



Let's samba!

Join Stephen Rodda as he hoofs it through the Samba suite to Linux.

As promised last month I've been playing with Samba, which I finally managed to make work with my version of Linux. I've been looking at SuperPrint for Windows 95 and Windows NT, too, but more of that later.

To explain, for those who may not have read last month's column: Samba isn't a dance (well, not in this case). Samba is a suite of programs which allows connectivity between Unix and Windows for Workgroups machines. The easier part is to attach a Windows for Workgroups share to the Linux machine. The harder task is attaching a Windows for Workgroups machine (or Windows 95 machine, to be precise). The reason this is harder is that we have to "advertise" as a Windows for Workgroups file server and do the sharing over the wire, too.

How does he do that?

How did I do it? With a great deal of sweat and tears. I first upgraded my version of GNU C++ to version 2.7.2 as 2.7.0 was quite buggy. Then I upgraded from Linux 1.3.20 through all the patches available to 1.3.63. The latter version is quite impressive compared with the former and even the installation routine has been changed.

The new "make config" operation is much smarter, allowing IPX, Samba and AppleTalk support to be built-in (these

come with the kernel). It includes the VFAT file system, which is useful since it supports Windows 95 and NT's long file names — the original Samba package was an add-on.

Once the computer had finished compiling and linking the kernel, I modified the loader batch file (I use LOADLIN rather than LILO, the boot manager) and rebooted. All went well; the machine booted into Linux and soon asked me for my login and password. I ran the "smbmount" program, which came with the Samba package, and mounted the file system on the Windows 95 machine onto the Linux one. The smbmount program (as long as the machine is visible on the network to "ping", say) requires just the name of the share and the mount point (rather like the MS NET program) so I mounted the share called "C" from the machine named "Sanders" onto a directory located in "/sanders/c", following the

command with "-n", which told smbmount not to send the server machine a password as it was configured to allow attachment without passwords.

The reverse, however, was less easy. I had already configured the machine called "sanders" (my business partner Jeff's machine with the login name of "Jeff"), to allow it to access the Novell network and our NT server. Now, since his machine was already logged in to the network with his user name, I had to create that name on the Linux system too, because all attachments to the system use the user name and password.

How did I create a new user under Linux? I'd forgotten. But then I remembered that I had to edit the /etc/passwd file. I added a new line to this, cribbing most of the information from the "operator" account and then, as root, ran the passwd utility to allocate Jeff a password on the Linux system. Once this had been done, I only had to run the daemons, which allow access to the Linux machine as a Windows for Workgroups share; see the extract from the rc.inet2 file (Fig 1).

Then I added the two lines which would auto-mount any drives available on Jeff's machine to the Linux file system at boot time. But before this would work through the MS browser on the '95 machine, I had to change the Samba configuration file so that it would work with my system (Fig 2). Happy Unixing!

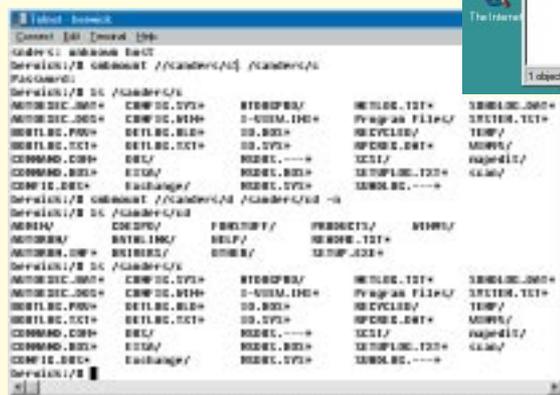
Durable budget network needed

Stuart Davies writes: "I am the IT co-ordinator of a 500-pupil secondary school and have been given the go-ahead to lease a network for the IT room. At present we have 24 stand-alones of assorted parentage and varying ages, so the prospect of a roomful of Pentiums is an exciting one.

We have limited experience with a small Novell network in our offices but essentially it's a clean sheet of paper.

A visit to the recent BETT exhibition gained some information from suppliers such as Research Machines (RM) and ICL. Both were emphasising the benefits of

Windows NT as a network platform, running a Windows 95 front-end on the workstations. RM has even developed an education-orientated management utility



Above The Windows 95 machine browsing the Linux shares before setting a password for the 95 machine's user

Left The Linux machine, showing the Windows 95 machine's drives mounted

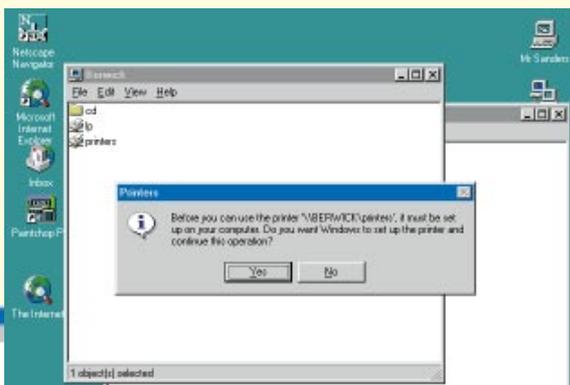


Fig 1 Share and share alike

```

echo "sharing drives through Samba"
/usr/lib/samba/bin/nmbd
echo "MS NETBEUI service started"
/usr/lib/samba/bin/smbd
echo "Samba shares started"
echo
echo "Mounting remote file systems..."
/sbin/smbmount //sanders/c /sanders/c -n

echo "//sanders/c "
/sbin/smbmount //sanders/d /sanders/cd -n
echo -n "//sanders/d "

```

1. Whatever we get will have to last for five years.

2. Our budget is finite, and tying it up on a five-year lease will not allow for any serious upgrades in that period.

3. Numbers are important; if it's a case of twenty-four 486s or 12 P120s, I'll take the 486s and live with it.

NT and 95 may be a nice option, but perhaps we should be considering a Novell-based system as well?"

which would make my job a lot easier.

My problem concerns the hardware requirements. Both suppliers were recommending P75s with 8Mb as workstations and a faster Pentium, with 16Mb, for the server. Quotes from two other sources came up with basically the same set-up.

My knowledge of NT is sketchy and I wonder whether the RAM is enough to do the job? In deciding what to get, I have to bear in mind that:

How to go about it

Firstly, five years is a long time in computing. Secondly, unless you pay income tax and other taxes which are levied on a limited company, leasing becomes a far less attractive prospect, financially speaking.

In this situation it's worth remembering that the "legacy" machines you already have may be capable of being "souped-up". No matter what operating system you install, it is likely that the file server will bear the brunt of the file and program storage.

Since you already have 24 machines, it may be possible to replace the motherboards in half of them (assuming they are not of a proprietary design) — remember, I am making a generalised guess. Assuming their RAM is unusable, a motherboard with an AMD or Cyrix 486DX100 and 8Mb of RAM should not set you back more than about £350. Add to this price around £20 for a network card and you've got a workstation for somewhere in the region of £370.

Remember, too, that not all Pentiums are better than all 486s. A 486DX100 will perform better on today's software than a Pentium 75. The other thing to look at is to make sure that these motherboards are capable of accepting a true Pentium as an upgrade (as are most motherboards on the market nowadays), so if in the future you found the machines to be sluggish you could always upgrade the processors to Pentium chips, on-site — and for a lot less money than you would now pay.

Be aware, too, that the 686 is only around the corner and it won't be long before clone

Fig 2 All change for the Samba

```

[global]
printing = bsd
printcap name = /etc/printcap
load printers = yes
guest account = guest
; This next option sets a separate
; log file for each client. Remove
; it if you want a combined log file.
; log file = /usr/local/samba/log.%m
; You will need a world readable lock
; directory and "share modes=yes" if
; you want to support the file sharing
; modes for multiple users of the same
; files
lock directory = /usr/local/samba/var/locks
share modes = yes
[root]
comment = the whole Linux filesystem
browseable = yes
read only = no
create mode = 0750
path = /
[CD]
comment = CD ROM
browseable = yes
read only = no
create mode = 0750
path = /cdrom
[printers]
comment = All Printers
browseable = yes
printable = yes
public = no
writable = no
create mode = 0700
postscript = yes

```



SuperPrint, I'm blue for you...

Zenographics' SuperPrint 4.0 for Windows 95 and Windows NT came in a pretty blue box with clouds all over the outside, proclaiming "Advanced Printing Tools for Windows" and decorated with the Microsoft Windows, Windows NT and Windows 95 compatibility logos. Inside, the box was just so much empty space: I pulled out a piece of cardboard, folded to take up the space of the box... and there was nothing more. But then I turned the cardboard over — neatly shrink-wrapped onto it were three pieces of card and a CD. I installed it under Windows 95, removing the PostScript SIMM from the HP LaserJet 4 on my desk, since on the pretty box was printed: "Not for use with PostScript-only printers". I also attempted to install an HP DeskJet 500C because one of those is on the network, too, in the guise of a DeskWriter C. The installation seemed not to be too

happy with accessing the network printers — it didn't even seem to give me the chance to access a printer through a network port. Nevertheless I thought, "I'll unplug the LaserJet 4 from the server and pop it into LPT1. It must work..."

One reboot later... in order to initialise the software (I was running Windows 95) but this time without the old printing services on the LaserJet and the DeskJet — and unfortunately, I had *no printing services at all*. Windows 95 has been on my machine, beta and release version, for about a year. In that time I've had to reinstall the beta version, but never the release version.

SuperPrint 4, despite its uninstall routine, has made me reinstall Windows 95; a feat of which no other program has been capable. You can imagine why I haven't tried SuperPrint under Windows NT.

another SCSI controller card for the tape drive, or replace the aforementioned Adaptec AHA 2940 with the AHA 3940 (a dual-channel version of the former). Now, if I don't qualify this, people are going to be howling for my blood, saying that you can have up to seven devices on a SCSI card. Yes, that's true, although in the greater number of cases you find that errors inexplicably creep in when running a tape drive from the same physical PC SCSI interface, whether under NT, NetWare, or whatever.

The backup medium should be DAT; prices are pretty low now and about £500 should get you a good DAT drive.

NT provides its own backup program which, for a simple backup such as you would require, should prove to be more than adequate.

I've left your choice of operating system until last. I've already come down heavily on the side of NT Server since I believe this is the way that operating systems are going. However, have you considered the possibility of using Windows NT Workstation on the client machines? It'll run respectably in 8Mb and version 3.52 will provide you with the '95 Explorer user interface as well.

The reason I suggest this is that Windows NT Workstation gives you a hitherto undreamed-of level of security against people breaking security on the file server and, indeed, workstations. '95's security measures are easily circumvented but NT's are pretty solid.

You could look at running NT on the workstations as a goal, because it is hungrier for resources than '95, but I foresee '95 being superseded by NT during the life of your project. It is for this and other reasons that I am against the idea of your leasing machines, which within five years could turn out to be as useful in teaching computing as, say, a Sinclair ZX Spectrum would now be.

At your Service

Microsoft has released Service Pack 1 for Windows 95 and I have put it on this month's free, cover-mounted CD for you.

PCW Contacts

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makers are selling 686 clones. It would be advantageous if the motherboards could also accept this chip as an upgrade.

So far I have spent around £4,500 of your budget. Assuming that the other non-upgradable machines work, you should be able to sell these off for a sum in the region of £200 each. This will net you £2,400 — we have now spent £2,100.

As for the other machines, any reputable clone supplier will be able to assemble a reasonable 486DX/100 with 8Mb of RAM, 420Mb hard disk, 14in monitor and VGA card, mouse, keyboard and a case for about £650 — perhaps less if you assemble the machines yourself.

This comes to a sum of about £7,800: a running total of approximately £10,000. I assume that this is the rough figure you would be looking at for leasing the setup you had in mind. Of course it would take only a few minutes' work with a spreadsheet to come to the point where you could perhaps use more legacy machines, phasing them out over a year or two and upgrading with the surplus budget, which ordinarily would have been swallowed up in the leasing charges.

Nowadays, reasonable-quality clone machines are every bit as reliable as their blue-chip cousins. The advantage lies in

their generic quality of being easily upgradable.

As far as a server is concerned, Windows NT would be far easier to administer than NetWare: NT's own server administration tools would be quite enough for you to administer the LAN without buying a server from a particular supplier, just because of a freebie administration package.

The safe way

I'd say that although it's a reasonable compromise, 16Mb in an NT server is pushing it a bit; I'd be inclined to use 32Mb. Remember that you can only put in 36-bit SIMMs in pairs with a Pentium, since it has a 64-bit data path and many motherboards don't have any more than four SIMM sockets, so you can either fit 16Mb or 32Mb of RAM. Anyway, for £300-odd, and since RAM prices are falling quite drastically at the moment, it's better to err on the safe side.

Do check out the availability of 686 clones if you decide to use clone machines — I should really recommend these in an NT server.

Another thing I should point out is, don't settle for anything less than an Adaptec 2940 SCSI controller in your server with, of course, SCSI hard disk(s). NT is a multi-tasking operating system and will make the best use of a proper bus-mastering setup, which IDE and its variants are not. I'd also suggest a 2Gb hard disk drive at the very least. With prices of disk capacity on the same downward slope as RAM prices it's a false economy not to take advantage of this.

Back DAT up

Don't forget that backup is a necessity, not an option. For your setup I'd either get

Incorrectly addressed

I must apologise for giving out some un-routable IP addresses in *Hands On Networks* last month. The 192.0.2.X address which I used on our local LAN was wrong. For some reason, my brain kept telling me "192" whereas my memory, once it had reasserted itself, said "10". For the sake of completeness, the correct ones are: 10.X.X.X; 172.16.X.X and 192.168.X.X.