



The X files

X Window (minus the s and the hyphen, note) has a friend in Chris Bidmead. Author Don Hopkins, however, can barely find a good word for it.

I'm always careful to call it "The X Window System" or just "X", because in the early days I used to get howled down by X buffs for daring to pluralise it and so invite confusion with products from a certain large PC software company.

A couple of months ago, I was investigating how to organise my NeXTStep installation on a 2Gb hard disk. At one point I thought that logical partitions might be the answer, but the BSD folks who live at the bottom of NeXTStep were ahead of me on this. The manual page for this particular version of fdisk concludes with the observation: "fdisk knows nothing about logical partitions, which are sub-partitions of an extended partition. Nor perhaps should it, as these are gross kludges from the Evil OS Company of the North."

Even X fans are beginning to slip into using "X Windows", and these days you see it all over the place. (By the way, hyphenating "X Windows" remains a definite no-no.) Not that Don Hopkins, author of a piece entitled *The X-Windows Disaster*, could ever be described as a fan.

Don Hopkins is a user-interface designer and graphics programmer who ported SimCity to X11, and describes himself as "working for Kaleida" at the bottom of the Web page I have here (http://www.digital.de/people/jmh/Unix_Haters/x-windows.html); what that means precisely, with Kaleida gone and Apple in disarray, is hard to say. I tried to get onto the home page indicated for Don at <http://web.kaleida.com>, but my browser tells me there's no such host.

Wherever Don is, his opus, actually a chapter from a book called *The UNIX Hater's Handbook*, lives on. As readers of this column will know, I'm a keen user of X because of the way it helps me unify these different operating environments about which I write, but I haven't had to program to it. Here's a flavour of Don's views:

"X-Windows is the Iran-Contra of graphical user interfaces: a tragedy of political compromises, entangled alliances, marketing hype, and just plain greed... If you sit down at a friend's Macintosh, with its single mouse button, you can use it with no problems... but just try making sense of a friend's X terminal: three buttons, each one programmed a different way to perform a different function on each different day of the week — and that's before you consider combinations like control-left-button, shift-right-button, control-shift-meta-middle-button, and so on."

But Don's chief complaint about X is the way different X applications work together. Or rather, don't. Interoperability

depends on programmers following the arcane rules set by the X Consortium in a tome called the *Inter Client Communication Conventions Manual*.

"The ICCCM," says Don "is unbelievably dense. It must be followed to the last letter and it still doesn't work. ICCCM compliance is... so difficult, that many of the benefits just aren't worth the hassle... And when one program doesn't comply, it screws up other programs. This is why cut-and-paste never works properly... drag-and-drop locks up the system, colourmaps flash wildly and are never installed at the right time... and deleting a popup window can quit the whole application."

Don lays it on with a trowel, but I have to confess it's all true. A camel is a horse designed by a committee, runs the old joke, and X certainly is that horse. But, but... it mostly works and I certainly wouldn't be without it. At least not until something better comes along.

Don Hopkins' biographical footnote at the bottom of the Web page adds a little twist of the knife: "To annoy X fanatics, Don specifically asked that we include the hyphen after the letter X as well as the plural of the word 'Windows'...".

Caldera and Linux

Some months ago I mentioned that Ian Nandhra, of Lasermoon, was running the gauntlet of the X Open Consortium. His plan was to take Linux-FT (his own version of Linux) through the compliance tests, and pay the huge sums of money required to certify Linux as UNIX and get it branded as such.

This is important stuff, with huge implications for the Linux community and, perhaps, for the world at large. But frankly, I never understood how a modest UK Linux vendor like Lasermoon was going to stand up to the ordeal of having the X Open Consortium's hand deep in its pocket. Well, it isn't. The financial responsibility for this extraordinarily brave venture has passed to broader shoulders and now Caldera Inc is carrying the baton.

Caldera, as regular readers will know, is the company

Linus Torvalds, author of the Linux kernel, is reported to be very fond of penguins, and wants this one adopted as the official Linux mascot. Amit Margalit <amitm@ggfi.netvision.net.il> is making this picture available from ftp://chaos.fullerton.edu/pub/Linux/XBanner/linux_logo_peng.gif



Cut-and-paste assisted by the xcutsel widget. NetScape is framed in the NTrigue X windows, at the bottom of which can you see the NTrigue copy utility. The red arrow indicates that test is sitting in the buffer, ready to be copied out

founded on the considerable wealth of Ray Noorda, ex-CEO of Novell. This is more than just another Linux distribution company. The central idea is to create a "Network Desktop" that will offer an alternative to the One Microsoft Way.

This ambition has a number of implications, most of which seem to be dealt with responsibly by Caldera. Providing an excellent, low-cost product is only the first hurdle, and that's where Linux comes in. The Red Hat Linux distribution provides the underpinnings, so the majority of what you pay for with your \$99 is all the commercial trimmings: the Looking Glass Desktop, the font server, the Accelerated X Window system, the Netware connectivity, the Crisp text editor, and so on. The second hurdle is to make applications available for this environment, and Caldera is working hard to encourage Unix vendors to port their software across.

Caldera seems to be very serious about getting all this working, building the market for third-party software and helping developers sell in to that market. To help this "emerging technology to obtain widespread implementation in the business environment", as Caldera's portentous promotional prose puts it, requires the creation of "technical support programs and corporate accountability".

Corporate accountability is the big issue. Linux is, technically, already good enough to have earned a place in serious corporate computing, but it meets a lot of resistance (even among those who have heard of it) because it gets inaccurately categorised as shareware. X/Open certification, as Ian Nandhra understood, would make a crucial difference.

Caldera has taken the Linux-FT development team aboard and is working towards what is now called Open Linux. This isn't, as some Linux newsgroups have been speculating, an attempt to hi-jack GNU software on

behalf of a commercial venture. Well, Caldera is commercial all right, but Open Linux, the base on which it will be built, is (according to Caldera's own press release) going to be "published freely with full source code via the Internet to individuals and organisations seeking stable, UNIX-systems solutions."

The Caldera toppings, of course, will remain proprietary. But the important thing, it seems to me, is that the core Linux distribution, certified as fully compliant with the new Single UNIX specification, will be returned into the Linux community. When? Round about the time you're reading this. Check for further details on <http://www.caldera.com>.

Cut and paste

I left you last month with that puzzle about getting data in and out of NTrigue. Or more generally, cutting and pasting between any two X windows that don't agree about how to use the cut buffers.

Even the keenest fans of X tend to agree that it has its unwieldy aspects. The multiplicity of cut buffers, combined with the way a selected block of text is also able to act as its own cut buffer, does nothing to detract from this reputation. And some people flatly hate X (*see later*).

The gurus at MIT (the Massachusetts Institute of Technology) had obviously had a similar problem with copy and paste between pre-release 3X clients that know nothing about PRIMARY and later clients that use it. So (as I learn from the pages of the manual), one Ralph R Swick of the DEC/MIT project Athena, came up with a little utility called "xcutsel". The page states: "The xcutsel program is used to copy the current selection into a cut buffer and to make a selection that contains the current contents of the cut buffer."

Xcutsel pops up a small widget with three buttons on it labelled quit, copy PRIMARY to 0, and copy 0 to PRIMARY.



This is the PPP dialler I use on my NeXT machine. The white window is for GateKeeper's own diagnostics, and in the yellow window behind I'm running netstat, a generic network diagnostic tool that shows the internet connections

As NTrigue's copy utility NTRUtil.exe puts the output of a Windows NT copy or cut operation into the Primary buffer, and the CubX X Window server uses Cut Buffer 0, xcutsel provides a convenient bridge. It's a standard part of most X distributions, so it might be worth looking at if you have problems with cut-and-paste operations on any of the X platforms.

PPP plays up

I'm currently going through some problems with one of my Internet Service Providers (ISPs), and the tribulations are teaching me a lot about PPP (Point To Point Protocol); some of it even useful!

Unless you are lucky enough to have one of these flash high-bandwidth direct internet connections, the link from your Linux box, or Windows NT machine, or whatever is likely to use one of two serial protocols, operates out of your comm port, through your modem and along your telephone line.

The two protocols are called PPP and SLIP (Serial Line Internet Protocol). There is also a common variant of SLIP called CSLIP (Compressed SLIP) and you might also come across proprietary variants (with cute names like PinkSlip). These latter are a curse and to be avoided. They usually mean you are locked in to whatever client software the ISP provides, which in turn dictates the operating system under which you run it. Guess what that turns out to be?

It's PPP with which I've been having problems. Under the various flavours of Unix it's normally a chunk of code compiled into the kernel or loaded as a module, combined with a daemon that you power up when you want to make the link. Additionally, it's normal to address PPP through a user interface program that handles dialling and passes the correct parameters to the underlying PPP daemon.

Most Linux distributions come with all this stuff in place, although you might have to recompile your kernel to get it working. NeXTStep was designed around the assumption that you're going to be directly connected into the internet though your network, so I had to add the PPP connectivity myself, with a certain amount of help (well, a lot of help, actually) from the indispensable Paul Lynch, NeXT specialist extraordinaire.

When, after having worked happily for many months, the PPP link started to go wrong a couple of weeks ago, I didn't know where to start looking for the fix. I would acquire what looked like a perfectly good connection but wouldn't be able to fetch any web pages. Mail worked, but only in a strangled sort of way that often left the larger outgoing messages stuck in my queue.

Luckily, I had other routes out to the internet, but I was determined to use the opportunity to learn more about PPP and, hopefully, fix it without imposing too much on Paul. My first port of call was the manual page for pppd (the PPP daemon). Manual pages can be confusing, even frightening. The trick is to try to enjoy them even if you don't understand them: you're bound to get something out of reading them, even if it's only more bafflement.

Here's how the manual page for pppd starts:

```
NAME
pppd - Point to Point Protocol daemon
SYNOPSIS
pppd [ options ] [ tty_name ] [ speed ]
```

Okay, so this is a daemon you call with parameters (these are normally passed by the dialup program). The port on which to look for the modem [tty_name], and [speed], the speed of the modem, were obviously okay, otherwise I wouldn't have had a connection of any kind. The problem probably lay somewhere in the first para-

meter you pass; a multifarious thing called [options].

The possible options are listed further down the manual page. There is a lot of them, some incomprehensible (to me). By correlating the options passed by my dialler as previously set up for me by Paul with the list in the manual page, I began to understand a little of what the connection was all about. To cut a long story short; a series of gentle experiments with the options (singly!) revealed bsdcomp, standing for BSD compression. The manual page states:

"bsdcomp nr,nt

Request that the peer compress packets that it sends, using the BSD-Compress scheme, with a maximum code size of nr bits, and agree to compress packets sent to the peer with a maximum code size of nt bits."

My options were pre-set with bsdcomp 10,10, but it occurred to me that compression schemes like this were probably instituted in the days before modems were smart enough to do their own compression. I know that imposing one compression scheme on top of another can sometimes drastically slow down a link. Of course, this doesn't explain why the link should have suddenly strangled itself, but I thought it might be fun to take out the BSD compression and see what happened. When I did this (by changing the bsdcomp parameters to 0,0) the link suddenly leapt into life — amazing.

What may have happened is that the ISP switched over to a set of different modems and that suddenly, my modem found itself able to negotiate a more sophisticated compression scheme that happened to fall foul of bsdcomp. I'm going to have a play with the compression parameters on the modem and on PPP to see if I can verify this.

Meanwhile, it's a real relief to have the link back. ■

New, next month

As from the October issue, Hands On 32-Bit will become Hands On Unix which, we hope you will agree, is more relevant to today's computing needs. The new Unix column will continue to be written by Chris Bidmead.

● We will also be introducing a new Hands On column for Windows NT buffs, written by Dale Strickland-Clarke.

PCW Contacts

Chris Bidmead is a consultant and commentator on advanced technology. He can be contacted on bidmead@cix.compulink.co.uk