry* is worth a brief mention. A great many problems can be solved by fiddling around in the registry, but unless you know what to look for it's difficult to know where to start.

The file regentry.hlp, referred to above, is great but it's fairly unstructured information. On the other hand, this book gives practical advice such as how to tweak the registry to get a Windows NT 3.51 modem driver working with Windows NT 4.

Registry security and auditing gets plenty of treatment, as well as the registry keys

includes a CD which contains a variety of utilities, including a registry search tool.

### Zip it up

Here is a flashback to Zip drives, and some helpful comments from reader, Peter Edgley, who has found a much better way of adding a Zip drive to an NT system without having to go through all that palaver of fiddling around with drive letters and the

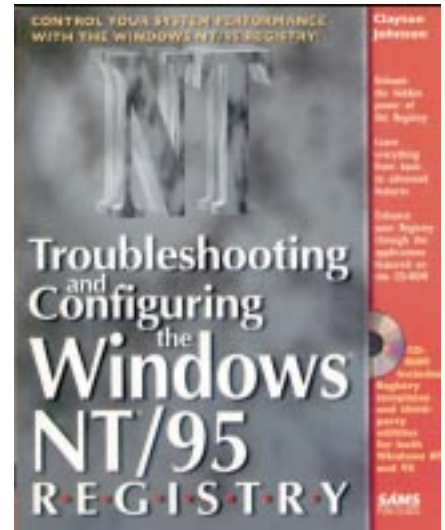
rebooting that's involved.

In his particular case, the system has two hard drives, an EIDE

drive (C:) and a SCSI drive (which is assigned letters D:, E: and F:). The SCSI drive is connected to that old favourite, the Adaptec AH1742A. (I'm still using one of those, for various peripherals like CD-ROM drive, tape drive and scanner.)

One of the features of this and many other SCSI controllers is that there's an external connector provided (in my case, this is where I plug in the scanner). Peter says that by far the easiest way to implement a Zip drive under NT is to obtain the SCSI version and plug it into this port. Just as any other SCSI device would be, the Zip drive is assigned the next available drive letter (G:, in Peter's case). What's more, the drive then works straight from Windows NT — Peter hasn't even touched the utility disk that came with it.

OK, this solution does mean you have to pay a bit more for the SCSI version of the Zip, but it's just so much easier and I can see why Peter is keen on it. He has



discovered just two minor drawbacks. The first is a costly adapter to connect the Zip drive to the connector on the Adaptec controller, and the second is that the CD-ROM drive letter (but fortunately not the hard drive letters) can move depending on the SCSI addresses you use.

Peter recommends always fixing the CD-ROM drive letter at R: (wouldn't this make life so much easier if everyone did it?) so it will never have to move again. I would go further and suggest a scheme for fixing tape, hard drive and CD-ROM drives at specific SCSI addresses, such as 6, 0-3 and 4 respectively. That leaves 5 clear for the Zip drive if you have one and should not upset the CD-ROM.

### Accent Composer

Accent Composer, the accented characters utility I mentioned last month, is on our cover-mounted CD this month. The evaluation version is valid for 30 days, after which you need to register. Contact: Dr Warren Kovach, Kovach Computing Services, 85 Nant-y-Felin, Pentraeth, Isle of Anglesey LL75 8UY.

### PCW Contacts

Andrew Ward can be contacted at [NT@pcw.co.uk](mailto:NT@pcw.co.uk) or write to him at the usual PCW address (see page 12).

All books are available from **Computer Manuals** 0121 706 6000 [www.compman.co.uk/](http://www.compman.co.uk/)  
 • **Microsoft Windows NT4 Server Resource Kit Supplement (two CDs)** Microsoft Press, £46.99; reference 285570  
 • **Troubleshooting & Configuring the Windows NT/95 Registry Book/CD Package** SAMS, £46.95; reference 274951  
 • **Windows NT Server 4 Security Handbook** Que, £36.99.





# Thrashing it out

Is your system being slowed by the hard drive, even if it seems big enough? There's no need to thrash it, as Andrew Ward explains. Plus, warming up screens when they turn blue.

**L**ife on the hotfix front is becoming more complicated (Fig 1). At the time of writing, there are 14 of them on the Microsoft FTP site, at [ftp.microsoft.com/bussys/winnt/winnt-public/fixes/usa/nt40/hotfixes-postSP3/](http://ftp.microsoft.com/bussys/winnt/winnt-public/fixes/usa/nt40/hotfixes-postSP3/). The problem is that they need to be applied in the correct order.

The reason for this is that a hotfix is not a patch. Rather, Microsoft replaces the entire file that contains the bug, and some later fixes contain the same files as earlier fixes. So, if you apply the earlier fix after the later one, you will be overwriting the latest version of a file with an older version. Not only that, but other fixes may depend on changes made in the later fix, so you will end up with an unstable system.

It is therefore essential to observe the correct order when applying hotfixes. But therein lies the snag. Microsoft doesn't tell you what that order is, so you have to manually check the dates on the self-extracting .EXE files which contain the hotfixes and apply them in ascending date order. The good news is that you can ignore the advice to reboot after applying a hotfix: you should be able to apply them all, one after the other, and then do one reboot at the end of it all.

## Updated ODBC

Following on from my piece (*PCW September*) regarding the use of the Internet Database Connector to interface with a text file using the ODBC drivers, I suggested that one source of the drivers was the Office install disk. Peter Grossi has pointed out that the ODBC drivers are not only available for download from Microsoft's web and ftp sites, but also that these

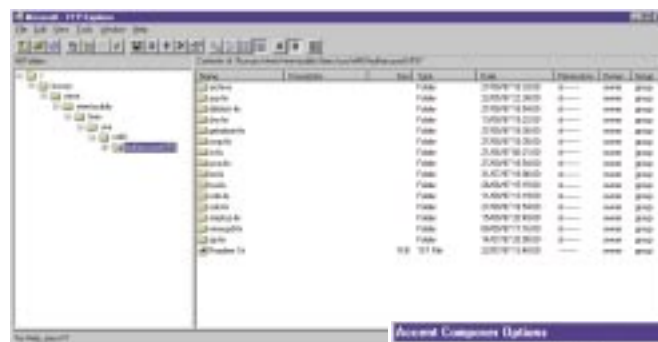


Fig 1 (left) Hotfixes galore on Microsoft's ftp site

versions contain the latest updates.

Specifically, the ODBC Driver Manager Update (as it is officially known) contains the latest version (3.0) which has several bug fixes, including, claims Microsoft, modifications to ODBC tracing to enhance security features.

On the ftp site, the Intel drivers are at the following URL (an Alpha version is in the same directory): [ftp.microsoft.com/developr/odbc/public/odbcadmin.exe](http://ftp.microsoft.com/developr/odbc/public/odbcadmin.exe). You should note, though, that you cannot uninstall these new ODBC drivers, so test them before committing them to a production system.

## Accent on accents

One of the complaints I've often heard users voice about Windows NT is that there is no convenient means of typing characters which are available in the character set but not on your keyboard. Usually, the requirement is for someone with an English-language keyboard to be able to type accented characters like those found on a French or German keyboard. But the same applies to other keyboards: a French

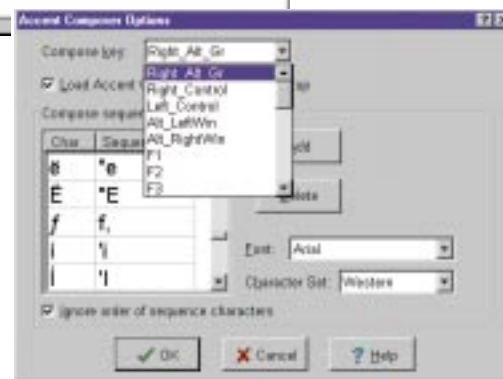


Fig 2 (below) Accent Composer lets you type extended characters in Windows NT



Fig 3 (above) With Accent Composer you can create many weird and wonderful symbols

user, for instance, may want to type a character normally found only on the German keyboard.

Of course, it's possible to use the Alt-key

method of entering these characters, but typing Alt-0231 for ç is a pain. Users of Microsoft Word may have found the Ctrl-accent key followed by the letter method (so you would type a comma and then the letter c to get ç) akin to the old dead-key technology of the manual typewriter, which is reasonably convenient.

But that's not much help if you're not using Word. You can cut and paste letters from Word, if you happen to have a copy, but that doesn't do much for your fluency if you're conducting three concurrent conversations, in French, on IRC.

Accent Composer is an extremely convenient solution to this problem. It uses intuitive key sequences, like the Word and dead-key paradigms, which are triggered by the hot-key (called the compose key) of your choice. By default, this is the Alt-Gr or Right Alt key. Accent Composer can be used to produce any of the characters in the extended character set (Figs 2 and 3), so the copyright symbol © can be produced by hitting the compose key, c, then o, and the Yen symbol ¥ can be created with compose, Y and =. You can modify or remove any of these sequences and add your own.

One neat trick is that you can opt for the key sequences to work in either order. Intuitively, it makes rather more sense to type the letter and then the accent, but for those used to the Word and dead-key method of doing things, the reverse will be the case. Accent Composer is shareware and is supplied by Kovach Computer Services (see "PCW Contacts", p259).

## Hard times with hard drives

Windows NT is notoriously dependent on hard-drive speed for good performance. I was concerned that my own system was being slowed down by the hard drive (the fact that the thing is rattling away for significant periods was something of a clue) but what could I do about it? Short of changing the controller and drive to a new technology, speeding up the drive interface is not an option.

Most performance problems under Windows NT can be solved by adding more memory, to the extent that it is usually cheaper to add more memory than spend time trying to find out where the bottleneck is: you'll probably end up adding more memory, anyway. Adding more memory specifically means that Windows NT can

allocate more to the disk cache, and of course it also reduces the amount of paging required, and paging memory to and from disk certainly slows things down. However, the system in question already has 64Mb, and as it is only used as a desktop system running modest applications, this really ought to be enough.

Another common trick with NT is to install a second hard drive, specifically for the paging file. This trick substantially reduces the amount of thrashing that goes



Fig 4 Moving the paging file

on with the primary hard drive, so I put in a second 1Gb drive and used Control Panel/System, selected the Performance tab, and opted to Change Virtual Memory to move the paging file from one drive to the other (Fig 4). The way to do it is to set up a new paging file for the new drive, and then set the old one to size 0. You'll need to reboot before it takes effect, of course.

The notion of thrashing got me thinking, and I then looked around the main drive to see what else was on it that could be moved. Right away, two directories stood out: the TEMP directory and the Temporary Internet Files directory used by Internet Explorer. Not only is the latter directory heavily used, it probably accounts for a great deal of the hard drive's fragmentation. As discussed last month, fragmentation is a cause of poor performance, so moving the Temporary Internet Files directory across ought to pay double dividends (it's also fairly unlikely to receive a thrashing at the same time as the paging file).

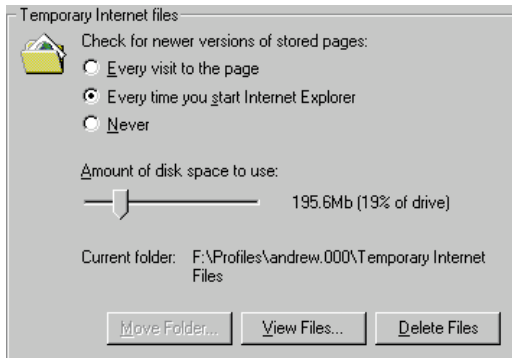
Moving the Temporary Internet Files directory proved not to be as easy as it seemed (Fig 5). First, you need to understand where it actually is. Although it,

p259 >

Table 1 Two handy registry entries

HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Explorer\Shell Folders\Cache
HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Explorer\User Shell Folders\Cache

*Administrator's Resource Edition*, a book that deserves an award for the



**Fig 5** Wouldn't it be nice if the Move button wasn't greyed out?

and various other directories, are shown to you by the Windows Explorer to be sub-directories of your systemroot directory — such as

D:\WINNT\Temporary Internet Files  
—this isn't, in fact, the case. In reality, it is at  
%userprofile%\Temporary Internet Files

which will be something like:

D:\WINNT\Profiles\andrew\Temporary Internet Files

The second problem is that in Explorer 4 Beta 2, you can't move this directory!

I hope, and assume, this won't be the case with the release version, which is what you should be using by the time you read this. I had to trawl through the registry to find which entries to change. In case you need them, there are two in Table 1 (above).

So, after all this fiddling, is the system any faster? Yes. Operations are much quicker when Windows NT is having to

access the paging file, and the primary drive is suffering far less fragmentation. And, I've been able to allocate a gargantuan amount of space to the Internet Explorer cache, which in turn really speeds up web surfing.

### Not yet home and dry with home directories

I thought my luck was in when Neil Payne emailed me to shed some light on the problem (Fig 6) of setting up home directories

(Windows NT, Oct). He has found a relationship between the rights given to the Users directory, and the rights given to each individual user directory that is subsequently created automatically by the User Manager.

Neil has had some success with the technique set out below, and I am grateful to him for sharing it with us. It didn't work for me, but that doesn't mean it won't for you. In any case, not everyone suffers from the problem: Gary Hill reports that he followed the instructions in my October column and had no trouble at all. Users are denied access to each others' directories, just as they should be. So here is Neil's technique:

1. Create the directory Users.
2. Create a share called Users and give Everyone full access to the share.
3. Set the security profile for the Users directory as follows:

Administrators	Special (RWXD)
Everyone	List (RX)
System	Full

To set the special rights for administrators, first set any old rights (there will probably be an entry for Administrators anyway, by default). Then, just double-click the Administrators entry in the Name box to get the dialog that allows you to set individual permissions. Then, when the User Manager creates a user directory, that directory should have a single entry in its security profile giving the user, and only the user, full rights to the directory. Even administrators can't gain access unless permitted by the user.

I found an interesting comment on this subject in *Inside Windows NT 4*

pretension of its title, if nothing else. One of the authors observes: "Officially this technique should work but in my experience it is not always reliable. Check...that directories were properly secured. You might need to do part or all of the job manually."

Very reassuring, thank you, Microsoft. I'm glad it's not just me that has trouble with it. Further enlightenment would be much appreciated.

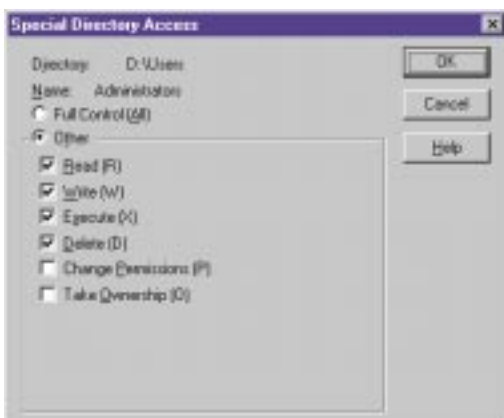
### Blue-screen blues

Last month I wrote about Linda Davies' NT computer, which seemed to be cured by a change of memory. Well, as it happens, I spoke too soon: the blue screens continued to pop up on a regular basis.

Linda is using the Matrox Mystique video card, and the drivers for this and other Matrox cards have certainly had their problems. We may at this point wish to pause to question the wisdom of moving the graphics drivers into kernel mode, to run at the highest privilege level where the smallest bug can result in an entire system crash. In this case, an updated set of drivers has helped tremendously, and the blue screens seem to have been reduced from a daily to a weekly occurrence.

By the way, on the subject of blue screens, the authors of a recent report interviewed both NT and Solaris users about various aspects of the two operating systems. None of the Solaris users had ever experienced a complete system crash, equivalent to the "blue screen of death", while the Windows NT users raised this as a serious issue.

I was flabbergasted to hear Microsoft's response to this report: that new software would reduce the reboot time by 50 percent! Clearly, Microsoft has some way to go before it fully appreciates the requirements of enterprise computing.



**Fig 6** Wouldn't it be nice if home directories created by the User Manager were given the appropriate security permissions?

### PCW Contact

Andrew Ward can be contacted at [NT@pcw.co.uk](mailto:NT@pcw.co.uk) or write to him at the usual PCW address on p12.  
**Kovach Computer Services** 01248 450414;  
email [support@kovcomp.co.uk](mailto:support@kovcomp.co.uk); URL [www.kovcomp.co.uk](http://www.kovcomp.co.uk)



# Behind schedule

Andrew Ward looks into scheduler problems and the ins and outs of *rasdial* — get the connection? He does disk defragmentation and wipes out the woes of Service Pack 3.

It's back to scheduler problems this month, with a query raised by James Holt. He has a batch file that's supposed to dial an internet service provider and he's configured the scheduler to run this file at pre-set times. He uses the *rasdial* command supplied with Windows NT which is supposed to be the command-line equivalent of pressing the Dial button in the phonebook.

Unfortunately, the command line *rasdial phonebookentry* doesn't work for him, even though the entry is fine if dialled manually by clicking on the Dial button in the phonebook. In theory, what he's trying ought to work if typed in at the command prompt, although not from the scheduler. For me, however, it doesn't even work from the command prompt: it fails at the "verifying user name and password" stage.

## Seeing double

According to Microsoft, when you don't specify a user account in *rasdial*, it uses the current user name and password. It's easy enough to get around this, simply by appending these items to the *rasdial* command line (Fig 1). Be sure to enclose the phonebook entry name in double quotes, especially if it contains any spaces or strange characters. The endless retry loop in this example is not a particularly good idea to implement in practice!

The problem is worse if using the scheduler, because the scheduler service logs on with the system account. Therefore, if you don't change the "Log On As" account for the scheduler service or specify a user name and password on the *rasdial* command line, then *rasdial* uses the system

Fig 1 Dialling an ISP

A sample batch file to dial an ISP using *rasdial* and send internet mail

```
:retry
rasdial "phone book entry" username password
if errorlevel 1 goto retry
smtpsend smtp.domain.com nt@pcw.co.uk billg@microsoft.com
message.txt
rasdial /d
```

Fig 2 The full syntax for Rasdial

```
rasdial entryname [username [password[*]] [/DOMAIN:domain]
[/PHONE:phonenumber] [/CALLBACK:callbacknumber]
[/PHONEBOOK:phonebookfile] [/PREFIXSUFFIX]
```

account to connect to the remote service. This causes all sorts of strange happenings.

What we can conclude is that using *rasdial* from the command line certainly isn't an exact equivalent to pressing the Dial button in the phonebook. There are several other differences, apart from the issue of the user account. Obviously, since *rasdial* is designed for unattended operation and has no user interface (apart from the password input), it cannot connect entries requiring user interaction. If you need terminal mode user entry during the dial sequence, it isn't going to work, and *rasdial* can't support operator-assisted or manual dialling.

*Rasdial* also cannot perform automatic redialling on link failure. However, if you have the phonebook (*rasphone*) running, it will perform redial on entries that were connected with *rasdial*. *Rasdial* does not start *rasphone* by default.

The other thing that *rasdial* doesn't do by default is pay any attention to the prefix

and suffix settings for the current location.

*Rasdial* can be used to disconnect an entry, for example after a session has terminated. The syntax in this case is *rasdial phonebookentry /d* and is equivalent to clicking on the Hang Up button in the phonebook.

For those concerned about putting passwords in plain-text batch files, you can use an asterisk instead. The user will be prompted to type in the password although it will not be echoed. That's not much good for unattended operation, though.

## Different domains

The full syntax for *rasdial* is shown in Fig 2. You will need Domain if you need to specify a different Windows NT domain for the user id; this is irrelevant when calling an ISP. With Phone you can specify a different telephone number to the one in the phonebook entry, and Callback does the same thing to the callback number.

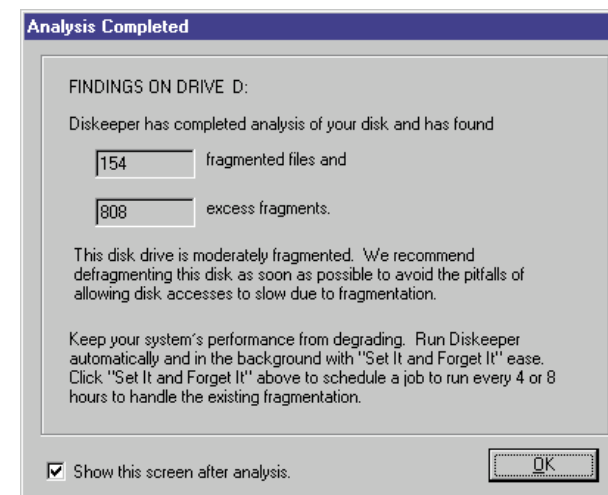


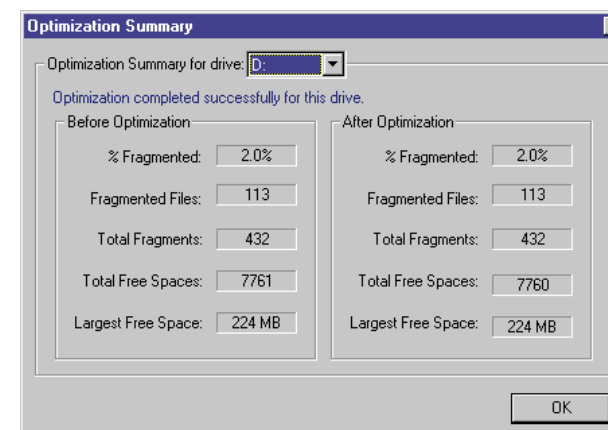
Fig 3 After defragmentation, Diskkeeper left the disk still in this state

Fig 4 A particularly unsuccessful attempt to consolidate free disk space

download from [www.swsoft.co.uk/smtpsend/](http://www.swsoft.co.uk/smtpsend/).

## Disk fragmentation

The issue of disk fragmentation is raised by readers over and over again. Generally, people want to know whether defragmentation is necessary with NTFS and, if so, what they should use. Well, it's certainly true that seriously fragmented drives will have a severe impact on performance (some operations can take twice as long) and in cases of extreme



With the Phonebook option you can specify an alternative location for the phonebook to use (the default is in `systemroot\SYSTEM32\RAS`). *Prefixsuffix* allows you to overrule the default setting and use the prefix and suffix settings from the phonebook.

## Sending internet mail

Setting up automated connection to an ISP is one thing, but it helps to then be able to do something useful, like send an email message or transfer a file. There are a number of command-line utilities around to accomplish these things and I've recently come across a freeware program called *Smtpsend* that allows you to send a message with optional attachment, to an internet address. The syntax for *smtpsend* is *smtpsend [-a file] gateway sender recipient [message file]*

You can optionally specify a message file, or the text for the mail message will be taken from the standard input stream. The gateway is the smtp gateway you wish to use to send the message. The freeware program *smtpsend* is available for

fragmentation NT may stop working at all, so answering the first question is easy. You could also be wasting masses of hard disk space with a fragmented drive.

The second question is more challenging. There are two popular disk defragmentation tools in use: Symantec's Norton Speed Disk and Executive Software's Diskkeeper. Both, however, appear to have severe limitations in practice. Speed Disk insists on rebooting your system after both installation and de-installation, and it killed off my Word without asking me if I wanted to save any open documents beforehand. On the plus side, Speed Disk automatically connects to Symantec's ftp server in order to download any updates to the software that post-date the installation CD.

Usually, it must be said that both products work fine and you are almost bound to improve the state of your hard disk by running one or the other. However, they are by no means perfect (Fig 3) and the most common problem you will experience is that they do little or nothing.

Fig 4 shows the results of an



## Hotfixes for Service Pack 3

**asp** — corrects a memory leak that occurs when the active server page feature of IIS is installed.  
**dbclick** — corrects the failure of double-click to edit Visio drawing annotations to work.  
**dns** — addresses a whole host of dns problems.  
**getadmin** — solves a security hole that allows getadmin.exe to grant normal users administrative rights.  
**icmp** — stops Windows NT from hanging if it receives a corrupt ICMP datagram fragment.  
**iis** — corrects the problem where IIS stops when it receives a URL between 4K and 8K in length.  
**java** — stops IE3.02 hanging when encountering a web page that contains a Java application.  
**lm** — implements a new registry key that allows you to stop sending LAN Manager authentication as well as Windows NT authentication.  
**lsa** — prevents an access violation error in LSASS.EXE caused by a remote client connecting to the local security authority over a named pipe which passes an incorrect buffer length.  
**oob** — prevents the denial of service attack caused by sending out-of-bounds data in TCP/IP packet.  
**simptcp** — prevents a malicious attack consisting of a flood of datagrams with a spoofed source IP address that causes network traffic to increase and NT performance to be impacted when simple TCP/IP services are installed.  
**zip** — corrects a problem with Windows NT assuming that the ATAPI version of the Iomega ZIP drive is a floppy and thus allocating it drive letter B.

unsuccessful attempt to consolidate the free space on my hard drive: the number of fragments has reduced by just one. It can be worse than this — sometimes the number doesn't change at all. And after running Diskkeeper immediately following this session, the number of free space fragments actually increased, to 7822!

Generally, you can solve problems like this by running the program again. Sometimes I've had to run Diskkeeper three times in a row to get sensible results.

Both utilities will integrate with the Windows NT Explorer, so if you select the Tools tab in the Properties sheet for the drive, you can click the Defragment button to kick them off. But both programs can also be configured to run as a background task, either at scheduled times or, in the case of Speed Disk, continuously. There need be little impact on performance, since the programs can be configured to run at low priority, using only idle time. For a fast defragment, they can also run in the foreground at high priority.

### Spaced out

Defragmentation of files, by concatenating all the bits of the file that the tool finds scattered around your hard disk, is only part of the solution. To achieve optimum performance, these tools also have to collect together all the unused space as far as possible, so new and expanded files have a chance of getting allocated unfragmented space from the word go. Apart from that, free space fragments smaller than 16 clusters cannot be used at all by NTFS and so are wasted space. Diskkeeper

automatically defragments free space and files, but Speed Disk allows you to defragment either or both.

One of the problems with Windows NT is that the directories cannot be moved by defragmentation tools. Directories will be scattered all over the drive, thereby greatly inhibiting the degree to which free space can be amalgamated. Speed Disk gives you the option of attempting thorough defragmentation; a much longer process than usual which will attempt to move your free space fragments to where there is the most space between unmovable files.

Neither of these products can defragment the Windows NT page file live: you have to switch to a new file, reboot and defragment if you want to do that; but the page file shouldn't be in a mess other than in exceptional circumstances or someone has really fumbled your NT installation.

So, in conclusion, it's difficult to make a recommendation other than to say that you should buy a disk defragmentation tool and use it regularly from when the drive is new. If you have an existing installation, you might want to consider a reformat and a fresh install (but do please take a backup of everything first).

### Service Pack 3 woes

Although Service Pack 3 for Windows NT 4.0 did fix a huge number of problems, it also introduced some new ones. Many of these are hardware-specific and I guess it just happens that those who beta-tested SP3 just happened not to have the right hardware to spot these bugs. But at least we got an SP3 that works for us (*grin!*).

For example, Andy Sawyer points out that although SP3 promises a fix for the screen corruption seen on certain Dell laptops with Cirrus Logic display controllers, not only is the problem not fixed, but the new drivers restrict him to run in 800 x 600, rather than 1,024 x 768 x 256 colours.

It might be possible that using the old driver with SP3 will allow him to gain the other benefits of SP3 and still run at 1,024 x 768 x 256 colours, although whether or not it's wise to mix drivers from different releases in this way is a different question. Microsoft tends to make changes that are interdependent, so changing just one driver in this way is always going to be a risky business.

In this particular situation, the way to keep hold of the old drivers is as follows. Before installing SP3, click the right mouse button on the desktop and select Properties /Settings/Display Type and look at Driver Information/Current Files to find out the filenames of the display drivers. These files will be in **systemroot\SYSTEM32\drivers** and/or **systemroot\SYSTEM32**. Copy these files somewhere safe, and then install SP3. Ensure that you have some means of recovering your system if the following fails: copy the new versions of your display drivers somewhere else safe and then copy the old ones back to the appropriate places. Reboot and see what happens.

The latest hotfixes for SP3 are shown above. They are found at [ftp.microsoft.com/bussys/winnt/winntpublic/fixes/usa/nt40/hotfixes-postSP3/](http://ftp.microsoft.com/bussys/winnt/winntpublic/fixes/usa/nt40/hotfixes-postSP3/).

### Hardware blues

Linda Davies has just purchased a new machine and installed Windows NT 4.0 with Service Pack 3, but is suffering from daily blue screens of death (BSOD). Of course, even with SP3, NT 4.0 is not 100 percent solid, but the errors reported were different each time. In these circumstances, the most likely cause is faulty hardware: the system may well have passed all the supplier's tests, but do remember that NT stresses hardware severely and can show up problems that the most thorough diagnostics don't find. In this case, changing the memory solved the problem.

## PCW Contact

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# Policy decisions

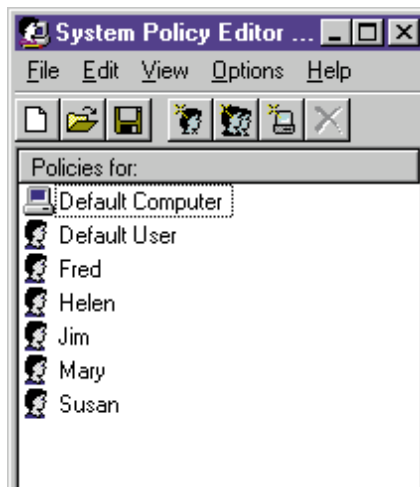
Andrew Ward looks at using system policy editors on an NT workstation, which files you need and how to set them up. And don't worry if your Zip's stuck; it *will* work under NT.

**S**ystem policies are intended to allow you to lock down some aspects of the user's desktop environment when using a Windows NT workstation, or Windows 95 system, attached to a Windows NT server. They are thus a boon to network managers who wish to limit the extent to which users can mess up their desktop environments and who want to reduce the amount of time users spend playing rather than working.

However, Jon White asked whether it's also possible to use system policies on a standalone Windows NT workstation? Many people probably use the same principle that he and I both do, which is to set up different user accounts on an NT workstation system in order to allow others to use it. Well, system policies certainly work on a standalone Windows NT workstation, but there are a couple of problems. One is with the system policy documentation itself. System policies are documented in several places, and the instructions for setting them up are not always consistent, so I'll clarify the exact procedure, whether for a network or a standalone workstation.

The other problem is that the system policy editor isn't supplied with Windows NT workstation. If you want to use it, you'll need to copy it from the server version (if your licence agreement permits it). You need four files from the CD: POLEDIT.EXE and POLEDIT.HLP need to end up in your SYSTEM32 directory, and the two template files, COMMON.ADM and WINNT.ADM, need to be in your INF directory (both these directories are under the system root, usually WINNT).

COMMON.ADM contains the templates



**Fig 1** With the system policy editor, you can set up a policy for each user

for those items common to both Windows NT and Windows 95 systems, and WINNT.ADM contains those specific to Windows NT. You clearly won't need the third template file (the one specific to Windows 95) in a standalone environment, since there can be no Windows 95 users.

## Configuring system policies

The next problem is with setting up the appropriate share. By default, system policies are configured in automatic mode, which means that if the system policy file of the correct name, and located in the correct place, is found on startup, then system policies will automatically be implemented.

However, this is where the documentation is confusing. In some places, it suggests that you need a directory called NETLOGON and that this is where the system policy file should reside. Actually, having a directory of this name is entirely pointless: what the system is

looking for, whether in a standalone or networked situation, is a share of this name. So, by all means create a directory called Netlogon (or whatever), ideally under the system root, but you must then create a share for it which must be called Netlogon. This will need to be on the primary domain controller in a networked environment.

## Getting filenames right

Getting the correct share setup is only part of the story, though. The system policies must also be stored as the correct filename, which is NTconfig.pol. (System policies also work if your server is NetWare; in which case the file must be called CONFIG.POL and be stored in the preferred server's SYS\PUBLIC directory.)

From hereon in, it's almost straightforward. The system policy editor allows you to specify policies both for machines and users (Fig 1). Of course, in a standalone situation, there might seem little point in applying system policies to your computer, other than as a convenient means of editing certain registry settings. But what it does mean is that if you acquire another computer, or have to reinstall Windows NT on your existing machine, then you don't have to sit and reprogram the registry with your preferred settings. All you need do is copy the policy file.

Using the policy editor is easy: you just add different users and then double-click them to edit the policies applied to that user. Or, you can add policies to apply to everyone in a group of users, or simply change the Default User policies.

Policies have a checkbox alongside them: if it's greyed out, then the user is free to make their own setting; otherwise, the

setting is forced on or off according to whether or not there is a tick in the box. So, as you click on a box, it cycles through the three settings of on, off or greyed-out.

System policies work as follows. The system policy you create is actually in registry file format. When a user logs on, the contents of the NTconfig.pol file are merged with the NTuser.dat file for the current user. Settings from NTconfig.pol then overwrite the settings in NTuser.dat. That's how the user bit works; settings for the current computer (or Default Computer if computer policies are unspecified) are added to HKEY\_LOCAL\_MACHINE at the same time.

## Do-it-yourself templates

The templates for the system policy editor do not contain every possible registry setting for HKEY\_CURRENT\_USER, but they do include the items you're most likely to want to lock down. If you want access to more, via the policy editor, it's easy enough to add them by creating your own template files (Fig 2) — it's better to do that than modify the supplied ones; those could be overwritten by service packs or upgrades.

The syntax for these template files is straightforward and an example is shown in Fig 3. Support for a new registry value NoNetConnectDisconnect was added with service pack 2 for Windows NT 4.0 but it's not supported by the policy editor as standard. I created a new template to allow me to specify whether a user should have access to the Map Network Drive and Disconnect Network Drive icons in Explorer. With this item checked, the buttons don't



**Fig 2** It's fairly easy to create new templates to add your own policies

appear on the Explorer toolbar.

Before you can make your own templates for the system policy editor, you really need an up-to-date reference guide to the appropriate registry entries. New registry entries are added with each service pack. The file REGENTRY.HLP, which you can always obtain from the latest resource kit (or supplement), is probably the most useful source of this information. Unfortunately, this file isn't included on the service pack CD, nor could I find it anywhere online.

Oh, and once again the documentation is wrong. The system policy editor template format is documented in the Windows SDK Documentation, Setup and Systems Management, System Policies, at [premium.microsoft.com/isapi/devonly/prodinfo/msdnprod/msdnlib.idc](http://premium.microsoft.com/isapi/devonly/prodinfo/msdnprod/msdnlib.idc). You're

## Fig 3: Template files syntax

```
A sample template file created to add a new policy
CLASS USER
CATEGORY "Andrew's Special Items"
    CATEGORY "Desktop Restrictions"
        CATEGORY "Explorer"
            POLICY "Remove Network Connection Toolbar
Buttons"

                KEYNAME
Software\Microsoft\Windows\CurrentVersion\Policies\Explorer
                VALUENAME "NoNetConnectDisconnect"

            END POLICY
        END CATEGORY
    END CATEGORY
END CATEGORY
```







### Workstation fax software

Roy Long is keen to get shot of Windows 95 and move on to NT (good man, Roy!) but is understandably reluctant to lose the ability to fax from his desktop. There are a number of good fax packages around for servers, but for the desktop, by far the easiest thing to do is download the Technology Preview 2 of Microsoft Personal Fax for Windows NT (Fig 3). It's free of charge and, while it is not a released product, many users are very happy with it. It's for Windows NT 4 only and you must have at least Service Pack 2 installed. By now, you should really be on Service Pack 3, anyway: it fixes many serious bugs and in particular fills some security holes.

It's easy to use the Workstation Fax software. It installs a fax printer driver, so you can fax a document from any



**Fig 3** Technology Preview 2 of Microsoft Personal Fax includes a natty monitor

application by selecting the fax printer. You can use Microsoft Outlook or Exchange clients. Incoming faxes can be automatically printed on arrival, if you wish, as well as stored in a local folder of your choice.

New features in Technology Preview 2 include a pop-up monitor window to keep you informed of the current call status. There's also more flexibility in answering calls: you can specify the number of rings before answer and you can set Personal Fax to answer calls manually or automatically.

Microsoft Personal Fax for Windows NT, Technology Preview 2 can be downloaded from [www.microsoft.com/networkstation/fax.htm](http://www.microsoft.com/networkstation/fax.htm). Note that it only supports Class 1 fax modems, and not Class 2 devices.

### Exchange Internet Mail Connector

Ian Denton has suggested an improved configuration to that featured in the June column, for using the Microsoft Exchange Internet Mail Connector (IMC) to collect mail from an ISP over a dialup line.

His idea allows the IMC to start up

without having to use the script and without having to dial up. Ian had spotted in the screenshots that the host name is being used, rather than the IP address of the mail server. Hence, the first thing Exchange tries to do is resolve the host name into an IP address by querying the Domain Name Systems (DNS) server. Unfortunately, as the DNS server is at the other end of the dialup connection, it must fire up the line to complete this task.

Ian has suggested a couple of solutions. The easiest and most obvious is to specify the IP address of the smart host, explicitly. In this case, `post.demon.co.uk` is actually `194.216`. If you don't know the IP address, you can find it using "nslookup" or "ping". Alternatively, if your machine is configured to use the host's file (which is stored in `%systemroot%/system32/drivers/etc`) you can add an entry to that.

Ian points out that this solution is much easier to manage than the batch file, as well as requiring fewer connections. Thanks for the suggestion, Ian.

### Intellipoint puzzles

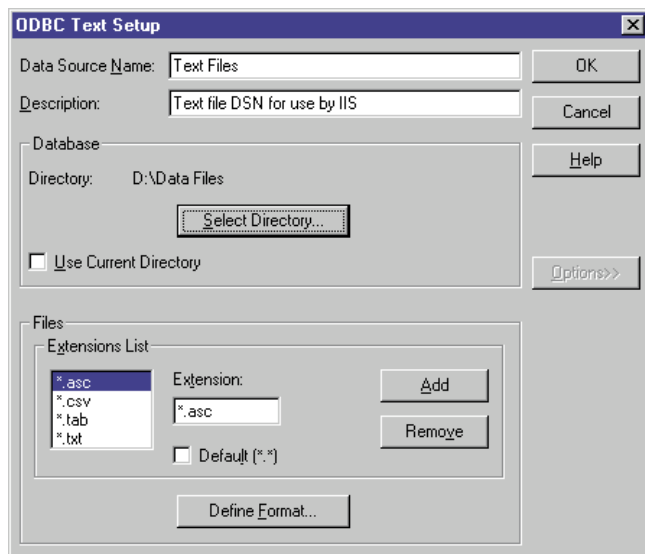
Some users of the Microsoft Intellimouse under Windows NT 4 have complained of a few minor niggles. Several people have mentioned that having installed the Intellipoint software, they now get event log entries from MSINPORT, MSBUSMOU and MOUCLASS. They can make the first two go away by disabling the INPORT and BUSMOUSE device drivers using the Devices applet in the Control Panel, but that still leaves the MOUCLASS event.

I experienced quite a different problem when I had the Intellipoint software installed: I found that I couldn't import a Schedule+ database into Outlook 97. Unlikely as it may seem, this problem did indeed go away once I had removed the Intellipoint software and rebooted.

Anyway, the main point is that you don't need the Intellipoint software in order to use the Intellimouse under Windows NT 4. Support for the wheel is already fully built-in: you'll find it works in Office, Windows NT scroll boxes and in third-party applications.

The moral is simple: just don't install the Intellipoint software, although this means you'll lose the ability to set some of the customisations it offers you, like changing focus to a window by merely passing the pointer over it. If the Intellipoint software stops Outlook from importing a Schedule+ database, it sounds like something you'd be





**Fig 5 (above)** Installing a system DSN for use by IIS

**Fig 6 (right)** Windows NT 4 Service Pack 3 includes a new ODBC administration applet

much better off without because who knows what else it might affect?

### ODBC and Internet Information Server

Linda Davies presented an interesting web publishing challenge. She has a large Oracle database currently running on a Hewlett-Packard system and wants to make some of the data available to a far wider audience than the current users of the database. This new audience would include not merely thousands of potential users on the internal WAN, but potentially anyone on a countrywide intranet, too.

Since there was already a Windows NT web server set up to address this audience, exporting the data to this system and publishing it using intranet technology seemed the easiest thing to do. It would mean instant deployment to all users without any new client software installation being required and would entail no extra loading on the HP, except a once-a-night export of the data. Furthermore, there would be none of the security challenges that would be presented by either a live link to the HP or publishing from the Oracle database directly.

The question then was how to store the data on the NT web server. The most obvious solution appeared to be to set up a database on the NT machine (like Microsoft SQL Server) and then access it via Internet Information Server and ODBC drivers, using the Internet Database Connector facility. SQL Server would carry with it an administration and maintenance burden

that no-one wanted, quite apart from the cost of the software.

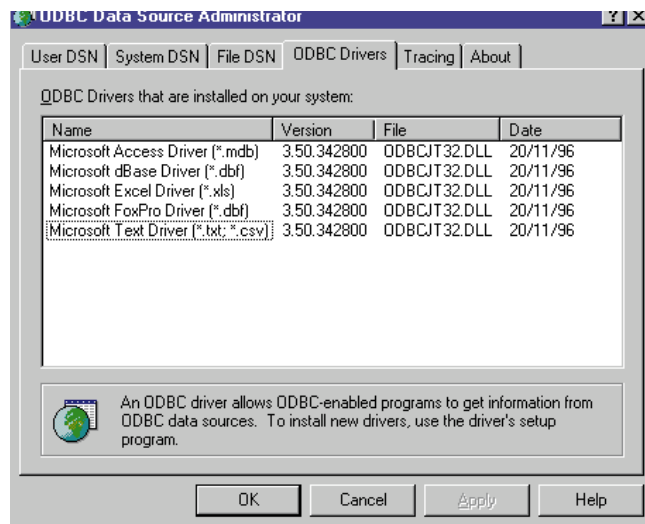
The next suggestion was to use an Access file. This would have been easy enough: the data is exported from Oracle as a comma-delimited file and the Access import wizard will import such a file and automatically create the appropriate table.

However, it occurred to me that

Database Drivers. Remember that you need to add an ODBC driver as a System DSN rather than a User DSN for it to be accessible by IIS (Fig 5). When configuring the text file options, you'll want to specify a directory for the driver to use — if you leave it configured for the current directory, it will choose the desktop of the logged-on user. Under Define Format (only accessible when you deselect Use Current Directory) you can specify how the file is delimited (tabs, commas or other) and by enabling Column Name Header you can make life considerably easier by telling the driver to obtain the field names from the first line of the text file.

Setting up the IDC and htx files is easy enough; the samples provided in the IIS

documentation serve as good examples. In the SQL SELECT statement, the table name becomes the name of the text file. As far as I could tell, the ODBC driver looks for a default file extension of .txt unless you specify something else in the SELECT statement. The IDC file thus ends up looking rather like that shown in Fig 4, with courses.txt being



### Fig 4: Sample IDC file for reading from a text file via ODBC

```
Datasource: Text Files
Template: test.htx
SQLStatement:
+SELECT course,title,summary
+ FROM courses
```

there is also an ODBC driver for text files (Fig 6), so why not use the Internet Database Connector (IDC) and the ODBC text driver to access the comma-delimited file directly? Perhaps a crazy idea, but to me so crazy it might just work. It did.

Not everything went quite as expected, though. The first problem was installing the ODBC drivers for text files: drivers are normally only installed along with the associated application, and Notepad doesn't come with ODBC text file drivers! I installed them from the Office 97 CD by selecting Custom Install and choosing the default list of

the name of the comma-delimited file. Remember that the IDC and htx files need to be in a directory on which the IIS user has execution rights.

Opting for a comma-delimited file instead of using SQL Server is likely to have long-term performance implications but it works for now. By using a web-based solution, from the user's point of view the back end can be changed at any time in the future without affecting the user interface. In any case, SQL Server running on the same system as the web server would have brought with it its own performance penalty, so is only likely to become a serious option if a second box is available.

### PCW Contacts

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Replica 3.0 for Windows NT  
Stac Europe 01344 302900



# The deed is DUN

If you're one of the many with auto-dial dramas, Andrew Ward, our new pair of hands on the NT scene, can calm you down and straighten it out. Plus, he sorts out NT Scheduler.

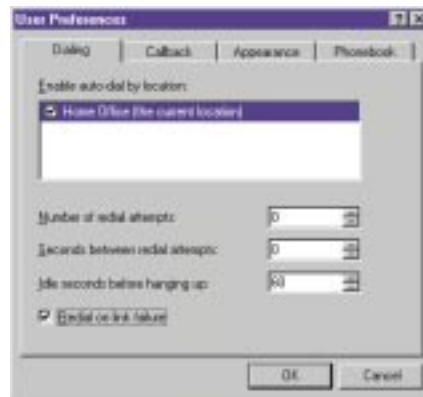
One of the more useful aspects of Windows NT 4, but one which seems to give people a lot of trouble, is dial-up networking (DUN). The basics of setting up DUN were previously covered in this column (*PCW* December 1996) but auto-dial deserves a second look.

Auto-dial is a great feature and should be particularly useful for internet access — if you can get it to work. But to judge by the volume of queries about auto-dial, many people are having as much trouble as I did to make it fly.

The theory sounds good: you run up Internet Explorer or click on the Fetch New Mail button in your preferred mail client, and auto-dial automatically kicks in to call your Internet Service Provider (ISP). When it works, it works well, and provides almost transparent internet access. Apart from the dial-up delay (which is fairly small if you use ISDN) you can pretend you have a permanent internet connection.

Like most users I soon discovered that auto-dial needs to be turned on from the phone book: it isn't enabled by default. For those who haven't yet stumbled across this, open up the phonebook and select More/User Preferences. (For internet use, ignore the Logon Preferences — these are for logging on to remote networks.)

Under User Preferences there should be a table of locations, although usually with only one entry; check the box to enable auto-dial. But oh, if only life were that easy! Run Internet Explorer and I can almost guarantee your system will not dial your ISP. By a process of experimentation I've come up with the following sequence of actions which, by and large, seems to kick auto-dial into life.



**Fig 1** Typical settings for DUN auto-dial

## Kick-start

1. Enable auto-dial, as shown in Fig 1, then restart the system.
2. Once the system has restarted, manually dial the phone book entry corresponding to your ISP (by clicking on Dial).
3. Once a connection has been established, run your web browser and connect to any site (the default home page will do). This step is necessary to "prime" the registry with the address of a remote site and to tell DUN which phone book entry it should use to connect to it.
4. Restart the system and run your web browser again. You should find that DUN will now automatically dial your ISP. (It must be said that even this procedure doesn't work for everyone.)

Unfortunately, even when you do get all this to work, auto-dial in Windows NT 4.0 still suffers from an annoying bug, up to and including service pack 2. The problem is as follows: if you log off and then log on again as another user, auto-dial will never work again; until the next reboot of the entire

system. Fortunately, this problem was fixed with service pack 3 for Windows NT 4.0.

When using auto-dial, DUN should time-out automatically after the time you set in User Preferences, or you can force it to hang up manually if you prefer. Timing out (or even hanging up) can cause problems later. For instance, you may have been browsing with Internet Explorer (IE) and the link has timed out because you've gone off to do something else. When you return to IE and click on a link or enter a new URL, nothing will happen (actually, you'll see an error message, but DUN won't auto-dial).

Now, remember the User Preferences dialog box? Did you notice the Redial On Link Failure checkbox? If you'd checked that, then auto-dial would reconnect in the circumstances just described. And of course, it will also reconnect if the link does actually fail during a session.

In spite of having done battle with auto-dial and, eventually, emerged the victor, I've actually given up using it altogether. That's because I use ISDN, and I've abandoned DUN and an ISDN terminal adapter (TA) in favour of a router. The result is a huge improvement, for many reasons which generally fall into two categories: ease of use and performance.

Although I've cracked auto-dial, it's still quite a pain to set up. Installing the correct modem type for the ISDN TA and then following the procedure above, involves several reboots. In theory, of course, you only have to follow this process once, but in practice I reinstall NT quite often — and setting up DUN adds a fair amount of time to the procedure. The router, on the other hand, only needs setting up once.

### Another route

On the performance side, the router offers several advantages. First of all, the connect time is much faster: DUN can sometimes take several seconds to page into main memory on my NT machine, and the router takes less time than that to complete the connection.

Throughput is higher with the router, too. Because it connects via ethernet, it has a potential 10Mb/sec at its disposal, rather than the maximum 112Kb/sec of the serial port (whereas ISDN, if you use both channels, can go up to 128Kb/sec). To be completely honest, I'm actually using a quadrupling serial card, so the maximum serial throughput for me is four times that figure. But if you don't already have one of these cards you're better off adding a network adapter, which has far more uses.

A further reason that router throughput is higher is because data transfer isn't plagued with errors. Fast serial communications place a high load on the CPU (which is in itself another good reason not to use a TA — people generally have better things for their CPU to do). Unfortunately, there are problems with the Windows NT EIDE disk drivers, as well as drivers for some graphics boards, which mean that interrupts are disabled for too long. As a result, serial characters can be missed which then results in CRC and overrun errors. Retries overcome the problem but throughput takes a massive hit.

Lastly, from the performance viewpoint, routers offer a much lower latency. Using the "ping" command reveals a consistent difference of around 60ms between the times reported via a router against a terminal adapter.

Of course, if you have more than one machine on a network, a router is the perfect choice. Without disrupting any of the machines on your network (you will have to set up a default gateway for TCP/IP, but that's all) you can provide internet connectivity to everyone simply by plugging the router into your hub.

You should be aware, however, that a router can only be used to connect to ISPs which offer PAP or CHAP authentication — it's no good where they require a plain-text logon script. When my predecessor on this column, Dale Strickland-Clark, first wrote about NT's dial-up networking, UK Online was the only ISP which offered ISDN connections of this type. Now, you can add BT Internet, MSN and Demon (and many

smaller operators) to that list, so there's enough choice for everyone.

There are drawbacks to routers, though. If you rely heavily on the internet you may have accounts with more than one ISP. Using Windows NT's DUN you can easily choose which one you dial — if one or the other is experiencing problems, for instance. It's a bit more of a fiddle to have to re-program a router to use a different ISP.

Finally, whether you use a router or a terminal adapter, you should be aware that internet protocols — and that includes the Point-to-Point Protocol (PPP) used for dial-up connections — are rapidly evolving. Hence, you may need to update the router firmware or Windows NT, as appropriate, to keep up to date with standards.

As an aside, it's worth mentioning that internal ISDN adapters (depending on the type) are treated differently by Windows NT. They're considered to be network adapters rather than modems and so are a lot easier to configure. Of course, you have to take your computer apart to install one so they won't suit everyone. And if you want all machines on the network to be able to use ISDN, you'll need to install a proxy server or similar software.

### Windows NT Scheduler

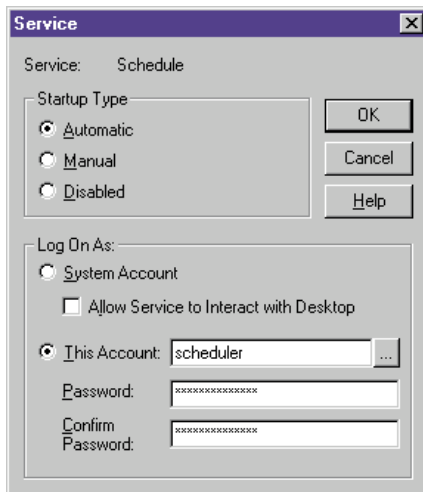
One aspect of NT that has triggered a lot of questions is the built-in schedule service. Typically, what users find is that commands which work perfectly when run from the normal logged-in user account appear to do nothing at all when triggered by the scheduler. Since this is often used for fairly mission-critical operations like taking backups, these problems can give administrators a real headache.

Firstly, you must be sure that the schedule service is running. If you're going to rely on it, you'll want it to start automatically each time the system boots. Go to Control Panel / Services, highlight Schedule in the list, and select Startup to change the options.

Right away we hit on one of the problems with the scheduler. By default, when it starts up, it logs on as the "localsystem" account. The permissions which this account has are unlikely to be useful for whatever you have in mind for the scheduler and this serves to illustrate an extremely important point.

For any Windows NT service you add, you absolutely must think very carefully about what permissions it will require and





Set up a user ID especially for the scheduler

then set up a dedicated user account specifically for that service. In this case, say, you might set up an account called simply "schedule". In order to get your scheduled service to work, it's tempting to give the account administrator rights. That's fair enough as a starting point but for security reasons you should, at some later date, make an effort to determine what rights it really needs and set it up appropriately. This is what I've done with the Microsoft Personal Fax add-on for Windows NT. Unfortunately I've yet to work out exactly what rights it does and does not need, so it still runs with administrator privileges.

In general, the documentation supplied with other Microsoft products (such as the Back Office components) does make it clear that you need to set up new accounts for services. But not everyone reads the manual, as I recently discovered when called in to investigate a failed Microsoft Exchange server. What had happened was that the person installing it had chosen a pre-existing administrator account for the Exchange service to log in with: and when someone changed the password on that account, then clearly the service could no longer function.

However, when using a built-in service which comes with Windows NT, you could be forgiven for not realising that you need to set up a special account: the schedule service is the one exception where you must, but unfortunately the problems don't stop there.

The next problem arises with the use of network drives. Drives which are mapped at the desktop are not necessarily visible to the schedule service and will change

## Quick look at a book

### ■ Microsoft Windows NT Server Resource Kit, Version 4.0, Supplement One

Price £37.49.

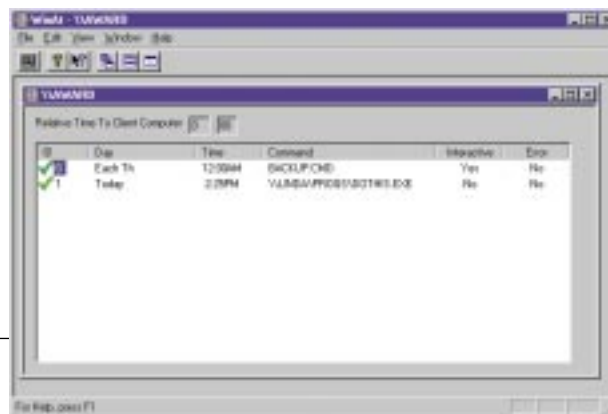
Contact Computer Manuals 0121 706 6000.

ISBN 1572315598.

This manual is largely devoted to Microsoft's Internet Information Server (IIS), and provides a wealth of information on how to optimise IIS performance. Security issues are also covered and there's a useful section on connecting to the internet with IIS. Much of this is fairly basic, but would be helpful for people with little internet experience — a market that Windows NT and IIS are no doubt reaching now.

There are some revisions to the existing Resource Kit manuals. The final chapter is a fairly brief look at some of the interoperability issues encountered in heterogeneous environments. The CD contains the entire set of resource kit tools and utilities, including several new and revised ones.

If you're making serious use of IIS, or already own the Resource Kit, you should find this supplement useful.



Top & above

The Resource Kit supplement includes a utility to check web page links

Left The Resource Kit includes a graphical interface to the scheduler

depending on what user is logged in at the desktop and what they choose to do. Therefore, any scheduled jobs should use UNC paths to access network drives (such as \\machineb\batchfiles).

Alternatively, you can use an "at" command to map a drive letter but in that case you should use a further command to un-map it: otherwise, the drive letter won't be available to the desktop user.

Usually, only system administrators may submit jobs to the schedule service, although for security reasons you may prefer to avoid this requirement and allow System Operators to be able to submit jobs, too.

You can allow this by finding the following registry key:

```
HKEY_LOCAL_MACHINE\SYSTEM\
CurrentControlSet\Control\Lsa
and adding the value
Submit Control [REG_DWORD]
0x00000001
```

There is no way for other users to submit AT commands.

## PCW Contact

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# The PC in profile

Roaming Profiles allow your Desktop, Start menu and recent documents to be accessible from wherever you log on. Dale Strickland-Clark shows you how. Plus, a visit to Zero Administration.

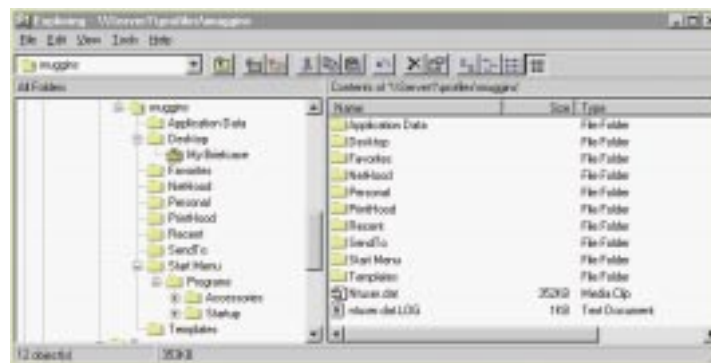
One of the great advantages of mainframe computers equipped with dumb terminals was that all the configuration information for each user was stored centrally. You could go to any terminal, log on and find yourself working with the same, familiar environment you had been using earlier, over on the other side of the office building.

PCs changed all that, and with the advent of Windows, the degree to which a user could alter the look of their PC could render it almost useless to anyone else. People tended to own their PCs in the same way they owned their desks and God help anyone who messed with your PC. Popping over to log on to someone else's PC was often unproductive. Network administrators spent the next few years trying to reproduce the effect of the dumb mainframe terminal so that users could log on anywhere, but enjoyed varying degrees of success (usually very little).

I'm a great believer in the black box PC in a business environment. All PCs are configured with the same standard software and as close as possible to a standard hardware configuration. The fewer differences the better. Then, if a PC loses the will to live or you need to change the office layout, you simply swap them around.

NT and Windows 95 give us the ability to avoid many of these configuration problems and enable us to treat the PC as a black box. Users can roam from workstation to workstation but still log on and pick up their own customised settings.

These settings are stored in a Profile, the use of which is optional with Windows 95 but standard on NT. However, to make a Profile available from any workstation, you



**Fig 1** A typical user Profile directory tree. This is what the system creates but you can add your own folders to extend your Profile

need to move it to a shared directory, probably on a server, and configure the user appropriately.

## What is a Profile?

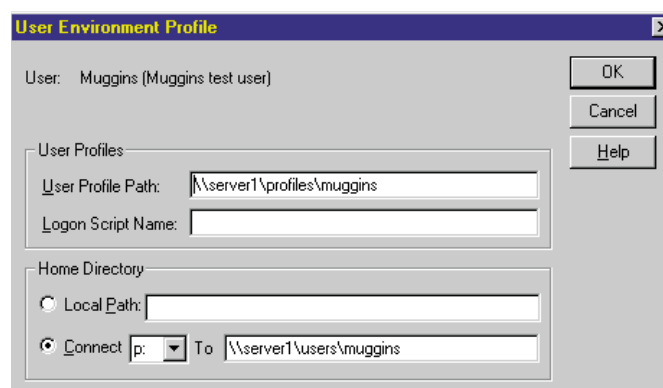
Your Desktop, Start menu, recent documents menu and many personal options are stored in a directory structure called your Profile (Fig 1). You find it by looking for a folder called "Profiles" off your Windows NT directory. Within will be a separate folder, created by the system for each user who has logged on to that PC. Within each of those, along with the Shell folders (Desktop, Start menu) you will find the files called ntuser.dat, which is the

user's Registry, and ntuser.dat.LOG. This latter is a transaction log for the Registry and provides fault tolerance.

Unless you tell it otherwise, NT creates a Profile for each user on each PC they use. But it won't follow them around and they will have to establish their preferences at each machine the first time they use it. New Profiles are always based on a copy of the Default User Profile on that workstation.

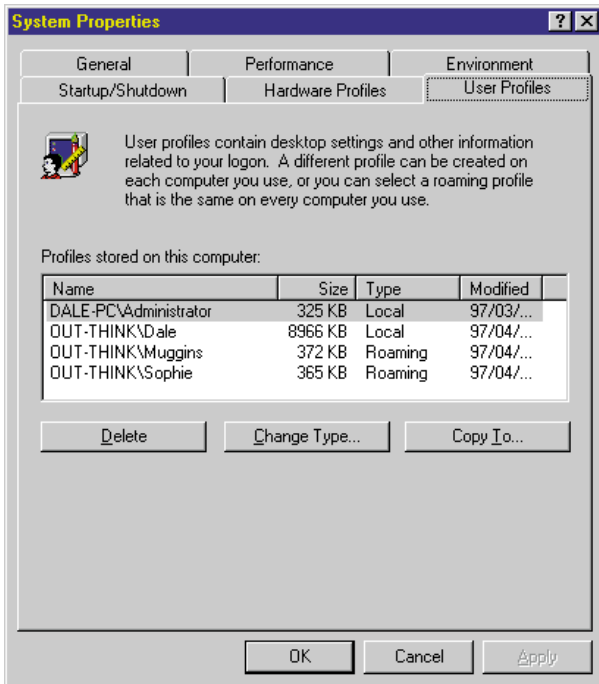
## Roaming Profiles

To make a Profile roam and be available to a user wherever they log on, you specify a User Profile Path (Fig 2) with the User Manager. The path should refer to a



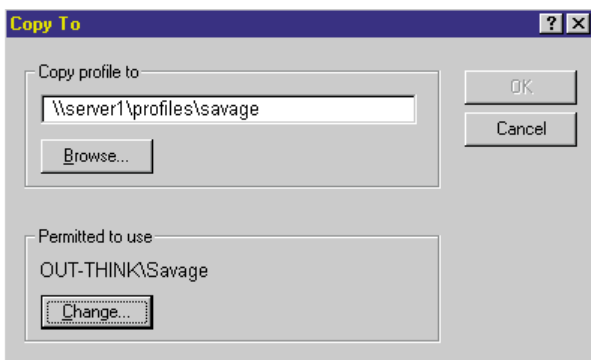
**Fig 2** To give a user a roaming Profile, you put the path to the Profile in the User Profile Path field. As long as the share exists (e.g. '\\server1\profiles') NT will do the rest. If this field is blank, the user will get a different local Profile on each PC

p265 ➤



**Fig 3 (left)** The System Properties applet shows all the local Profiles and cached roaming Profiles stored on the PC. Deleting a roaming Profile is harmless if it has been successfully copied back to the server, but a local Profile might be the only copy

**Fig 4 (below, left)** You can create a copy of a Profile as a backup, to copy a standard configuration for another user or to convert a local to a roaming Profile



location so you can pick out bits you're particularly keen to hang on to, or restore the whole thing from a backup.

Profiles *should* be kept small, but this is almost impossible to enforce because users like to store files on the desktop and there are distinct advantages to this for mobile users. Consider the

subdirectory of a share on a server. The share should already exist but the system creates the subdirectory tree when the user next logs on. Well, not quite: it creates just the root of the user's Profile when the user first logs on; the rest is copied from the workstation when they log off.

Each time they log on to a PC, the Profile is copied from the server to that PC where it is used as a cache for the duration of the session. When they log off, it's copied back to the server. The initial copying is skipped if the copy on the workstation is already up-to-date.

You really don't want to interrupt this copy back to the server (by resetting the workstation, for instance). It isn't performed in a fault-tolerant fashion and you could end up with a scrambled and unusable Profile. I've suffered from this more times than I can remember and, on each occasion, it was the `ntuser.dat` file that was damaged. If NT can't read this file when you log on, it ignores the whole Profile and creates a new one. The old one is retained in its original

load on the server, collecting all the updated Profiles, if everyone were to log off at the same time in the evening. Microsoft recommends not storing files on the desktop but using a Shortcut instead. This is at odds with Microsoft installing a Briefcase on every desktop by default. If your Briefcase is stuffed with files, your Profile will be large.

### Going mobile

On a mobile PC, the Briefcase is a useful tool for taking files away that you share with others, but if you are the only one who needs the file you can simply store it on your desktop or any other folder you create in your Profile. As long as the Profile on the mobile PC is up-to-date when you disconnect from the network, you can work on the file in the cached Profile. When you next connect to the network, the Profile will be updated, back on the server.

Watch out for the ways in which Windows 95 and NT treat Profiles. If your mobile PC is running Windows 95, it won't pick up your



## Book Reviews

### ■ Windows NT Workstation 4.0 — At a Glance

**Authors** Jerry Joice and Marianne Moon  
**Publisher** Microsoft Press  
**Price** £15.49

This primer is for the first-time Windows user. It begins by naming the objects you will find on-screen and dealing with important mouse techniques.



The authors have attempted to avoid technical jargon while covering those tasks users will need to negotiate daily. Each task is limited to a two-page layout, with plenty of screenshots and tips to accompany the numbered steps. There is sufficient information here to help even the most hesitant user make a start on their own, but even so, there is nothing more than you would find in the help files. It is not for the more confident or adventurous: they will be able to figure it out for themselves.

### ■ Working with Active Server Pages

**Authors** Michael Corning, Steve Elfanbaum, David Melnick  
**Publisher** Que  
**Price** £36.99

Active Server Pages (ASP) is a new feature of IIS. It greatly simplifies the job of web developers to build a dynamic web site without

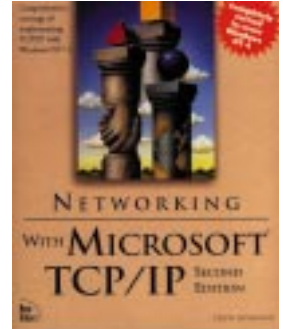


messing about with CGI scripts. It covers every angle of using ASP, starting with a quick look at IIS and how it sits on NT, through to writing VBScript, the ASP object model, and on to database programming. It's a well thought-out book which deals with subjects in a logical order. I would specially recommend the last few chapters on database programming and ActiveX Data Objects. The authors had some difficulty in containing their excitement over this new

data access technology and leave the reader in no doubt that this is an area to watch closely for developments.

### ■ Networking with Microsoft TCP/IP

**Author** Drew Heywood  
**Publisher** New Riders  
**Price** £41.49



This second edition (revised) covers NT4 and is as complete a volume on

TCP/IP as you're likely to find. It not only covers Microsoft's interpretation of this dominant protocol but also looks at the history and background, explaining why the protocol has evolved. Every possible component is covered in this NT-orientated book, including all the installable services like DNS, DHCP and WINS along with the console utilities such as PING, TRACERT and NETSTAT. An excellent book, and all most mortals will ever need on the subject.

NT Profile. Windows 95 Profiles are stored on the Home Drive as defined in User Manager and not in the User Profile Path.

### Management

You do not need to have hard and fast rules about the use of roaming Profiles. If users' needs change, it is easy to convert a Profile from local, to roaming, and back.

You can most easily achieve this from the PC where the local Profile is, or will be. When going from local to roaming, first make sure the user is not logged on and that you've updated the User Profile Path with User Manager to point to the server path where the Profile is to go.

Create the target top-level directory on the server (for example, \\Server1\Profiles\Savage), then open the System Properties applet (Fig 3) in the Control Panel (also accessible by clicking once on My Computer and pressing Alt-Return) and click on the User Profiles tab. Select the Profile on which you want to work and click the Copy To... button (Fig 4). Enter the path for the Profile and if necessary change the user with access permission to this.

Changing a Profile from a roaming one to a local version is simpler because it merely changes the state of the cached Profile on the PC to a static local one. Again, from the System Properties applet, select the Profile you wish to change, click the Change Type... button and check the Local option. There's no copying involved here but you might want to make sure the cached Profile is up-to-date by getting the user to log on to the PC before performing the operation.

Of course, there is far more to it than just setting up a few roaming Profiles to establishing the full ability of users to log on to any PC: you have to make sure the user's view of applications and data is consistent between PCs. This generally means that users must not store files on the PCs' local drives — also a requirement of the black box PC principle — and that if applications are installed on the PC, they are always installed in the same directories, or at least mapped to the same drives. If you install NT on your PCs from a common, preconfigured installation image, this should be automatic.

### Zero Administration

It's worth mentioning Microsoft's Zero Administration Initiative here because it extends the idea of the black box PC by making it possible to administer a PC without ever visiting it (which is where the "zero" comes from). It uses existing features like preconfigured Profiles and mandatory Profiles, and adds some attractive new ideas for automatic software installation on demand and remote problem diagnosis and resolution. The result is a PC which is much better able to look after itself but when it can't, demands less effort to fix.

The Zero Administration Initiative is not a product but a combination of tools and methodology, much of which will be in NT5 although you might need SMS (Systems Management Server) to administer other than NT5 workstations.

### PCW Contacts

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**Computer Manuals** 0121 706 6000.



# Heavenly host

Dale Strickland-Clark shows LAN users how to arrange global email via a software package by setting up an SMTP host to talk to their ISP. NT books and a CD are reviewed, too.

Last month I looked at the provision of a cheap internet service to users on a local area network. Rather than adopt the traditional approach and use a router, I chose a software alternative and used a proxy server to channel and direct internet traffic. I finished by abandoning the modem because it was running slower than a one-legged man with a bad leg, and switched to a Pace Ultralink ISDN terminal adaptor. I shall conclude this month by outlining the steps needed to bring global email to these same users.

As I mentioned in the first part, you need an internet service provider (ISP) which offers mail forwarding and an intelligent SMTP (simple mail transfer protocol) host. Your job is to set up an SMTP host at your end to talk to it.

There are several ways to go about this. One inexpensive option is a package called NTMAIL which is available from [www.net-shopper.co.uk](http://www.net-shopper.co.uk). I haven't tried it myself but I've heard good reports. NTMAIL will, as far as I understand, drag mail from your ISP's SMTP host and hold it

on your server until someone with a POP3 (post office protocol) mail client connects to inspect their mailbox. POP3 is the protocol most often used by ISPs for general subscriber access so there is an abundance of cheap client software about, including the free bits of Exchange that come with Windows these days.

However, I'm partial to Microsoft Exchange for email because it's flexible, easy to manage and is excellent if you like to keep synchronised copies of your mailbox on several PCs. The price of flexibility is complexity, and Exchange does its best to muddle you with a skip-load of options that you can safely ignore in a simple case like this.

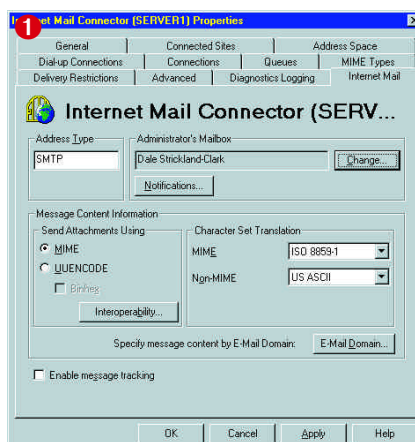
I'm going to assume Exchange is already installed and operating correctly for internal email, and that you have a working Dial-Up Networking connection defined for your ISP. You need to add and configure an internet mail connector (IMC): the IMC comes as part of Exchange Server Enterprise edition or you can add it to Standard Edition with the Exchange Server Connector Series.

Log on to the server as Administrator, start the Exchange Administrator program and select New Other from the File menu. From the fly-out menu, select MTA Transport Stack. It will display a list of available transports. Select RAS MTA Transport Stack (if this isn't in the list, run Exchange Setup again and make sure you've installed it).

A multi-tabbed dialog box will appear (Fig 1) and you will first need to insert the mailbox of the person who is to play Post Master in the administrator's mailbox field. They are told of problems with mail passing through this connection and you can set the level of reporting with the Notifications button.

On the Address Space tab, click the New Internet button and enter an asterisk in the email domain field (Fig 2). This routes all SMTP traffic through the IMC.

Click the Dial-Up Connections tab and select the dial-up networking entry that connects to your ISP from the list. Set the scheduling information to suit the connection frequency you feel appropriate. The example in Fig 3 exchanges internet



## Books & CDs

### ■ Microsoft Windows NT Workstation 4.0 Starts Here (CD Only)

Publisher Microsoft Press

Price £27.99

This multimedia CD assumes the basic level of user interface knowledge you need to find your way around but then, half way through, teaches you those same concepts. How the authors expect you to manage up to that point *without* this essential knowledge escapes me.

You are guided through most of the tasks essential to file management, launching applications, sharing information and using dial-up networking. It uses your own desktop as the starting point for each lesson and assumes a standard configuration. The course makes no attempt to detect whether the student is sticking to the prescribed route or has gone hopelessly astray. However, as the course window stays on top and has a demo button for a video run-through, the student should be able to figure it out eventually.

Each lesson is introduced by a short, typically American video which may not impart much information but will probably help retain the student's interest. The course will probably do its job but lacks the background information that may help the student understand just why the steps they have taken actually work and what the alternatives might be.



### ■ Designing & Implementing Microsoft Index Server

Author Mark Swank & Drew Kittel

Publisher Sams.net Publishing

Price £36.50

The Index Server is an extension to IIS that adds a search capability to your web server. It's a free download and lacks full support from Microsoft, so this book offering installation and configuration guidance could prove useful. It's a bit slow to get started and wastes most of a chapter describing how to download the software from Microsoft and install it; instructions which you can reduce to fetch the installation material from [ftp2.microsoft.com/msdownload/indexsrv11](http://ftp2.microsoft.com/msdownload/indexsrv11) and run it. But from chapter six it all becomes worth the effort. From here the book contains much useful information on configuring the Index Server and setting up a web site packed with information which is still easy to find. There are lots of examples, and if you're planning to use the Index Server, this book will make your life easier.



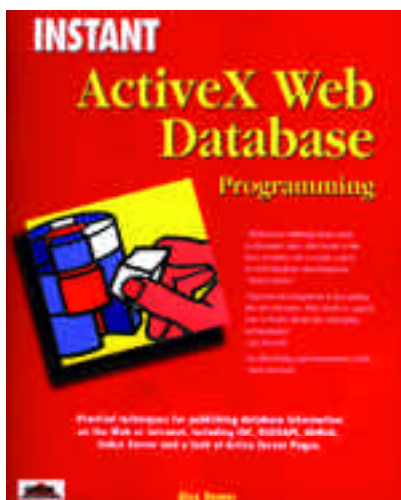
### ■ Instant ActiveX Web Database Programming

Author Alex Homer

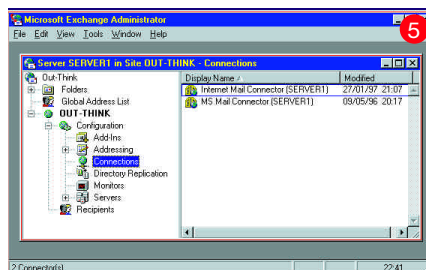
Publisher Wrox Press

Price £27.49

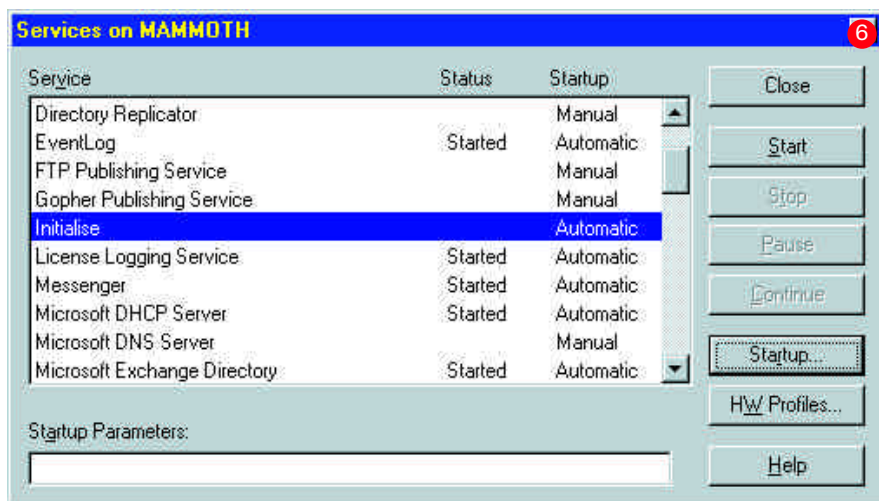
The level to which ActiveX plays any role in shaping the contents of this book is minimal. But drop "ActiveX" from the title and this leaves the real meat of the book. Sadly, though, it's another of those books which are padded with screenshots of a magnification that is doubtless helpful to the short of sight but unnecessary for others. However, there is some worthwhile reading on IIS and ISAPI, the IDC, dbWeb and Active Server Pages. The author shows how to put applications together using these tools with a bit of VB, where it helps. It's a useful book for comparing various approaches, but it should be smaller.







**Fig 6 (below)** Using a service to run a batch file allows you to have it start when the system is restarted



email just once a day at 18:30.

Finally, select the Connections tab (Fig 4). Assuming your ISP has an intelligent SMTP host, you can avoid messing about with DNS servers and simply forward all email to them to distribute. Select "Forward all messages to host" and enter the domain name of your ISP's mail server. Click on "Dial using" and select the dial-up networking entry from the list. This simply means that mail to all destinations goes via that connection. And that's it (Fig 5). You

shouldn't need to worry about the other configuration settings.

Once it's all set up, you will probably want to test it. You need to start the IMC service (called MSeXchangeIMC) before it can do anything but you can queue messages as soon as it's properly created. If you send yourself a message using a fully qualified internet email address, it should go out to your service provider and come straight back, once you get the link started. (If it takes a longer route, you might like to

have a quiet word with your ISP about its mail routing.)

Because we've chosen to forward all outbound mail to the ISP's mail server, starting the IMC isn't quite as simple as it could be. During start-up, it likes to be able to talk to this important host at the other end of the link, and if it can't, the IMC refuses to start. That means you need to

dial the Dial-Up Networking connection before you start the IMC; a sequence that won't happen automatically. I found this a chore each time I restarted the server or reconfigured the IMC, so I wrote a small batch file to simplify the procedure. The routine is shown in Listing 1 and uses the sleep command from the Resource Kit to introduce a couple of delays: The first waits for ten minutes, giving Exchange enough time to get its act together so that the routine can be run immediately after a restart. The second is used in the dial retry loop, which you will notice has no limit on the number of retries: it will keep trying until a connection is made. You might like to modify this to report the difficulty if the connection continues to fail.

This batch routine is all very well, but you still need to start it. It's no use putting it in the Start-Up group on Administrator because it will only get run when Administrator logs on, which may be a long time after a restart or several times during the day. The best place to run this is from a system service where it will start automatically during a restart (Fig 6).

To run a batch file as a system service needs the help of two more Resource Kit tools: SRVANY and INSTSRV. The first runs the batch file as a service and the second is used to set it all up properly. I won't list the steps involved to put this together because it's well documented in the SRVANY.EXE section of the Resource Kit Tools Overview help file.

SRVANY doesn't (or can't) stop the service when the batch file has finished so I added a line at the end of the routine to stop itself and free the resources it's using. If you don't call your service "Initialise", you will need to change that last line. I was a bit dubious about a service stopping itself in this way, but it seems to work.

If you progress to installing the DNS service on your NT server, you can perform your own mail routing rather than forward it all to your ISP. You should then be able to start the IMC without the link being up beforehand and thus do away with the Initialise service.

### Listing 1: A sleepy batch file

```
REM Wait for Exchange to pull itself together
Sleep 600

:Dial
Rasdial "Demon ISDN" && goto StartMail
sleep 60
Goto Dial

:StartMail
net start MSeXchangeIMC

net stop Initialise
```

### PCW Contacts

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Computer Manuals 0121 706 6000





# Mind your own business

Are you a small business and keen to take advantage of the internet? Then why not set it up yourself. Dale Strickland-Clark helps you keep control of your system — and your money.

**T**he world is changing the way it conducts its business. Companies are getting on the net, and now even the smaller companies are finding the advantages too compelling to ignore. Email is generally the first consideration, but a corporate presence on the web and equipping users with browsers may also be important. Whatever the objective, if you have an NT server, it needn't be a complicated job to set it all up.

There's more than one way to achieve this, and many people might turn to a router to provide the bridge between the LAN and the internet. However, I've chosen a different approach which gives you better control and accountability (at least, in this price range). For browser access, you need just two things: a copy of Microsoft's Proxy Server, and a modem or ISDN terminal adapter. If you want to provide internet email you'll also need a mail system, such as Exchange. Hosting a web site requires a bit more thought, if only to make sure you're handling the security properly. Indeed, Microsoft recommends that you don't host a web site on the same machine as Proxy Server and I won't be covering that this month. Setting up email using Exchange will be the subject of next month's column.

A proxy server allows any number of machines to access internet resources external to the LAN using only a single public IP address. All client requests destined for the internet are transparently diverted to the proxy server which then re-issues (as opposed to simply routing) the request to the internet. Responses from the target sites are sent back to the originating system.

You will, of course, need an account with an internet service provider (ISP). If



You manage the Proxy Server's two components (Web Proxy and Winsock Proxy) from the same application you use for the rest of IIS, but it's not clear that the WWW service must be running before the Web Proxy can start

you're planning to run a mail service and want your own domain name, make sure the ISP handles SMTP (Simple Mail Transfer Protocol) and can register the name for you. They will also need to offer mail forwarding. This means that the ISP will store your inbound email while you're not connected instead of returning a "host unreachable" indication to the sending system. Demon is one of several who offer these services, and I use them.

## First, a modem...

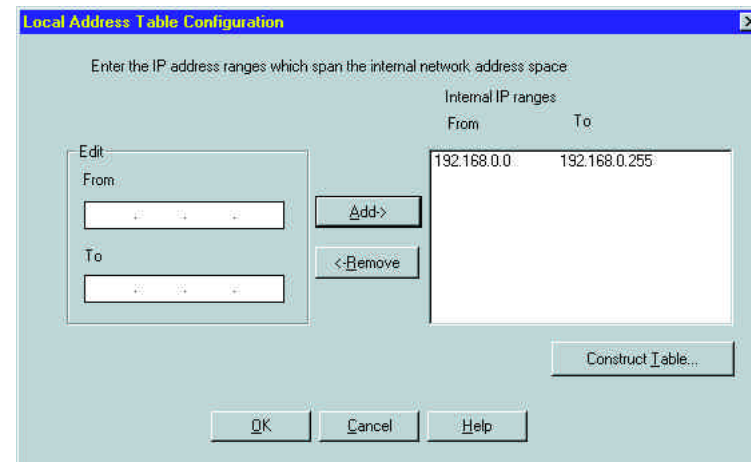
The first task is to connect a modem. Even if you're planning to use an ISDN terminal adapter, you might find it helpful to debug the Dial Up Networking (DUN) connection using a modem. Then create the entry in the DUN phone book on the server that will connect to your ISP. I covered this a few months ago so I won't go into it again here. If you can establish a connection with this new entry and browse a web site from your server, the first phase is complete.

You can download the Proxy Server from Microsoft's FTP site. Unfortunately it's only an evaluation copy but it will last you a couple of months while you assess its

suitability. A licensed copy should cost you around £600 — rather more if you buy it from Microsoft. If you want the evaluation, your journey starts at <http://www.microsoft.com/proxy> with a registration form and a 6Mb download.

The Proxy Server comes in two parts: the server software itself and client software for each workstation. The server software is, in fact, an extension to IIS (the internet server component of NT) and you manage it from the Internet Service Manager applet along with the rest of IIS. The client software is responsible for identifying internet-bound traffic and diverting it to the proxy.

To install the Proxy Server, you will need an NT Server 4.0 system with Service Pack 2 already loaded. The installation is free of surprises as long as you've noted the CD key which you'll need to enter early in the process. (It was "375-1749043" when I last looked.) The only remotely taxing aspect is setting up the local address table. The LAT contains all the IP address ranges used in your local network and is automatically copied regularly to the client PCs. The client software uses this table to determine where it should direct network requests.



I always use one of the IANA (Internet Assigned Numbers Authority) suggested address ranges for private networks of 192.168.0.0 to 192.168.255.255 for all the networks I set up. This means my LAT only needs a single entry. You can build the table yourself or use the Construct Table button to have it attempt to build the LAT for you from information it can glean from your network. The server installation needs to know the name of the DUN entry it should use to start the link and the times during the day that you want to allow auto-dial on demand.

## A matter of protocol

I haven't yet found the need to differentiate between internet protocols: a user is simply given access to the internet. However, you can restrict access by protocol, allowing FTP access but not World Wide Web, for example. You will find it easier to manage and see who can do what if you create a

security group for each type of access you want to control, then admit users to the appropriate groups.

The fun bit is determining who will be allowed to access the internet through the proxy. Your company may have certain business rules on this, but I have found that granting entrance to the necessary security group in exchange for bribes works well.

During the server installation, a network share is created on the server called, rather anonymously, mspclnt. Open this share from each workstation and run the Setup program found within. This installs the client software and takes a few seconds. It also updates Internet Explorer (if it's installed) to direct its requests to the proxy.

That's it. The first authorised user to fire off an internet request will trigger the proxy to autodial and establish a connection. There's an appreciable delay here when using a modem and some clients may time-out, but if the user retries the request it

The local address table must reflect all the addresses used on your private network. In many cases, this may be a single entry

should succeed on the second attempt.

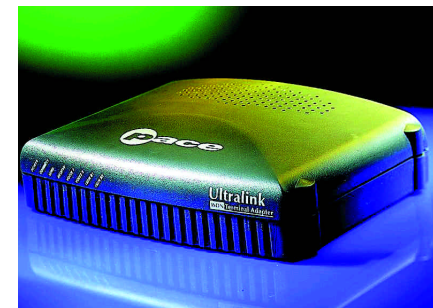
The line will now stay up until the inactivity timer closes it down. This time limit is set in the DUN phonebook and you might want to try different values to keep connection charges down without the line dropping in the middle of an online session. To adjust it, open Dial-Up Networking from My Computer, click on the More button and select Logon Preferences.

A Control Panel applet allows the user to use an alternative server or switch the proxy off altogether, so they're not cut off from internet access through their own modem if they need it occasionally.

## Ah yes, ISDN...

Using the Proxy Server for internet access almost feels like having a permanent connection, inasmuch as you don't have to take any special action to get the line going when you need it. Unfortunately, the time taken to establish a connection and get any data across it reminds you that your knees are firmly planted in modem land.

I needed something faster that wasn't going to provoke shrieks of horror from the Finance Director. I decided to go for an ISDN2 line and a terminal adapter (TA). BT has a number of price options for ISDN lines at the time of writing so you can get one installed for a modest outlay. ISDN TAs have been dropping in price too and I picked the Pace Ultralink which is keenly priced and comes from a reliable stable. This neat little box sits external to the server and connects via a suitable COM port. To be suitable, the port must definitely be buffered and preferably be on a Digi board serial port



The Pace Ultralink is a tidy little ISDN terminal adapter but don't let the picture fool you. This device can stand on its side, too

Assigning internet access permissions is best kept to specific security groups because it's easier to see what privileges a user has been granted by inspecting their group memberships. However, if group membership has wider implications, you can list users individually, too

adapter to relieve the main processor of much interrupt handling. The Pace Ultralink comes with the installation material you need to set it up on NT in a few moments and then you just treat it like a modem.

Connection times with ISDN are very

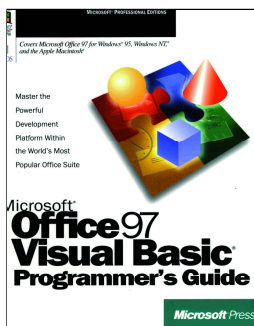
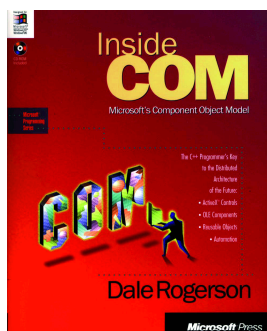
## Windows NT Books

I am indebted, as ever, to Computer Manuals (0121 706 6000) who keep me supplied with books to review.

### Inside COM

**Author** Dale Rogerson  
**Publisher** Microsoft Press  
**Price** £28 (£32.99 inc VAT)  
**Pages** 376  
**Includes** CD-ROM

COM is Microsoft's Component Object Model. It defines the way programs (or, more correctly, components) talk to each other and is the basis of OLE and ActiveX. This book assumes a solid grounding in C++ and develops the principles of the interface from the basics through to automation and beyond. It's a thorough book and the author explains the concepts clearly, although he has a tendency to lapse into patronising fables at the start of chapters. There are plenty of diagrams and code samples which you will also find on the CD. This is an ideal book for newcomers to the subject because of the careful explanations, but more experienced programmers will find it a bit slow.



**Microsoft Office 97 Visual Basic Programmer's Guide**  
**Publisher** Microsoft Press  
**Price** £32.49 (no VAT)  
**Pages** 528

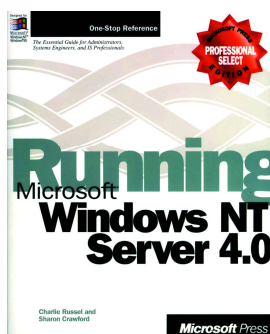
Visual Basic now sits behind all the main components of Microsoft Office. It doesn't really matter whether you like it or not; if you are involved in administering Office or writing the odd macro, you are probably going to need to get to grips with it. Fortunately, the flexibility of the language has improved in recent revisions and the development environment in Office 97 helps a lot, but you are still going to need help with the object models of

the applications. That's where this book comes in. Once it has explained the basic language principles, it goes on to describe the object model and then the object structure of each application. These are taken in turn and then the book goes on to explain programming the Office Assistants, manipulating the drawing layers and programming databases using Data Access Objects. Finally, it covers ActiveX and programming the internet applications. The appendices help with converting old Excel and WordBasic macros. You could probably get by without this book and just the online help files, but life has more worthwhile challenges.

### Running Microsoft Windows NT Server 4.0

**Authors** Charlie Russel and Sharon Crawford  
**Publisher** Microsoft Press  
**Price** £36.99 (no VAT)  
**Pages** 615

I was pleasantly surprised when I started dipping into this book. I was expecting the usual maintenance tasks explained and a list of steps you need to perform to complete them. Well, it's got all that, but it also offers more background and insight than I recall from similar books. The fact that it's an inside job might have something to do with this. It is also a very compact book and covers its subject without spreading itself across yards of shelf space, although it does stick to server issues. You won't find too many topics covered which might also fit in a book on NT Workstation.



much shorter than an analogue line and you don't get that confrontation between Hissing Sid and Zebedee as the modems suss out each other's capability and the quality of the line.

The question now, of course, is do I go for ISDN at home. It's awfully tempting.

## PCW Contacts

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**Computer Manuals** 0121 706 6000





# The main event

The Windows NT event logs keep track of what's happening in the system, but they themselves need regular attention. Dale Strickland-Clark shows you how they work.

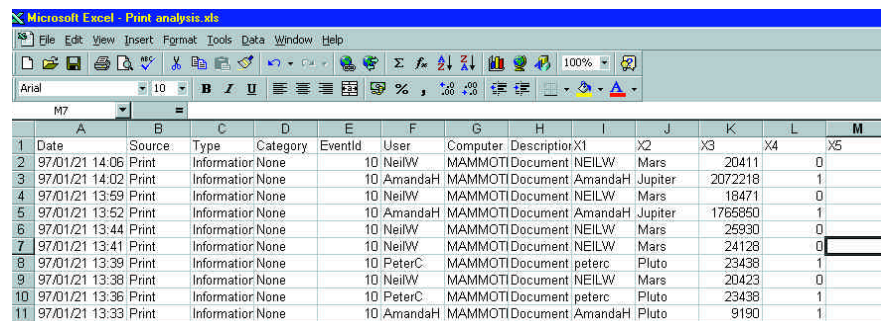
When you want to know what's been happening on your system, the NT event log is the place to turn. It's the central record for notable incidents and can help with problem diagnosis, resource management and capacity planning.

Each NT workstation or server has three event logs: system, security and application. The system log contains information about configuration problems, the state of the services and the use of printers. Application programmers determine what they consider important enough for the application log and administrators control most of what is written to the security log.

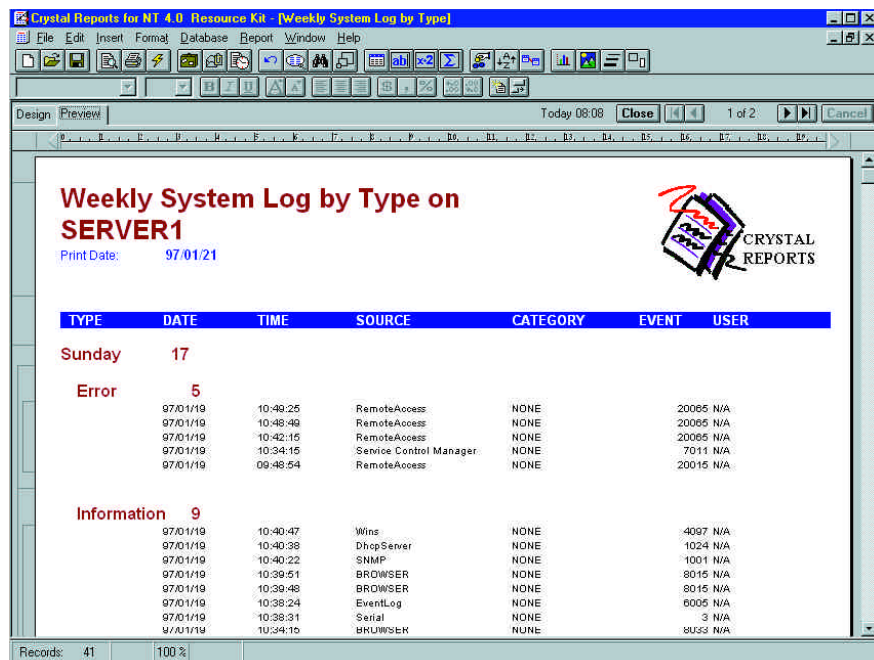
These logs are a valuable source of information concerning what has happened on a system and it's a good idea to archive them daily if you're ever likely to want to examine the historical behaviour of a system.

Records are written to the event log in a format which, in part, is only understood by the application that wrote them. When you view or export the logs, the system calls upon each application to format its own records so you can make sense of them. This is great until you take a raw event log

Once the event log data has been massaged into a tidy comma-delimited format, Excel will quickly turn it into a simple database



1	Date	Source	Type	Category	EventId	User	Computer	Description	X1	X2	X3	X4	X5
2	97/01/21	14:06	Print	Information	None	10	NeilW	MAMMOTT Document	NEILW	Mars	20411	0	
3	97/01/21	14:02	Print	Information	None	10	AmandaH	MAMMOTT Document	AmandaH	Jupiter	2072218	1	
4	97/01/21	13:59	Print	Information	None	10	NeilW	MAMMOTT Document	NEILW	Mars	18471	0	
5	97/01/21	13:52	Print	Information	None	10	AmandaH	MAMMOTT Document	AmandaH	Jupiter	1765850	1	
6	97/01/21	13:44	Print	Information	None	10	NeilW	MAMMOTT Document	NEILW	Mars	25930	0	
7	97/01/21	13:41	Print	Information	None	10	NeilW	MAMMOTT Document	NEILW	Mars	24126	0	
8	97/01/21	13:39	Print	Information	None	10	PeterC	MAMMOTT Document	peterc	Pluto	23436	1	
9	97/01/21	13:38	Print	Information	None	10	NeilW	MAMMOTT Document	NEILW	Mars	20423	0	
10	97/01/21	13:36	Print	Information	None	10	PeterC	MAMMOTT Document	peterc	Pluto	23436	1	
11	97/01/21	13:33	Print	Information	None	10	AmandaH	MAMMOTT Document	AmandaH	Pluto	9190	1	



TYPE	DATE	TIME	SOURCE	CATEGORY	EVENT	USER
Sunday	17					
Error	5					
	97/01/19	10:49:25	RemoteAccess	NONE	20065	N/A
	97/01/19	10:48:49	RemoteAccess	NONE	20065	N/A
	97/01/19	10:42:15	RemoteAccess	NONE	20065	N/A
	97/01/19	10:34:15	Service Control Manager	NONE	7011	N/A
	97/01/19	09:48:54	RemoteAccess	NONE	20015	N/A
Information	9					
	97/01/19	10:40:47	Wins	NONE	4097	N/A
	97/01/19	10:40:38	DhcpServer	NONE	1024	N/A
	97/01/19	10:40:22	SNMP	NONE	1001	N/A
	97/01/19	10:39:51	BROWSER	NONE	8015	N/A
	97/01/19	10:39:48	BROWSER	NONE	8015	N/A
	97/01/19	10:38:24	EventLog	NONE	6005	N/A
	97/01/19	10:38:31	Serial	NONE	3	N/A
	97/01/19	10:34:15	BRUWISBK	NONE	BUSS	N/A

The Crystal Reports bundled in the Server Resource Kit provides exception reporting and basic analysis of event logs

(an .EVT file) and attempt to examine it on another system. If the application that created the records isn't installed, you may find that much information won't make sense. Depending on the network, you may

also find that user IDs are displayed in their internal representation, which is a curious string of digits called a SID. There is a similar danger when attempting to examine an old archived log. If applications have been removed from the system or users deleted, some log entries may reveal less than you'd like.

For these reasons, it's a good idea to consider the information you're likely to want to extract from event logs before choosing your storage strategy. It's also worth watching the size of the event logs you generate. Large logs of tens or even hundreds of megabytes per day on a busy system are easily achievable if you're over-zealous with auditing.

Because of the possibility of event logs

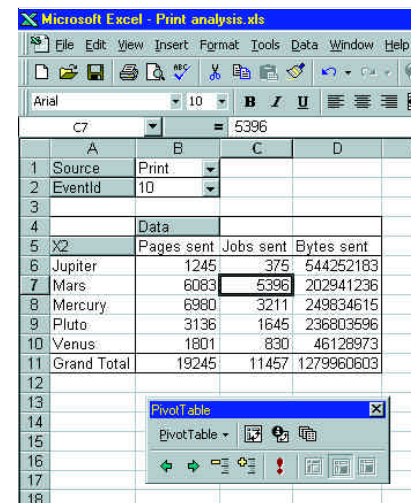
becoming useless over time or losing touch with the applications creating them, long-term storage and most types of analysis are going to depend on a formatted export of the event log. I think there are three main types of uses to which the event log is put. The first is as a problem alert, although it's not really designed for this: serious problems are already written to the console and sent as messages to registered administrators. Second is as a problem diagnosis aid for when something isn't working properly and you need to find the reason. Lastly, as an audit trail, to record who's done what.

As part of a capacity planning exercise, I needed to find out which printers on a network were being most heavily used and by whom. The Event Viewer application that

comes with NT is adequate for viewing raw events but pretty hopeless for analysis. While it will export the logs in a comma-delimited format, you can't automate the process and the resultant file might be described as offering an interesting challenge for analysis.

There is a tool in the NT 4 Resource Kit called DUMPEL that might have helped simplify getting the data out of the logs, but in spite of the help file suggesting otherwise, I couldn't get a comma-delimited file out of it. I'll look at this again when I come to automate the archiving of log records, but for now I was happy to get the data out by hand, using Event Viewer.

The Server version of the Resource Kit includes a copy of Crystal Reports that will read the event logs directly and produce a



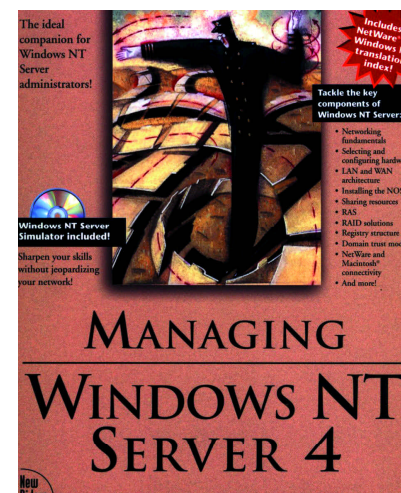
1	Source	Print			
2	EventId	10			
3					
4		Data			
5	X2	Pages sent	Jobs sent	Bytes sent	
6	Jupiter	1245	375	544252183	
7	Mars	6083	5396	202941236	
8	Mercury	6980	3211	249834615	
9	Pluto	3136	1645	236803596	
10	Venus	1801	830	46128973	
11	Grand Total	19245	11457	1279960603	

Excel's PivotTable is an ideal tool for interactive analysis. Here it summarises the use of several printers

## Books

■ **Managing Windows NT Server 4**  
Author: Howard F. Hilliker  
Publisher: New Riders  
Price: £46.99 (incl VAT)

This book bears a striking resemblance to *Inside Windows NT Server 4* (reviewed January 1997) by the same publisher. Many of the subjects covered are similar, and I'm also suspicious of the number "4" in the title. Parts of the text have a distinct NT 3.51 ring to them and there are even screenshots from an NT 3.51 system. Worse, the console command reference at the back of the book mentions none of the extensions introduced in NT 4. Either this is a revised 3.51 book, or it's been a long time in the making. Gripes apart, this is a solid, thorough volume covering most of the issues concerning NT administrators. The CD is a corker, with a vast amount of demonstration NT software plus a free copy of *Inside Windows NT Server* in Acrobat format.



■ **Whiz Bang Web Site F/X**  
Author: Tom Lockwood  
Publisher: Que  
Price: £32.99 (incl VAT)

This book solves one of the great mysteries of the web age: how do you make a background that tiles seamlessly? Also explained is using image maps, creating animated GIFs, working with audio, Java and multimedia. CGI scripts and VRML are explored along the way on the journey to producing appealing web sites.

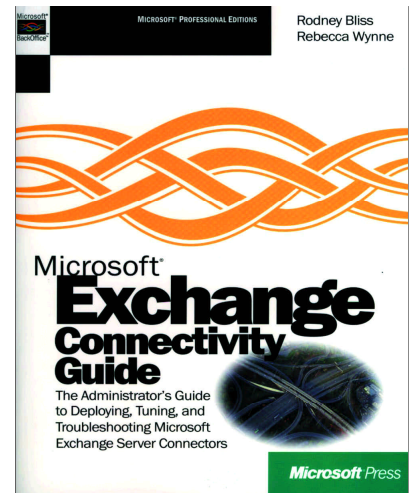
The book adopts the unconventional approach of listing very few of the code samples on its pages, leaving you, instead, to fish them off the CD — which is nicely organised as a web site with links to relevant pages out in the real world.

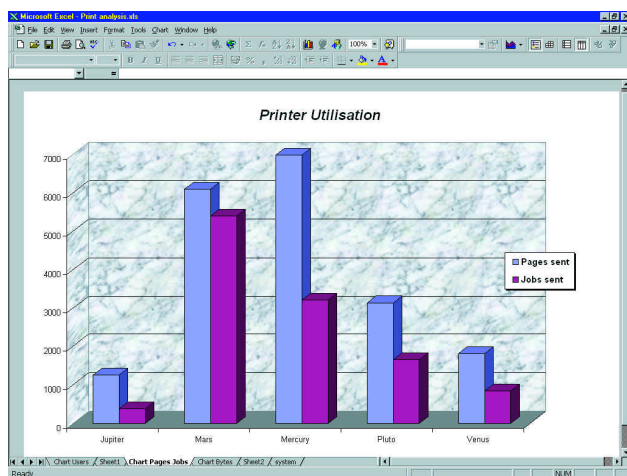
The author knows his subject well and explains it clearly. This is an ideal companion for someone already familiar with HTML but who wants to be more adventurous.

■ **Microsoft Exchange Connectivity Guide**  
Authors: Rodney Bliss, Rebecca Wynne  
Publisher: Microsoft Press  
Price: £27.49 (incl VAT)

The connection possibilities offered by Exchange are many and even the experienced administrator can find themselves with a system that really should be transmitting mail but stubbornly refuses. This book explains the large number of parameters that affect message transfer and fills the very large holes left by the documentation supplied with the software. It assumes little and explains setting up a server to talk to the internet, X400 or MS Mail in networks of varying complexity. All the dialog boxes concerned are shown and each parameter is explained along with possible problems you may encounter and what to do about them.

A very comprehensive and useful reference.





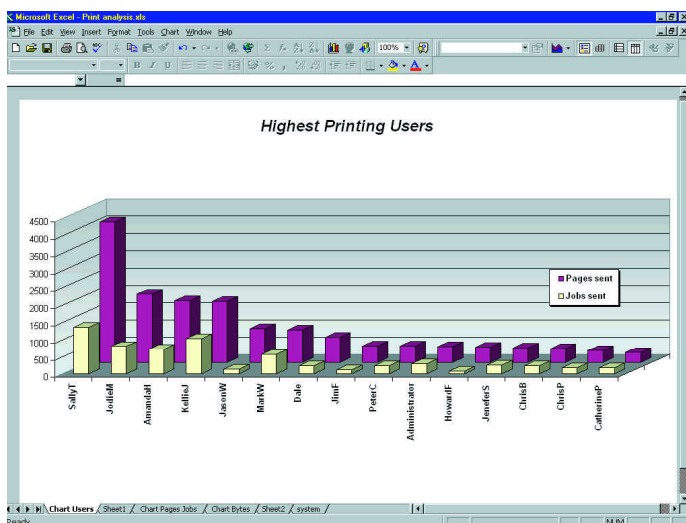
**Left** The poor distribution of workload is now evident. Mercury, an overworked LaserJet 5P, might benefit from swapping places with Venus, a rather swift Lexmark Optra Rt+

**Below** Highlighting high print users might encourage economic printing behaviour. Sadly, it's turned into an ugly scramble for the top position

variety of reports, but in the end I chose Excel to do the analysis backed by a little Perl program to sanitise the data.

I exported the system log from the server into what the Event Viewer program calls a comma-delimited format and ran it through the Perl program, `cleanevent.perl`

(see screenshots, page 266). `Cleanevent` adds a header record, identifying the columns so Excel will treat the data as a database. It merges the date and time fields from the log, it picks up all the trailing description fields that sometimes follow a



record and adds them to the end of the original record, and, finally, it identifies the records relating to printing. From these it picks out the user ID, printer name and print size, placing them in the general-purpose fields, X1 to X4, on the end of the record. If the output of `cleanevent` is written to a .csv file and dropped into Excel, it will automatically be split into individual cells and is immediately ready for analysis.

I called upon a PivotTable (under the Data menu) to do the analysis and finished off with a few charts to help illustrate the load on the printers.

The Perl routine could easily be extended to extract other interesting information, split the logs into smaller record sets or write it to a database for long-term analysis.

## Mouse moment

If you cast your mind back to the January issue, you may recall my request that Santa deliver a new design of pointing device. Well, it wasn't Santa but Microsoft that came up with the goods, and while it's not exactly what I asked for, we're definitely heading in the right direction. I refer, of course, to Microsoft's new Intellimouse. I've only been using it a month or so and already I'm lost at a PC without one. Now, with an ordinary mouse, I find myself scraping uselessly at the little gap between the two buttons and receiving strange looks from uninitiated onlookers. Scrolling has never been so effortless. Nine out of ten points, Microsoft. I'll save the extra one for when someone comes up with a cordless version. (Are you listening, Logitech?)

## PCW Contacts

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