



## Size doesn't matter

**...except when you're dealing with ever-expanding mail messages and trying to plan a network.**

**Stephen Rodda looks at how things are developing in this area, and at one possible way of avoiding credit card fraud.**

In 1993 the average size of a mail message on a specific network was 2.5Kb. In 1994 it grew to 25Kb. This year, as people realise how to add more and larger attachments, it looks set to grow to 250Kb. Where will this leave us in the future? With the growth of the number of Internet connections and with access to the Internet allowing multi-megabyte downloads of World Wide Web pages, video files, sound files and so on, Internet access is going to be a major factor in the

planning of a network and, of course, an email system.

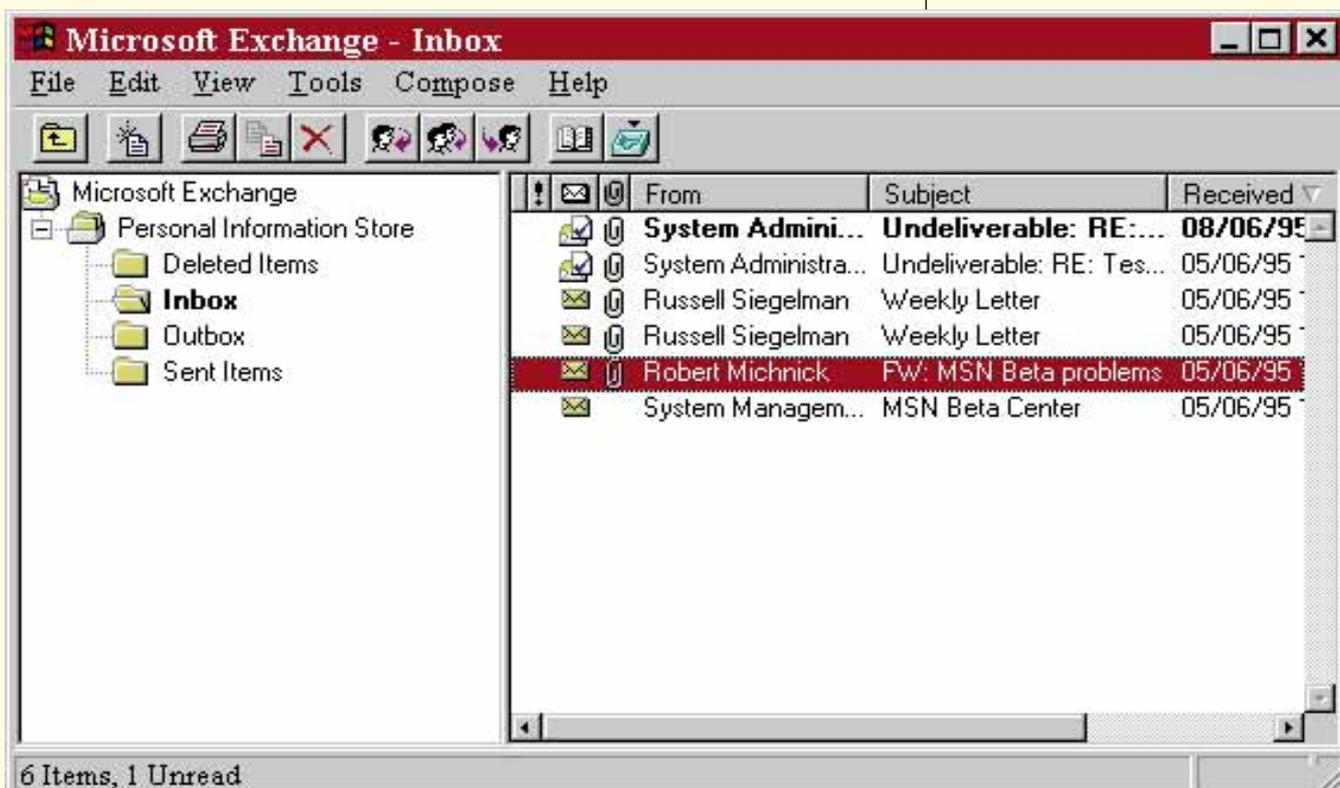
Where do we go from here? Storage is a primary consideration. My bet is that servers' space requirements will be expanded in roughly the same sort of time-frame as is required for a 20Mb drive to become outmoded. At the turn of the decade, you may remember, a 20Mb disk drive was reasonable for a machine which ran a word processor, a spreadsheet and a database. But now, a 200Mb drive

doesn't seem enough. Fileservers and networks are going to have to come to terms with a new explosion in data requirements. I attended the EEMA (European Electronic Messaging Association) conference recently, and it seems that my concerns are shared by many email administrators.

I spoke to the director of IT at a large Swiss multinational, who said that his users were accessing the World Wide Web by email and retrieving large numbers of WWW pages. We came to the conclusion that, in order for his company's network to return to operating properly, he would have to initiate a programme of replacing his networking hubs with ATM-type hubs. These sense where the data is going and switch the network so that rather than one large network with only one connection is available at a time, it becomes a series of smaller ones, allowing concurrent connections from machine to server and machine to machine.

He also felt that his fibre-optic backbone wasn't going to be as fast as required, and that he'd have to arrange for a series of backbones to augment the data-carrying capacity of the first. Lotus Notes seems to be the main "culprit" since users appear to include attachments along with the original message in any reply they might make. The problem is exacerbated

*Microsoft Exchange, which interfaces with the Faxination fax server*



by multi-addressed messages, where the network traffic is proliferated by these replies going to all the original addressees.

This poses the question: "What can I do about this state of affairs to get the most out of my network as it stands?" The obvious answer lies in training, and the selection of a threaded mail package. The package, much like CIX or the Microsoft Network, allows a graphical representation of which message is a reply to which other so that they follow on, on-screen, and users see where the message lies in the structure of a conversation, or thread. This, combined with training (normally the Cinderella of IT) would probably go as far as anything to cut down on the volume of email traffic. Of course, there are other methods of saving traffic; the most obvious of which is object linking, rather than embedding.

While at this conference I took the opportunity of visiting the associated exhibition where I saw many interesting developments, including the linking of X500 directories from various vendors. This will probably occur in the near future and allow X400 email to be implemented without knowledge of the somewhat cryptic X400 addressing style.

I also came to the conclusion that there are now *three* network classifications according to size: LAN, WAN and what I call a GLAN (Global Area Network). This entails access outside the framework of your organisation, and would typically be implemented by use of the Internet.

### Beating the fraudsters

We all know the risks involved when transmitting credit card numbers over the Internet. The less law-abiding among us can easily install a "packet sniffer" in an Internet node, and by simple recognition of the typical 1234-5678-9012-3456 type of card number, can print out a list of the card numbers transmitted over that segment. It struck me that the simple expedient of formatting a message differently (until the perpetrators caught on, of course) would enable users to send their credit card numbers as plain text, while defeating the sniffer approach.

Such a message could look like this:

```
4 Please
9 send
2 me
9 a
8 copy
4 of
...and so on.
```

Of course, more sophisticated methods exist which involve encryption using the

American DES or the public key cryptography (PGP) methods. I had the opportunity of looking at some, and when I receive the evaluation copies, I'll report back.

### Mac fax

Among the products on display at the exhibition was the first integrated fax system I have ever seen which lets Mac users share a computerised fax/modem and send graphics, as easily as their PC counterparts. Until now this hasn't been the case, since in order for the Mac to send a graphic it has had to be printed. While there are fax packages with built-in PostScript interpreters, and any Windows NT Server-hosted fax package will allow Macintosh users to print PostScript to any printer whether PostScript or not, the small problem of transmitting the recipient's fax number within a PostScript file still exists.

This problem seems to have been solved by Fenestrae (Latin for "Windows") whose Faxination fax server ties in with MAPI (Microsoft) mail packages. It allows routing over a WAN if available, so that call charges are minimised; batching of faxes, again minimising call charges; the use of a DDI (direct dial-in) connection to determine the mailbox to which to route the fax; and it interfaces with Microsoft Mail and Exchange.

Another item which I found interesting was a program, developed by French Canadians, to deal with the problem of transmitting accent marks over 7-bit mail systems. Of course, there's precious little an accent does in French save change the pronunciation, but in other languages (e.g. Dutch, since I know a little) there are words which are only differentiated from one another by their accent marks: for example, *voor* ("for") and "*vóór*" ("in front of"); and "*een*" (the indefinite article) and "*één*" ("one"). Here, accents are of paramount importance, especially in legal transmissions. Until this software was available, the only options open to speakers of languages like this were either to use 8-bit mail systems or to uuencode or use a similar system of encoding 8 bits into 7 bits. I shall be looking at this software in a future issue of *PCW*.

### Windows 95 patch

And finally this month, there's a patch for those of you using Windows 95. It entails possible slow registration with a NetWare server and it's called NWLSP.EXE. It contains new login code for NetWare servers and, once run, should be moved into the System folder of Windows 95.



## Questions & Answers

### A remote chance

How do I connect to a NetWare LAN remotely?

*This question is a combination of various queries I have received. There are basically two methods: using a remote login program, which enables transport of the networking protocol over a modem link; or simply running a program which takes control of a machine at the network end of the link, transferring the screen image to the remote machine and copying mouse and keyboard actions over the line to the networked slave machine.*

*They both have their pros and cons; the first method, using a package such as NetWare Connect (from Novell), enables the remote machine to log on to the network. The problem here is that any frequently run program code should reside on the local machine (it can take 40 seconds just to load LOGIN.EXE over a comms link), so you should identify the programs' run and make sure they're available and on the locally defined path, so that they run before DOS searches the Novell-defined path.*

*Files may be transferred by issuing a simple copy command, or dragged from the network drive and dropped on a local drive (if you are running Windows).*

*The other method of remote access is useful if you're accessing a large database or an accounts program (both are essentially the same thing). To access a database, it's usual to copy the whole contents of that database through the network link, to the workstation's memory, a bit at a time. The trouble is that if you're running a remote logon type of program, you may find the time taken to perform simple operations prohibitive. The remote-control type of package scores here, since you are limited only by the local LAN speed and by the time it takes to transfer the contents of the screen to the remote machine. Programs which fit into this category are Laplink for Windows, Carbon Copy and PC Anywhere. The disadvantage here is that you'll need a machine to act as a host; the remote login programs will run either on the file server or on an old 286-type machine which may be lying around unused.*

### Share and share alike

With reference to your July '95 column, I'm very interested in the part dealing with CD-sharing, which could be the answer to a prayer. (I don't fancy the Novell server solution.) Any chance of some clarification on the following four points? And how about a major hand-holding article on this?

- Is "Attach" the Novell command, and if so, why the "Map"? We don't use WfWG so I'm not familiar with peer-to-peer networks.
- What devices/drivers/protocols are needed?
- When playing with Win95, I couldn't understand the bit about named access lists. It didn't seem to give me any security.
- Is speed across an Ethernet 10Mb/sec okay?

I took the beta off, because even loading with VLM in DOS it was not satisfactory with Novell 4.1, in particular because every time I used dialup it lost all my network connections. Do you know if NDS support will be available on release? I'm limited to build 347.

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*Thanks for requesting a hand-holding article on sharing CDs. I'll probably get around to this in the near future, so keep your eyes peeled. The Novell fileserver solution to CD-sharing is problematic, since you do need to take into account the size of the CD — NetWare will cache it just as if it's a hard disk and will need commensurate memory even for a slow-access medium such as the CD. I appreciate that NetWare 4.x poses problems for Windows 95 in its current Final Beta Preview configuration, in that it uses NDS and*

*therefore the shells are different. Novell seems to be committed to supporting Windows 95 with NetWare connectivity, although it has said the same of Windows NT, and Microsoft has had to deal with the provision of NetWare connectivity.*

*Novell, too, still seems to be saying it will support Windows NT, but nothing concrete has arrived except for a couple of NetWare connectivity betas. I suspect the same will occur within Win95: Microsoft will write the connectivity option for NetWare. I can't envisage any Novell connectivity allowing a Windows 95 machine to ape a NetWare server, though. Perhaps that's the delay with Novell's Windows NT offering. They might be trying to prevent a NetWare drive from being shared over the NT network. You rightly say that NDS support is not currently available with this version, but I really shouldn't worry about it. My bet would be on NDS availability by shipping time. Any device drivers and protocols you'll need to run are those which deal with the CD itself (useful when you're going to access it) and those which deal with the network. Both of these should either be picked up automatically by the installation Wizard with plug and play, or you can easily add them later by confirming that you want to use NetWare file and printer sharing protocols, or by adding your CD driver (most likely, as I said, to be picked up automatically).*

*You ask about a couple of NetWare commands, Attach and Map. Attach is a way of logging in to another fileserver without using the Login command; the Attach command will emulate the Login command so far as a connection to the named server is established, but differs from Login in that Login will break any connection currently in use, and will run a login script too. Attach does neither of these.*

*Map is the command you'll find in the login script; it attaches a drive from a server to an unused drive on the local machine. A typical MAP command might be*

```
MAP K:=SERVER\SYS:APPS\WORD
```

*As it is configured (providing you opt for Netware emulation), you need to know nothing about peer-to-peer networking since the Windows 95 machine gets all the logged-in data from the Novell server. The server performs the user validation and then the Windows 95 machine allocates the same attributes as a Novell server, but on a share-by-share basis. This means that you could allow full access by everyone to all your applications (assuming they are in one directory and that directory is shared), but restrict your data to a certain number of people on the network and allow the NetWare server to deal with their logging-in verification, and the Windows 95 machine to determine the access restrictions applied.*

*As far as named access lists are concerned, they don't seem to be visible in the version of Windows 95 I am using for this test, although like yours, it's build 347. Perhaps you haven't got your machine set up as a NetWare-compatible server?*

*With regard to data transmission over an Ethernet network, think about the relative data transfer rates of a hard disk and of a CD. A hard disk is an order of magnitude faster than a CD. If Ethernet is fast enough to make a fast hard disk in a file server a more attractive option than an older, slower hard disk in a workstation, it won't slow a CD's (already slow) access time.*

### PCW Contacts

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