



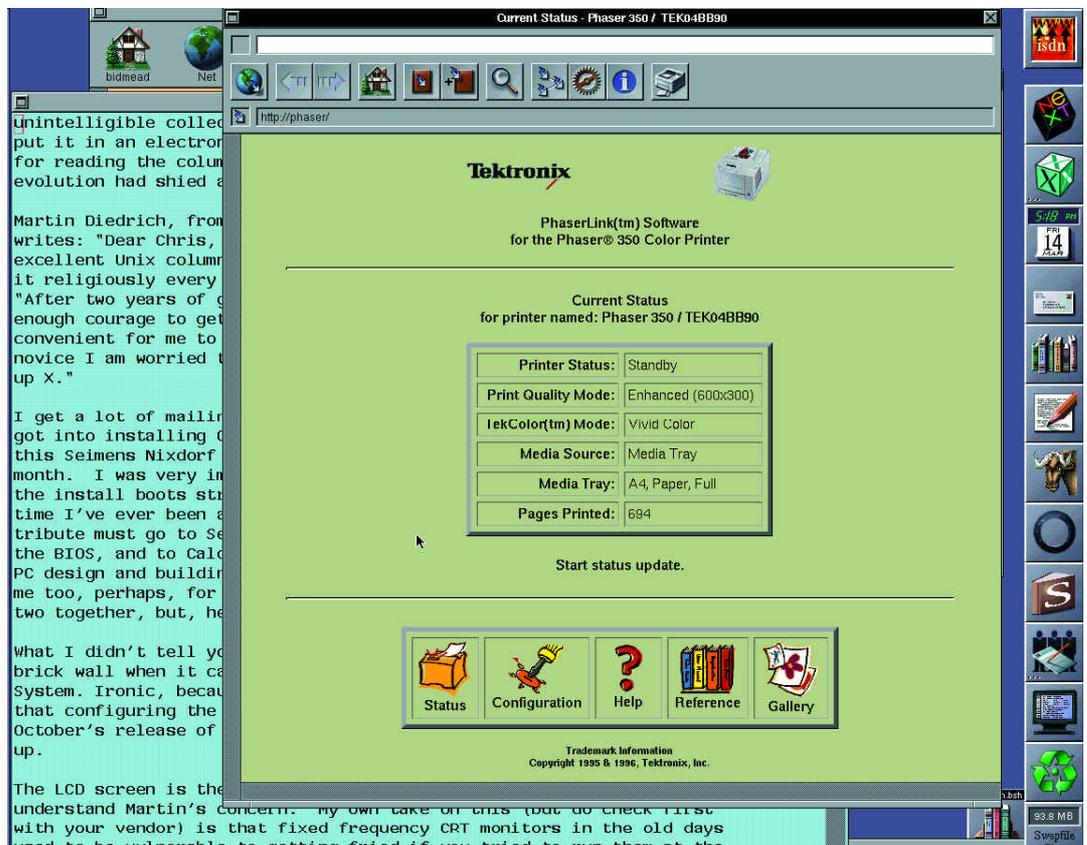
The joy of X

Chris Bidmead tells how he got X up and running on his Scenic Mobile 700 notebook, accepts praise on his technique, and gets down to some heavy vetting of Linux books.

Of course, it may be that you've all been well brought up, but a great deal of the email I get these days begins with burbles of praise for this column. And a frightening number of you are also writing in to tell me you've been encouraged by my ramblings here to junk Microsoft Windows and install one or other of the UNIXes, or at least create a dual boot system. For once, words fail me. I don't know how to express the sense of excitement, trepidation, pride and responsibility this gives me.

On the other side of the coin are the people who tell me that Windows is "good enough" and "if it ain't broke, don't fix it." I'm sympathetic about this too. Microsoft has done a remarkable job of making computing accessible to everybody. And if by contrast you're left with the impression that UNIX is an unintelligible collection of arcane keystrokes — as somebody recently put it in an electronic conference — I do see your point (and thanks for reading the column this far). My response to this was: if evolution had shied at arcane keystrokes, we'd all still be rocks.

Martin Diedrich, from the Department of



Cross-platform interoperability isn't just about workstations and servers. I really like the idea of being able to control the network printer from any workstation on the network — security permitting. The Tektronix Phaser 350 has its own built-in web server, so any workstation running a browser can read its status and reset its parameters

Economics at Keele University writes: "Dear Chris, First of all, my congratulations on your excellent Unix column in PCW." (See, I'm not making this up!) "After two years of growing interest in Linux, I have finally gathered enough courage to get started... For various reasons it will be convenient for me to install Linux on a laptop... but being a Unix novice I am worried that I might do damage to my screen when setting up X." I get a lot of mailings asking about UNIX

and laptops, which is how I got into installing Caldera's latest release, Caldera Open Linux, onto a Siemens Nixdorf Scenic Mobile 700 portable, as I mentioned last month. I was very impressed — and I hope you were too — by the way the install boots straight off the Caldera CD-ROM. It's the first time I've ever been able to do this with a PC-type machine, and tribute must go to Siemens Nixdorf for implementing this feature into the BIOS, and to Caldera for

CBOR — Chunky books ooze reassurance

The day that Windows NT finally established itself, I remember thinking at the time, was the day that the Windows NT Resource Kit arrived — three chunky volumes accompanied by a CD-ROM. It doesn't matter what my views of Windows NT are, I recall thinking, or what I know about Microsoft's support for its new baby ("Problems? Have you tried rebooting? Ah, OK, then the best thing is to reinstall...), or indeed whether Windows NT fulfils its promises or not. The three chunky volumes ooze the kind of reassurance that is exactly what corporate customers need with a product like this. Microsoft knew this, of course, which is why the Microsoft Press produced them.

At the time I never believed that even its greatest fans could feel the same way about a freely distributable operating system like Linux. Sure, there's a ton of documentation out there on the web or buried inside the installation CDs. But these are nerdy monographs with spellings like "kernal", not glossy volumes that sit on your bookshelf glowing with confidence.

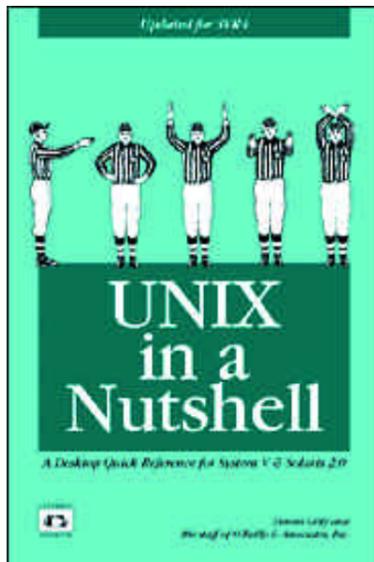
All that has completely changed now. Solid, informative books about Linux abound. When readers ask me, what books should I buy to get started, I still respond that the best way in is probably to hold off from buying books and get stuck in to the docs on the disks. But once you're through that, or if you really don't like reading on-screen, the book scene waiting for you is a toothsome banquet. Which ones to choose?

The starting point is *The Unix Philosophy* by Mike Gancarz, from the Digital Press, which asks — and answers — the rarely faced question "Why UNIX?". When it comes to "How UNIX?" my favourite was always *Running Linux* from O'Reilly, and there's a new edition out now. Supplement this with *Linux Network Administrator's Guide* if you're going to get hairy with networks. This too is published by O'Reilly, but it's also part of the Linux Documentation Project so you can download it from the web or consult it on-line as necessary.

But the must-have book for me has always been *UNIX in a Nutshell* (yes, that's from O'Reilly again!). It covers all the basic commands but manages to be more than just a command dictionary, finding plenty of room for worked examples and illuminating commentary.

There are several versions of *UNIX in a Nutshell* for different flavours of UNIX. I favoured the System V version but it had surprising (to me) omissions. When I was first struggling with the mount command I was alarmed to find no mention of it in the book. A seasoned UNIX jock patiently explained to me that this was because it was a user's manual, and mere users had no business messing with system commands like mount.

Well, there's now a (rather fatter) version of the Nutshell book specially for Linux, and, yes, mount is in there. This new version recognises that most Linux users are also going to be their own system administrators, so there's now a complete section on System and Network Administration at the back of the book. There's also a rather breathy introduction with headings like "The Excitement of Linux" which, while not inaccurate (sample: "Linux revives the grand creativity and the community of sharing that UNIX was long known for...") may help to obscure the point that, largely thanks to the weighty endorsement of books like this, Linux is clearly ready for prime time.



chat with colleagues and some recent experiments of my own, is that you just don't get to fry a modern LCD display with mere software.

Although X wasn't working on the Scenic, at least Linux was all in place. If the character-based consoles are as far as you're ever able to get with a particular UNIX installation, please don't despair. For the first four months after I introduced Linux to this column a couple of years ago, I couldn't get X working. That Linux installation wasn't pretty, but it was still powerful. I got a lot of things done with it and, thanks to all the loose documentation, the manual pages and the built-in Info hypertext system, there was plenty to keep me busy and keep me learning until I worked out how to get X going.

This time I didn't have to wait that long. X is now up and running on the Scenic (I'm writing this using XEmacs on the machine), and I'll tell you how I did it. Originally I anticipated filling the next 50 paragraphs with a detailed technical description containing a lot of example data like

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640x480 @ 60 Hz, 31.5 kHz hsync
Model ine "640x480" 25.175
640 664 760 800 480 491
493 525
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with some heavy discussions about dot clocks and horizontal and vertical sync frequencies. This column isn't afraid to venture into tough territory, but Bidmead's Law of Hard Work states: don't do it if you don't have to. Some of you may regard this Chronicle of How I Got X Going as something of a cheat. So be it. This is how it goes with Linux in real life.

Step one was to ignore any possible difficulties and just go for it. Caldera Open Linux comes with a pair of alternative X systems, the freely distributable XFree86 version and a commercial package called Metro-X. I'm dedicated to the cause of free software, but I also like an easy life, so given the choice I started with Metro-X. Alas, it turned out not to include any support for the Scenic's CT65550 graphics chip. Happily the XFree86 version does; as is often the case, the free software is ahead of the commercial equivalent, and this implementation had the CT65550 covered.

But there's more to a video subsystem than the graphics chip. Other key factors are the RAMDAC and the display. In the absence of any specifics on these I ignored the possible problems and sailed into the XFree86 graphical setup routine I

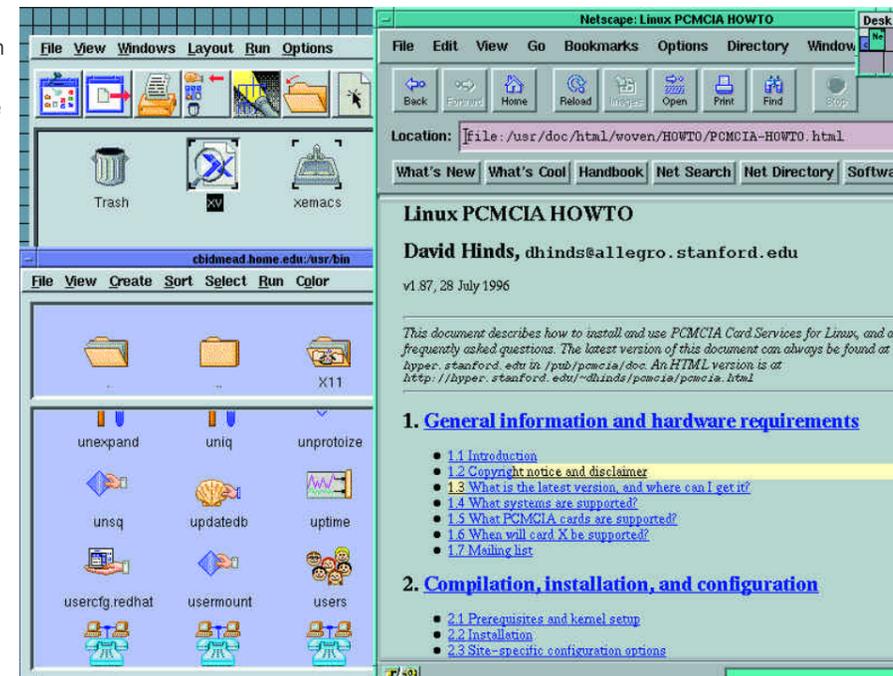
mentioned last month. It's called XF86Setup and it tries to establish an elementary X display straightaway, and then invites you to fiddle with the parameters through a dialog box with buttons and pull-down menus.

The X screen it came up with was about two thirds the size of the Scenic's LCD, which I could live with temporarily. But it was defaulting to the wrong mouse, which meant I couldn't pick my options by point and click. Happily, the keyboard navigation that XF86Setup offers as an alternative worked, somewhat awkwardly, and once I'd fixed the mouse (the touch-sensitive pad the Scenic uses is, conveniently, PS/2-compatible), it was a lot simpler.

With the majority of desktop machines, XF86Setup would probably get you all the way home. But notebook computers tend to be weird. The Linux Laptop Home Page at www.cs.utexas.edu/users/kharker/linux-laptop (or the RedHat mirror at www.redhat.com/linux-info/laptop) is run by Kenneth E Harker, who seems to be working very hard to keep it up to date. It covers a number of the popular machines, but the Scenic Mobile was too new to be on it. I was on my own, and, as it turned out after several hours with XF86Setup, on my own with a display that determinedly remained two-thirds of the size and fizzed a lot every time I wiggled the mouse.

The XF86Setup utility is really just a pretty front-end to a configuration file called XF86Config that sits (usually) in the /etc directory, which is the canonical place for these kind of files. So my next step on the road to The Joy of X was get out of XF86Setup and start mulling over the config file directly. Like all good UNIX config files, this one is in plain ASCII, editable by any text editor provided you're a user with read/write access to /etc, which on most systems implies you're root. Root is always presumed to know what s/he's doing, so the fact that you can dramatically mess up the entire system by tweaking these /etc config files isn't supposed to be a problem. My consolation was that messing up XF86Config could at worst only deprive me of my fizzing, shrivelled X display and leave me at the command line. From there I could at least restore a backup of XF86Config.

Past experience on other Linux systems



Here's another increasingly common use for web browsers — as readers for internal documentation.

The Caldera OpenLinux Base I've installed on the Scenic Mobile comes complete with a large set of HOW-TOs and other documentation set up for easy-on-the-eye reading through the bundled Netscape browser, so I can read up on Linux wherever I am

has taught me that the supplied autoconfig utilities like XF86Setup tend to be a lot smarter than I am. So if they couldn't produce a decent display, I had a lot of experimentation and twiddling ahead of me. I accordingly armed myself with "The Hitchhiker's Guide to X386/XFree86 Video Timing (or, Tweaking your Monitor for Fun and Profit)" by Eric Raymond et al, and those of you who are disappointed that I'm not going to parade the guts of video tweaking in this month's column had better hasten onto the net to procure it, if it's not already in your X11R6/lib/doc/ directory. Speaking of the net, the other (and really smart) thing I did was to put out a Mayday call. Not on the newsgroups, although I did first scour comp.os.linux.x and comp.os.linux.setup to see if this ground had been covered. (An excellent way to do this is to run a search from www.dejanews.com.) Instead I went to the Siemens Nixdorf web site at www.sni.de and found a discussion group set up there for problem logging. The net is full of so-called problem reports that just say something like "I'm having terrible trouble getting X to work on my laptop. Please can anybody help?", so I took the trouble to describe the problem, specifying the model number of the machine and the version of

Linux and XFree86 I was trying to set up.

The response from the Siemens Nixdorf engineers the next day wasn't wildly helpful: it just suggested I contact the UK help desk. From there I learnt that Siemens Nixdorf doesn't support Linux, but at least the help-desk guy gave me some pointers to existing help on the web. Following these up resolved down to "The Hitchhiker's Guide to...etc" so things seemed to be going round in circles.

I was settling down with the Guide when another bit of mail dropped into my mailbox. It came from Heiko Boch, a German computer science student at the Technische Hochschule in Darmstadt, Germany. Heiko had seen my *cri de coeur* in the Siemens Nixdorf discussion group, and was happy to step in and help. His mailing included a ready-to-go copy of XF86Config he'd hand tailored for the Scenic Mobile.

Thanks, Heiko. That's real-life Linux — people turn up and help. Now if I can just get this network card working...

PCW Contact

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recognising this important new trend in PC design and building their CD to be bootable. (A bit of a tribute to me too, perhaps, for reading the relevant manuals and putting two and two together.)

What I didn't tell you last month was that the installation hit a brick wall when it came to configuring the XFree86 X Window System. Ironic, because I had introduced the subject by saying that configuring the X server had got a lot easier since last

October's release of XFree86 3.2 with its easy-to-use graphical setup.

The LCD screen is the single most costly component in a laptop, so I understand Martin's concern. My own take on this (but do check first with your vendor) is that fixed frequency CRT monitors in the old days used to be vulnerable to getting fried if you tried to run them at the wrong frequency. I've never come across this with a modern monitor, and my impression, reinforced by a