Ghost story

No, not things that go bump in the night, but a utility that automates network installation. Bob Walder investigates.

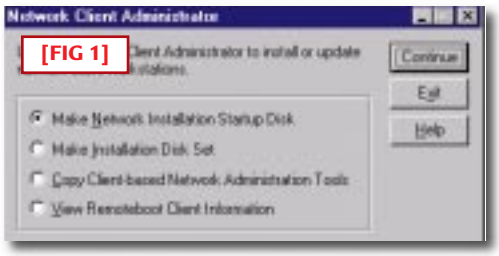
There are still occasions when you may need to have a set of network client disks for your PC in order to attach to the network without booting into Windows 95 first. Leaving aside the possibilities of corrupt Windows installations which might force such drastic moves, I can cite one practical example of my own.

When I create new machines for the test lab, I use a nifty utility called Ghost <www.ghostsoft.com>, which is designed to automate the process of installing Windows 95, NT and OS/2. The idea is that you create a "standard installation" on one PC and then create an image of the hard drive in a special "Ghost file" that can then be written to any number of other PCs at the click of a mouse.

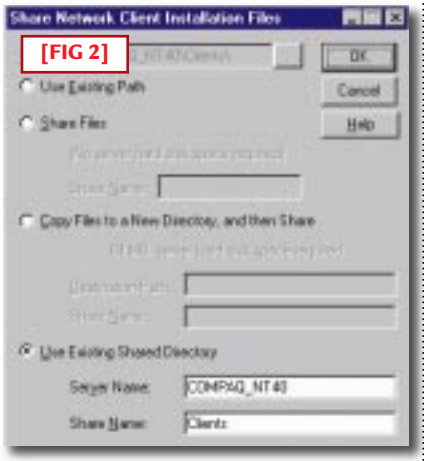
The spirit of DOS

The catch is that you need to Ghost from partition to partition, or from disk to disk, and when creating a client you need to run Ghost from DOS rather than Windows. The easiest place for me to store the standard Ghost files is therefore on my network drives, but this necessitates being able to boot to DOS and attach to the network in order to access those files.

This is done using the Network Client Administrator, a utility which is installed via the standard NT Set-up routine. Once installed, you must log in as Administrator (or equivalent) and run through the following procedure:



1 Click Start, Program, Administrative Tools (Common), Network Client Administrator to fire up the utility. You are presented with the window in [Fig 1].



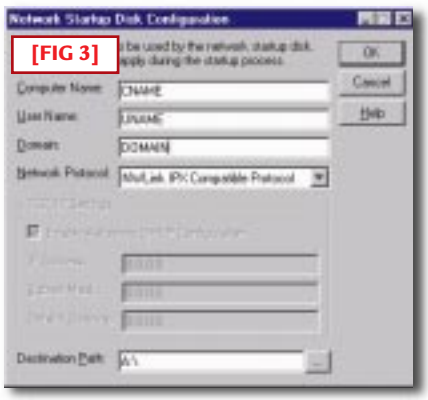
2 Making a full installation disk set is a pain, and the available client options for that are limited, so we will make a Network Installation Start-up Disk. Click on the appropriate option and then Continue. The difference with this option is that the resulting disk merely boots and attaches to the network, following which it automatically runs a full client installation from the server to the local hard drive.

3 The next window looks like [Fig 2]. If this is the first server to host the utility, you can allow it to copy the client installation files to the local server hard drive and create a share called "Clients", simply by entering the source path (the installation CD) and selecting "Copy files to new directory, and then share". Alternatively you can leave them where they are on the CD-ROM by selecting the "Share Files" option, although the CD must then be available each time you perform a client installation.

4 After the files have been copied to a server, you will simply enter the server name and the share name (usually "Clients") where the files were copied to, and select the "Use existing shared directory" [Fig 2].

5 Select the floppy drive type, client and network card from the next window. We are creating disks containing the Network Client for MS-DOS and Windows but you might find you have a problem with the network card. There are not many to choose from in this menu, which is strange given the range of devices supported within NT.

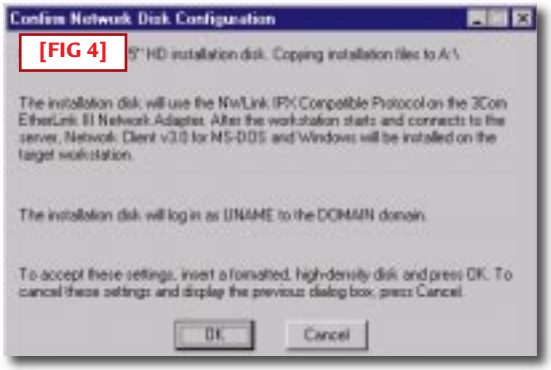
If your network card does happen to be among those listed, congratulations, because you've got an easy life and the rest of the process is plain sailing. For most of us, however, we will have something else installed in our client machine and so we have a bit of jiggery-pokery to perform. To begin with, just select any old card — I chose the 3Com Etherlink III — and we will fix the configuration files later.



6 The next window [Fig 3] is where we specify the unique computer name we want to assign the client machine, any user name which has access to the NT Server where the client files are located (best to make this one Administrator equivalent), the name of the domain to authenticate to, and the network protocol to use. You may only have one available, so the TCP/IP settings may or may not be applicable. If you select TCP/IP you can then specify whether or not to get IP info from a DHCP server. If not, you can enter the IP address, subnet mask and default gateway yourself. Either take a look at my previous column on IP addressing, or stick to IPX/SPX to keep things simple.

The final bit to enter here is the destination path, which is usually your floppy drive.

[FIG 4]



7 The confirmation screen is at [Fig 4]. Insert a floppy disk which has been formatted as a system disk (i.e. format a: /s) but is otherwise blank. Clicking OK will start the file-copying procedure

Once all the files have been copied, you have a disk that contains the files COMMAND.COM, CONFIG.SYS, AUTOEXEC.BAT and a directory called NET. The important stuff is all in the NET subdirectory, which contains the basic client software, configuration files and network card driver.

If you selected the correct card in step 5, then you are home free at this point: just stick the floppy disk in your client PC, reboot and away you go. For the rest of us, it's time for that jiggery-pokery I mentioned earlier.

The first step is to put the correct driver on the floppy disk. This is difficult to specify exactly, since every vendor constructs its driver floppies differently. In essence, however, you are looking for a subdirectory called NDIS, or perhaps DOS, which will be somewhere on the driver disk that came with your network card. In that directory will be a file with the .DOS suffix. In my case, the driver for the 3Com Fast Ethernet XL 10/100 PCI network card is called EL90X.DOS, so this file should be copied to the NET subdirectory. Just to be on the safe side, why not delete the driver that is there currently, which is called ELNK3.DOS.

OK, we now have the correct driver on the disk, so the next job is to amend the configuration files to point to it. Look in PROTOCOL.INI [Fig 5] for the line which says DRIVERNAME=ELNK3$ and change it to reflect the name of your new driver. Leave out the .DOS suffix, but make sure you leave the $ on the end. In my case the line will now read DRIVERNAME=EL90X$.

A similar operation must also be performed with the SYSTEM.INI file [Fig 6]. Here you are looking for the [network drivers] section, for a line which reads

```
NETCARD=ELNK3.DOS.
```

This time, you are going to replace the entire filename, so in my case the new line reads

```
NETCARD=EL90X.DOS.
```

It's not difficult to do, but it's just not that obvious if you're not used to it. All you need to do now is insert the floppy disk into the client workstation and reboot. OK, I lied. Because what actually happens, if you take a look at the AUTOEXEC.BAT file [Fig 7], is that the client software is loaded, the PC attaches to the network and then installs the full client from scratch on your local hard drive (that's what the z:\msclient\netsetup\setup.exe /$ does).

[FIG 5] PROTOCOL.INI

```
[network.setup]
version=0x3110
netcard=ms$elnk3,1,MS$ELNK3,1
transport=ms$ndishlp,MS$NDISHLP
transport=ms$nwlink,MS$NWLINK
lana0=ms$elnk3,1,ms$nwlink
lana1=ms$elnk3,1,ms$ndishlp

[ms$elnk3]
DRIVERNAME=ELNK3$
; IOADDRESS=0x300
; SLOT=1
; MAXTRANSMITS=6

[protman]
drivername=PROTMAN$
PRIORITY=MS$NDISHLP

[MS$NDISHLP]
drivername=ndishlp$
BINDINGS=ms$elnk3

[ms$nwlink]
drivername=nwlink$
FRAME=Ethernet_802.2
BINDINGS=ms$elnk3
LANABASE=0
```

[FIG 6] SYSTEM.INI

```
[network]
filesharing=no
printsharing=no
autologon=yes
computername=COMPAQ_NT40
lanroot=A:\NET
username=newuser
workgroup=domain
reconnect=no
dospophotkey=N
lmlogon=0
logondomain=domain
preferredredir=full
autostart=full
maxconnections=8

[network drivers]
netcard=elnk3.dos
transport=ndishlp.sys
devdir=A:\NET
LoadRMDrivers=yes

[Password Lists]
```

[FIG 7] AUTOEXEC.BAT

```
path=a:\net
a:\net\net initialize
a:\net\nwlink
a:\net\net start
net use z:
\\COMPAQ_NT40\Clients
echo Running Set-up...
z:\msclient\netsetup\
setup.exe /$
```

Of course, that means you have to go back and redo the changes you have just performed on the new installation on the hard drive. To be honest, I usually remove that last line of the AUTOEXEC.BAT and use the floppy disk itself to boot and attach to the network, replacing the NET USE Z: mapping to point to the shares I actually want to use. For instance, if you share the C: drive of your server as DRIVEC, you can replace the above command with:

```
net use z:
\\COMPAQ_NT40\DRIVEC
```

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