



DOS gags on an Apricot

All Chris Bidmead wanted to do was install DOS on his "universally compatible" Apricot. Just about anything else would have been easier. He isn't going to suffer in silence, though.

Last month I was boasting about the universal compatibility of the Mitsubishi Apricot LS550 that is currently running SCO OpenServer on this network. But I thought I might have to eat my words when I tried installing DOS on a partition I'd reserved for that purpose. This was an overture to installing, of all things, Windows 95. I've had a lot of mail asking how you make Windows 95 co-exist with Unix and I was beginning to feel a bit cheap shrugging you off by saying "Windows 95 isn't my thing". So I thought I'd learn to suffer with the rest of you.

NeXTStep remains a lively environment, despite stories of the mother company losing interest in operating systems now that it is concentrating on web applications. The other day I downloaded a new update to my NeXTStep mail system: EnhanceMail version 2.0b5. Among other extensions of the official NeXTStep Mail.app, this package can translate ASCII smileys into little yellow faces with the appropriate expression. To give you a better look, I've dropped in a close-up window using Magnify.app from Eric Tremblay's magnificent Walnut Creek Nebula CD-ROM shareware and freeware toolkit (eric.cdrom.com). You'll notice, too, the X-Face enhancement to Mail.app: that's the black and white mugshot of me in the top right-hand corner. The picture's contained in the X-Face header string which can travel as ASCII via any mail system and be resurrected, cross-platform, by any mail reader with an X-Face handler

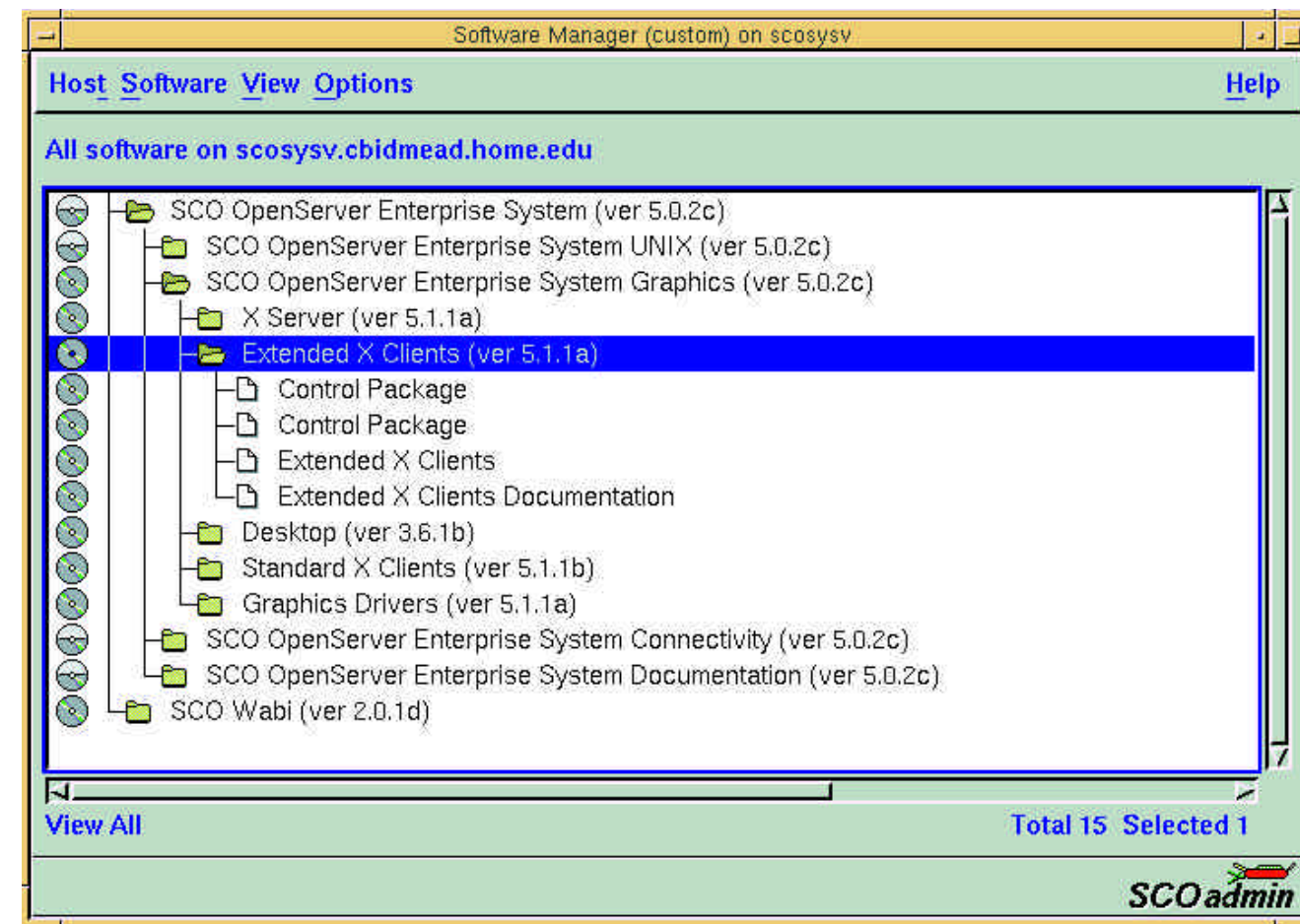
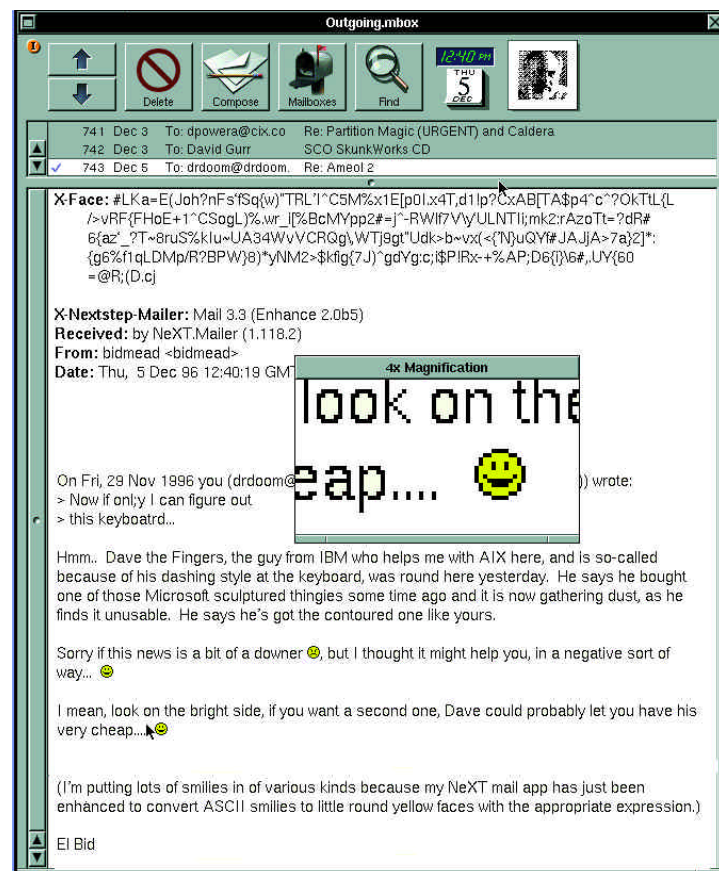
Well, I'm still suffering. But more of that in a moment. I was using a copy of MSDOS 6.2 that happened to be lying around, and the catch was that it was the Upgrade version. This looks for an existing version of DOS on the hard disk and offers to replace it. But if there's no DOS it bows out politely, inviting you to contact your vendor for the full package.

This nonsense is all to do with the way IBM and Microsoft had agreed to carve up the DOS market, back in the eighties. I certainly wouldn't encourage my readers to breach the fine print, but my personal

approach to this is to exit from the DOS installation at the first chance by hitting F3, and then run FORMAT C: followed by SYS C: from the command line. This puts the DOS 6.2 command.com and hidden boot files onto the hard disk. Then I run SETUP, which goes and looks at the hard disk and says to itself, uh-huh, seems there's a copy of DOS on there already, so it's OK to proceed. Well, that's the theory. But in the case of the Mitsubishi Apricot, SETUP came back this time with "Incompatible Hard Drive", and then a bunch of stuff about having to read things in manuals.

I started to worry about the 1.2Gb hard disk and went to look at the Apricot's comprehensive BIOS setup. The BIOS is written by IBM, which reinforces my feeling about general compatibility, but I knew that DOS is easily upset by any departure from the straight and narrow, which at one time in its history included any disk greater than 32Mb capacity.

The BIOS offers a couple of disk-drive parameters that seemed relevant — "enhanced", or "compatible", which I guessed must be to do with whether the addressing is in logical blocks or old-style sectors. But changing these would wipe out the



SCO offers a comprehensive software manager for installing packages. But it needs to install a huge number of config files every time it looks at the CD, to see what's there — a process that takes over five minutes. Having transferred them, you can install a single package, after which the software manager throws away the config files. If you want to go back for another package — yes, you've guessed it — the software manager has to spend another five minutes reinstalling the config files. Not a feature, admits SCO's David Gurr; a bug to be fixed in the next version...

three hours or so it had taken me to install SCO, so I wasn't inclined to mess with these as a first resort.

The next thing I did was to run DOS's FDISK to assure myself that SCO hadn't been so silly as to put the DOS partition high up on the drive where DOS couldn't find it. DOS uses the BIOS to read and write from disk drives and traditionally the BIOS routines aren't able to get to those parts of the disk above the 512Mb limit. But no, FDISK revealed the DOS partition to be the first one on the drive.

Nothing for it then but to read those manual entries to which SETUP was pointing me. With a sinking heart I turned to the DOS manual chapter called "Diagnosing and Solving Problems". This is the wasteland where I seem to have spent much of the eighties — and Unix was supposed to be my escape from this. The section headed "Setup displays the 'Incompatible hard disk or device driver'" screen told the whole story. Without apology, the DOS manual declares that

SETUP regards any drive on which it finds a Unix partition as "incompatible", even if there's a perfectly good, usable DOS partition waiting for the install. So much of this myopic megalomania surrounds Microsoft's approach to alien products that I no longer regard it as an accident. I think Microsoft goes out of its way as a matter of policy to encourage the view that non-Microsoft operating systems are somehow weird and dangerous. Actually, the opposite is closer to the truth.

Got the T-shirt

If I may put the SCO/Windows 95 story on the stack for a moment... I got a T-shirt sent to me the other day with a button on it that looks like the famous Windows 95 Start Button, except that it says "Stop" with the words "Bill Gates" underneath. The legend on the back reads "Before he stops you...". This came from Martin Houston (Martin.Houston@ukuug.org), a Unix consultant and organiser of the UK Unix Users' Group which distributes the excellent

"news@UK" newsletter. Martin is an outspoken Linux enthusiast and although I share many of his views I'm not sure I'd go so far as wearing a T-shirt that states "Stop Bill Gates".

I would like Microsoft to put a stop to these anti-social software practices, though. It's time it learnt to live with the rest of the industry, rather than building software on the assumption that everything non-Microsoft is all going to go away quite soon. And I really hate the attempt by Microsoft to label its highly proprietary, uncooperative software "Open". Around this time last year Michael Tilson, CIO of SCO, was reported in UniForum's newsletter (www.uniforum.org/spool1/html/publications/uninews) as complaining about just this. "The term 'open' has been hijacked," said Tilson. "Because 'open' is good, everyone labels whatever they sell as 'open'."

Incompatible hard disk — phooey!

Meanwhile, back at the Apricot, Microsoft is the company behind this version of DOS

that is declaring my hard disk "incompatible" simply because it has an SCO Unix partition on it. The straightforward solution turns out to be abandoning the automated SETUP routine and doing a manual install of the various files. Alternatively, there's an arcane command line switch, `SETUP /u`, that tells the installation not to make damn fool guesses about the drive and to just get on with the job.

The daft thing about all this is that most OS partition schemes have well-defined "partition signatures" (values buried at the beginning of the boot record) which identify them. So any operating installation procedure written by someone with half a brain ought to be able to come back and say "You have SCO partition on this drive, but there's plenty of room for DOS in another empty partition. Shall I go ahead and install?"

SCO OpenDesktop

I told you last month about how confused I became at Open Desktop's skulduggery in pretending that the Apricot's ATAPI host connector is SCSI. I was talking about this to Steve Perkins, the technical products manager for Western Digital in the UK, and he tells me that IDE's evolution has brought the interface very close to SCSI and the command sets are now similar. So what SCO is doing isn't as convoluted as it looks.

Having got over the SCSI/ATAPI hurdle, installation went smoothly. Admittedly it failed to automatically sniff out my network card, but it returned the right interrupts once I'd defined the type of card (a 3Com EtherLink II). I ran into a small problem defining the mouse: the one on the Apricot is what's normally called "PS/2 Type", except that this wasn't on the list of options. Foolishly I settled on "Bus Mouse", which completely immobilised my mouse cursor when X brought up the graphical desktop. This is a trivial problem, but one that can stop the show. After five years of messing about with Unix I am still a raw beginner in situations like these. I didn't know how to fix it, but what I have learnt in those five years is how to go about *learning* how to fix it. And Unix is a great teacher.

The first lesson of Unix is "DON'T PANIC". In real life this is just an empty slogan but inside Unix it's an eternal verity. With Unix you never *have* to panic, because it is an operating system that panics for you — panic being the term for what happens

The ISDN connection

There are at least three ways to use an ISDN connection from a personal computer. You can put a terminal adaptor (TA) where the modem was and connect to the PC with a serial cable. You can fit a TA into your PC like an internal modem. Or you can set up a kind of ISDN router on your network, so that all your workstations have access to the ISDN line. Paul Lynch, of P & L Systems, whose ZyXEL Elite 2864i TA I'm currently using, has offered to help me set up a router configuration based on the ZyXEL Prestige 2864i Remote Access Router which his company also sells. This sounds like a lot of fun and very much in keeping with the multiplatform tone of this column. But for now I'm getting to know ISDN the easy way — and it really is incredibly easy. First, you need an internet provider which offers ISDN (this seems to be most of them, these days). The ISDN line may be on a different number, in which case you need to change your dial string. While I was doing this I also changed the dial command from ATDT (tone dial) to ATDI, which is the Elite's string for initialising an ISDN connection. Most of the ISDN internet connections I've been trying, like the very friendly and fast Astra Internet service run by Chris Comley (ccomley@cix.co.uk), use the PAP authentication scheme I discussed in my January '97 column, so I had that already in place. And that's really all there is to it. It works!

when the operating system decides it's come across a fatal error and can't run any more. Typically it will put up a screen message that states something like "System panic — dumping core" and close itself down as gracefully as it can, creating a diagnostic log as it does so. You don't get this very often, and I wasn't getting it now. I just had a stuck mouse on the graphics screen, with the real Unix still chugging merrily away underneath. Happily, as with Linux, SCO allows you to switch out of the graphics screen into one of several virtual terminals by hitting Ctl-Alt and a function key. I logged into the virtual terminal as root and began sniffing around.

By long Unix tradition, the different peripheral devices like the mouse are stored in the `/dev` directory. They look like files and to some extent can be treated as such, but it's better to think of them as datachutes through to the actual devices they represent. If you know how, you can create your own `/dev` devices using a tool called `mknod`. SCO provides a friendly front-end to `mknod` in the form of a shell script named `mkdev`. I found this out by running `apropos` devices at the command line (`apropos` is an alias for `man` with the `-k` parameter, which states, "give me a reference to all the man pages that contain the following key word").

Then I consulted the manual (by running `man mkdev`) to find out how SCO does this. The manual told me to run `mkdev` with "mouse" as a parameter. When I did this, the script trotted me through the options for building the appropriate mouse device (or more probably, installing the correct link from a ready-made device; happily, `mkdev` shielded me from these grizzly details). It turned out that my PS/2 mouse is something SCO prefers to describe as "Low Resolution Keyboard Mouse"; a rather

weird description, so it's hardly surprising I missed it first time around. But call it what you will, my mouse was now working.

What still isn't working is Windows 95. You can install Win95 in the DOS partitions that SCO creates but then it goes and trashes the SCO boot. I reached for the proprietary boot manager, System Commander, to try to repair the damage Win95 had made to my master boot record, but it couldn't. The manual, however, goes into a description of the damage at some length and gives a very elaborate five-step procedure which it describes as "Risk Free Windows 95 Installation".

The manual also warns that once you have Windows 95 safely ensconced, you can still wreck your access to other operating systems when you install the bonus package of utilities and screen furniture that Microsoft calls Windows Plus. System Commander (from POW! Distribution at dpower@pow-dist.co.uk) offers ways around this, too, but having reinstalled SCO (which, in turn, seems to have trashed Win95) I decided it had all been too much excitement for one month.

As an added complication, Daniel Power at POW! has just sent me the latest cut of Partition Magic, originally an OS/2 partition mover and now a fully-fledged multiple operating system partition manager. This version comes complete with a licensed copy of OS/2's own Boot Manager so it's now an alternative to System Commander. If I'm feeling strong enough next month I'll give one or both of these a proper go and let you know how I get on.

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