Open Quarterly

The EurOpen magazine

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A new EurOpen initative

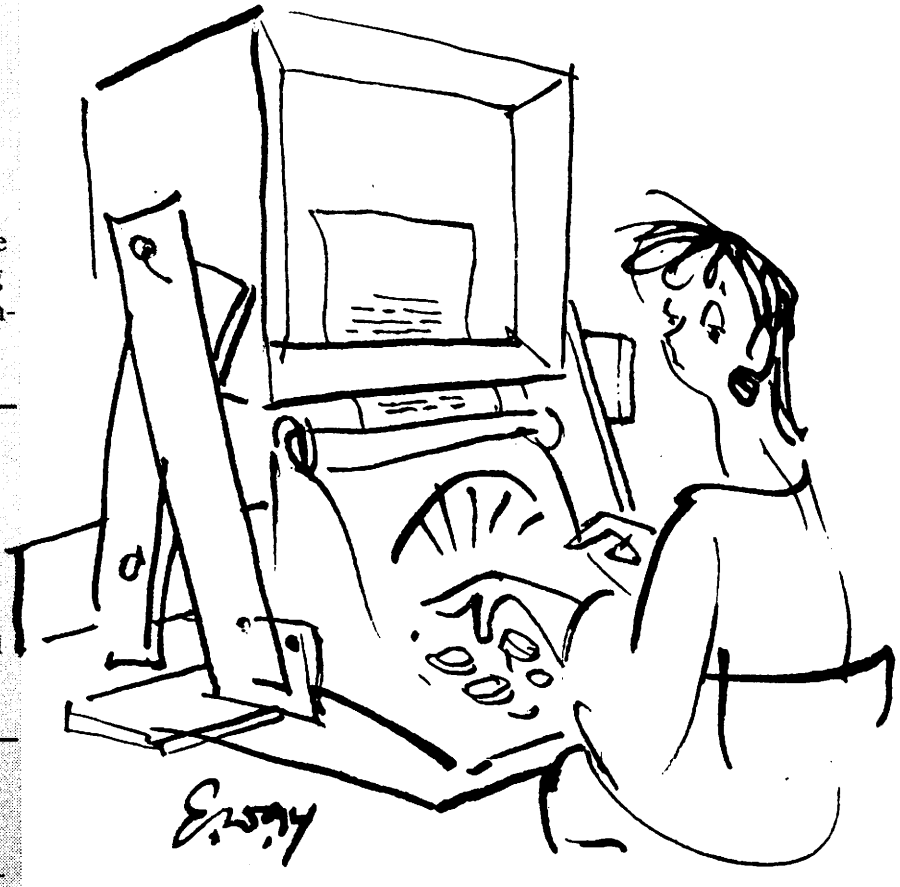
Well, you're looking at it right now: A new EurOpen magazine published quarterly containing articles clipped from the national user groups' newsletters.

Low-cost UNIX

The theme of this first issue is low-cost UNIX which includes both a commercial UNIX like BSD/386 and non-commercial ones like Linux and FreeBSD.

UniForum 94

We have a report from the world's largest UNIX exhibition.



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The New Initiative

This is **not** the old EurOpen Newsletter in a new awkward format.

Well, what is it then? It's an attempt to give a larger audience access to some of the excellent articles in the newsletters published by the national user groups that forms the membership of EurOpen.

To keep the basic EurOpen fee as low as possible the magazine will not be distributed to all members of the national groups. The magazine will be sold in subscribtion through the groups.

It should be noted that this is an experiment — this first issue is only printed in 500 copies (a future collectors item?). The experiment will be continued if enough national groups express their interest — both by ordering copies of the magazine but also by sending their own newsletters to us (with permission to use clippings from the newsletters).

The awkward format of the magazine is very much influenced by the DKUUG Newsletter (of which I'm also the Chief Editor). The idea behind using this format is to distinguish the magazine visually from the countless other IT newsletters that keeps piling up on your desk (all of them apparently in the A4 format). As one who started out disliking the format I can say that I have grown very fond of it.

In this issue

In this issue we focus on "low-cost UNIX" to show how articles from several sources can be put together to cover a theme.

Apart from the theme articles we have a fresh report from the UniForum 94 Convention in San Francisco, an interview with the president of the X Consortium, Robert Scheifler and an open letter concerning a European encryption initiative from Martin van Gelderen.

SOJ

Linux

René Seindal
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This text is written on a 80486-based PC running Linux, a free Posix-compliant UNIX implementation for 386 and 486-based computers. The editor is Emacs 19.19 under X11R5.

This pretty well sums up what Linux is: a full UNIX system with the complete GNU software suite, X11, TeX, and much more, on ordinary PCs, all free, and all legal.

History

Linux is about two years old. The Kernel is made by Linus Torvalds, a 22 year old Finnish Computer Science major. Originally Linus just wanted to learn how a 80386 worked in protected mode (i.e. using virtual memory), so he started the project with foundation in Minix. Within a few months he had several processes, a tty driver and virtual memory and after approx. six months it was made available on the Internet, GNU cc were compiled and then everything else followed. After about one year the system was useable for most purposes, it now included all the GNU programs, TeX, and X Windows.

Hardware

With this kind of free systems the hardware demands are naturally very interesting. Actually the demands are quite moderate with Linux.

> ***"Linux is free but it's not public domain software"***

The system was written with the 80386 in mind and won't operate on anything smaller. A co-processor is optional since Linux has a FPU emulator.

Minimum internal memory is 2Mb, but 4Mb is necessary for larger programs. Using X Windows is possible with 4Mb but 8Mb is recommended.

Linux can use AT-bus harddisks, it takes more space than DOS. My system, which consists of the basic parts of Linux, C and C++ compilers, GNU Emacs, TeX and LaTeX, X Windows, etc., uses about 60Mb (X Windows about 15Mb, TeX about 6Mb). With the system, swap, user space, and DOS, a minimum of 120Mb disk is needed.

If you want to use X Windows the screen is important. Linux supports MDA, CGA and EGA (including VGA and SVGA), but X Windows in color needs a SVGA screen and not all SVGA cards will work. The graphics card should have 1Mb RAM (although it's possible to get by with 0.5Mb).

Linux goes beyond this

basic configuration. Several SCSI controllers are supported, making it possible to use SCSI disks, tape stations, CD-ROMs, etc. Some Ethernet cards are supported which opens the world of TCP/IP and NFS. There are also drivers for an expanding number of PC cards like sound cards, internal fax modems...

Linux works on some portables as well.

DOS

Linux can co-exist on the harddisk along with MS-DOS, OS/2, Xenix, etc. Linux uses DOS's disk partitioning, which allows four partitions per disk, it doesn't mind non-Linux partitions.

DOS files on the harddisk or on diskettes can be used in two ways under Linux. There is a package implementing DOS programs like "cd", "dir", "label", "rd", "md", "mwrite" and "mread". Alternatively it's possible to mount DOS file systems and use the standard UNIX commands to manipulate the DOS files and directories (with the limitations imposed by the DOS file system).

A DOS emulator for Linux is being developed but is still unstable and can only run simple DOS programs.

There are two ways of starting Linux on a machine with both DOS and Linux installed. Either leaving the boot procedure untouched, starting DOS from the harddisk and Linux from a boot diskette. Or installing a separate Linux boot-loader in the boot sector of the Linux-partition (marking this partition as the active one at system start). While starting the computer you are asked which system to use.

File systems

Linux supports several kinds of file systems including minix, DOS, CD-ROM, proc and extended file systems, that allows longer file names and larger file systems. Berkeley's FFS have not been ported to Linux but has been the inspiration for the extended file systems.

The Minix file system was the first in Linux, it's a classic System V file system with 14-character file names but extended with symbolic links.

The extended file systems are based on the minix file system with modified directory structures allowing longer file names, larger files and larger file systems. They use larger block sizes and fragments like FFS.

> ***"Networking is the main point were Linux falls short of 386BSD"***

I'm using the second release of the extended file system which is quite stable.

The CD-ROM file system is a ISO 9660 file system. There are commercial distributions of Linux on CD-ROM.

The Proc file system is a special file system (normally mounted on /proc) containing a directory for each running process on the system. In these directories are files containing the command

line, environment, statistical informations about the process, references to the process' working directory, root and program files, directories with references to open files and shared libraries. In the file systems root directory are files containing various system informations, like memory statistics, kernel messages, system load and kernel version number. Programs like ps, top, uptime, etc. all uses this file system and doesn't need direct access to /dev/kmem and are no longer dependent on changes in the kernel (quite useful since the kernel might be on a diskette).

The file systems on my machine are shown in figure 1.

Networks

Attempts to implement networks in the Linux kernel have been made, as far as I know partly based on the Berkeley net-2 distribution. There are TCP and SLIP and on top of these inet, UNIX sockets and NFS. Some use PCs with Linux as X workstations, some use News. I don't have any experience with either.

Networks are the main point were Linux falls short of 386BSD and the reason many choose 386BSD instead of Linux.

I have only used the network for UNIX sockets to syslogd, emacsclient and the X server, so my experience in this area is quite limited.

Virtual memory

In virtual memory Linux is ahead of 386BSD. Linux supports shared libraries, which saves both disk and memory space, especially when using X Windows.

Linux also allows paging to disk, either on a separate partition or in a file. Since Linux only uses the first 16Mb of each swap area (4K pages of 4Kb) using a file is the most feasible, otherwise a very small partition is needed. The swap area is also used for ordinary memory so a system with 8Mb memory and 16Mb swap has 24Mb virtual memory.

Linux' use of memory isn't bad. The first 640Kb of the memory are used for the kernel, then an area up to the first Mb for memory-mapped io. Then an optional RAM disk and the rest for user processes. I have 16 Mb

- /dev/hda4 on / type ext2 (rw)
- /dev/hda3 on /home type ext2 (rw)
- /dev/ramdisk on /tmp type minix (rw)
- /dev/hda2 on /vol type ext2 (rw)
- /dev/hda1 on /dos type msdos (rw,uid=0,gid=0,umask=2)
- /proc on /proc type proc (ro)
- /dev/fd0 on /mnt type msdos (uid=50,gid=50,umask=22)

figure 1

RAM, a RAM disk of 2 Mb, leaving 13 Mb for user processes. I normally use 6 Mb when I have X Windows, an emacs and an xdvi running.

The buffer cache in Linux are not allocated a fixed amount of memory but uses the memory otherwise left unused. Normally I have about 6Mb buffer cache. The memory allocation on my system can be seen in figure 2.

	total	used	free	shared	buffers
Mem:	13384	12632	752	3440	6076
Swap	16380	1304	15076		

figure 2

The size "used" are both processes and buffers and "shared" shows how much memory is used by more than one process.

X Windows

I use X Windows on a SVGA screen with a ET4000-based 1Mb graphics card. The server is XFree86 Version 1.3 running in 800x600x256 non-interlaced or 1024x768 x256 interlaced on my screen (which is of the cheapest kind). Numerous different resolutions are possible with different combinations of screens and graphics cards. The server also comes in a monochrome version. The mouse can be any PC mouse although a 3-button mouse is preferable.

With the X distribution comes the necessary files and libraries for programming under X using the standard toolkit or open look. It comes with about 100 applications and more can be found on ftp servers.

A nice detail is how you can jump in and out of X Windows. Linux implements several, typically eight, virtual consoles which you can switch between using Alt-F1, Alt-F2... This convention has been implemented in the X server so it's possible to jump from X Windows to another virtual console (here using Ctrl-Alt-F1).

TeX and LaTeX

I'm using LaTeX for almost everything I write. The TeX distribution for Linux contains tex, latex, bibtex, metafont, and all the different programs for installing and testing the system. It also includes all the standard fonts in 300 dpi versions and the standard macro packages.

"I use Linux for my work and I'm a very satisfied user"

The distribution also contains dvips but I prefer dvi2ps myself. Formatted texts can be viewed with xdvi or as Postscript with Ghost-

script under X Windows. The latter is especially useful when using pictures in the text.

Groff, GNU's version of troff, comes as part of Linux with drivers for ascii, Postscript and DVI.

Documentation

The documentation for anything besides the kernel is the original documentation for the programs, mostly man pages or GNU info files.

As to the kernel a 120 page "Hackers Guide" describing how to write device drivers and implementing your own system calls has recently been published. Plus you always have the source code.

A major documentation project has so far resulted in a number of How-To guides, covering system installation, installing UUCP, networks, etc.

Availability

Linux is free but it's not public domain software. The kernel is copyright Linus Torvalds but under GNU's copyleft with everything that this means.

The majority of the programs by far are from GNU and thus under the GNU conditions. The main exceptions are X11 which is under the restrictions from the X Consortium and TeX which is completely free (apart from the name).

The Linux distribution can be fetched by FTP.

Installation

Since Linux is free software there isn't a standard distribution, but several commercial packages exists packing Linux, X11, TeX, installation software, etc.

The most popular package is SLS, Softlanding Linux System, available both commercially and by FTP. The SLS distribution consists of a number of diskettes divided into a number of series, containing boot diskette, the basic system, X Windows, TeX, C and C++ compilers, documentation, ...

The SLS distribution consists of about 30 diskettes, of these 10 are X Windows and 3 are TeX.

Experiences

My experiences with Linux after using it for about 18 months is basically positive. I'm now using the fourth version, version 0.99.12, and have only experienced one crash (more than a year ago). There have been minor errors but they have all been quickly corrected. At present I'm not aware of any serious errors in the system.

The philosophy behind Linux are akin to the one around UNIX before it became commercial. It's a system made by people who do it for fun and like to share it with as many as possible, so it's a system that develops, often along untried paths. There are quite a number of experimental modules you can configure into the kernel at your own risk. My experience is that even if it's a "hobby" UNIX it's not unstable. I use Linux for my work and I'm a very satisfied user.

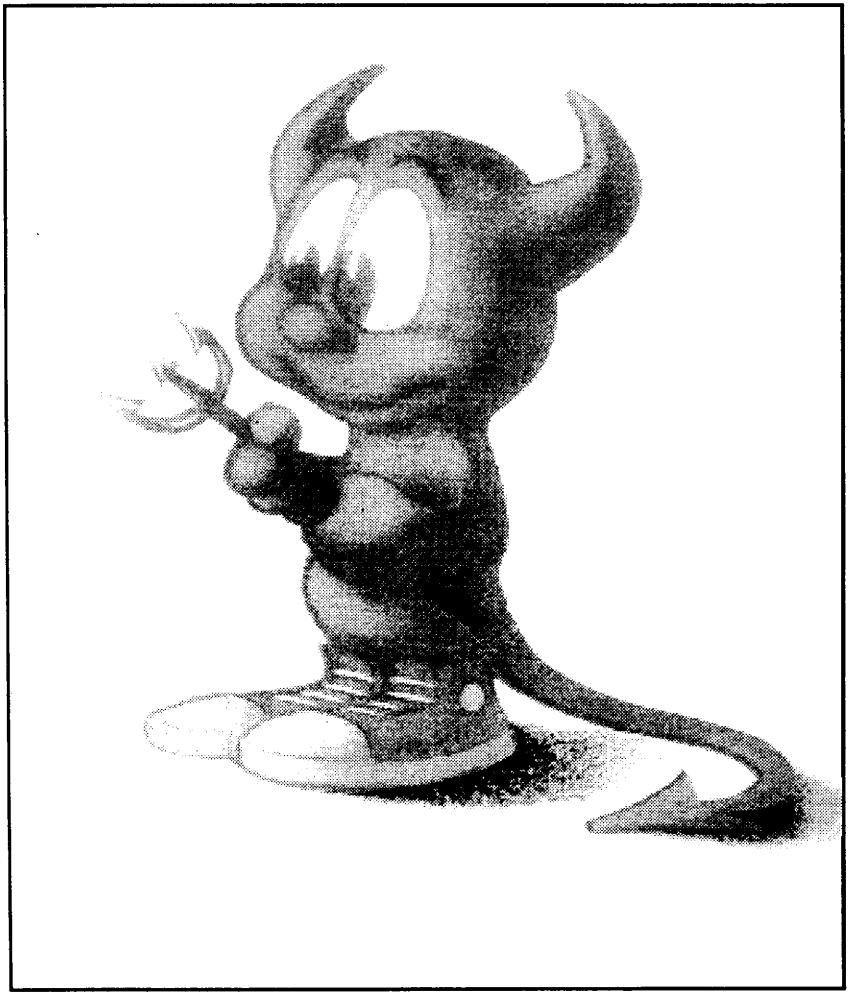
❑

FreeBSD 1.1

A free Unix for everybody

Poul-Henning Kamp
<phk@login.dkuug.dk>

Poul-Henning has been making trouble in the Danish UNIX pond for far too many years. He has also had ample opportunity to bother the rest of Europe. He lives alone with an excessively complete Wagner collection, a violin, a waterbed and no TV. He doesn't smoke or drink, sings in a choir nobody has heard (about) and dislikes UNIX vendors.



If you need, miss or just don't have a UNIX system, it's now possible to get a free UNIX for a PC. Actually it's been possible for almost two years, but until recently it's mostly been a toy. In this article I'll describe FreeBSD release 1.1 (the release date is March 20th).

What is FreeBSD?

FreeBSD is an unpaid volunteer effort which a lot of people have made for fun. As such there are no support organization, customer information or sales persons pestering your life (there are quite a number of consultants offering support of almost all aspects of FreeBSD, they are listed in the file SUPPORT.TXT). The end result is a UNIX with full source code running on a PC.

"most companies will be troubled by the missing support"

A deal has been made with Walnut Creek CD-ROM. They have donated a machine to the development of FreeBSD and are in exchange allowed to distribute FreeBSD on CD-ROM. New releases are scheduled aprox. four times every year.

Most companies will be worried by the missing support, but if you have an email connection and are able to give an adequate description of an error, it seldom takes more than a few days before the error has been corrected. Or you might just look in the source and correct the error yourself.

The small demonic figure shown in this article is the logo and mascot of FreeBSD. We inherited him from the CSRG people at Berkeley - they thought it would be a shame if he should disappear form the UNIX scene.

What can it do?

In comparison with most commercial offerings FreeBSD has a lot of things included that you would normally have to buy separately. This is a far from complete list, it's more or less what I have accidently noticed:

- C, C++, Fortran and Objective-C
- Posix 1003.4a Draft 7 based threads mechanism
- TCP/IP with Ethernet, SLIP, PPP, TCPdump and tunnelling
- RPC, NFS and YP/NIS
- CD-ROM and PC file system support
- Troff/nroff
- Shared libraries (Sun style)

Apart from that there are binary packages (so you don't have to fool around with makefiles) of lots of stuff:

- Emacs, TeX, Archie, Gopher, FlexFax, ksh, tcsh and sc (a spreadsheet)
- Ingres (the non-commercial version), X11, Tcl, Tk, Perl, etc.

"there are no support organization or sales persons pestering your life"

Of course a lot of things which a "respectable" UNIX won't do is possible in FreeBSD, f.i. you can format an ordinary HD-diskette to 1.72Mb — if you only have floppy diskettes as backup it saves one in every six compared to normal 1.44Mb diskettes.

Hardware

CPU: FreeBSD will run on 386, 486 and Pentium PCs. Obviously a 32-bit operating system run on a 16-bit machine like a 386sx will perform at half the speed, but it works, although slowly. 387-coprocessors are supported. MCA and PCI busses are not supported but ISA, EISA and and VL are. Support is on the way for PCI but nobody seems interested in MCA.

RAM: The minimum is 4Mb RAM but depending on what you intend to use the machine for more should be added. I have 16 Mb in my own machine. Note that only 16Mb can be addressed with DMA on an ISA bus, this problem doesn't exist with EISA and VL buscontrollers.

Disk: The more the better, a binary system can get by on 60Mb, the source for FreeBSD itself is 90Mb and it takes 50Mb more to compile. The source for everything takes more than 300Mb.

IDE and ATA disks are supported, all WD1003/WD1007 compatible controllers (that is almost all MFM, RLL, EDSI, Adaptex 154x, 174x SCSI controllers, Buslogic 545S and 445S, Bustec 742A and 747, Ultra Store 14F and 34F).

There is full support for disks, tape stations and CD-ROMs on all these SCSI controllers.

> ***"it doesn't have to cost a fortune to build a UNIX system"***

Net cards: SMC Elite 16 WD8013, most WD8003 compatibles, SMC Ultra 8216, Isolan AT4141-0, Isolink 4110, Novell NE1000 and NE2000, 3Com 3C503 (Etherlink II) and 3C509 (Etherlink III).

Other: Mitsiumi CD-ROM, the soundpart of Adlib, SoundBlaster, SoundBlaster Pro, ProAudioSpectrum, Gravis UltraSound, and Roland MPU-401 card. Unfortunately there is still no support for the CD-ROM part of these cards.

Serial and parallel ports (a lot of serial ports!), QiC-40/80 "floppy tape" support.

Graphics: If using the XFree-2.0 package you can use X11 with a lot of different cards: VGA/SGVA, ET3000, ET4000, S3-801, S3-805, S3-928, ATI Ultra/Ultra Pro, 8514, etc. Resolutions from 640x480x2 to 1600x1200x8 only limited by the card and screen. The VL bus is a great advantage when using X11 since all access to the video-RAM is faster. The fastest solution should be a S3-928 card with mmio access to the video-RAM.

As can be seen it doesn't have to cost a fortune to build a UNIX system. Why not a dedicated print server or a domain name server?

Distribution

There are several ways to get FreeBSD, either buy the Walnut Creek CD-ROM ($39.95 + $10 in shipping) or get it by FTP. On the CD-ROM are a lot of the extra packages you normally would have to

download from the archives yourself.

Installation

Under all circumstances you'll need three floppy disks. If you're using the CD-ROM all that's necessary for writing the disks is present. Otherwise remember to get "dos-tools". On the CD-ROM is an excellent set of instructions on what to do. This is intended for those who have downloaded.

If the machine has previously been installed with DOS on the entire disk, you'll need to make a backup and erase the DOS partition with FDISK. If you still need DOS make a partition for it. 20Mb really are sufficient for most of the good games.

First you boot your "kcopy-fd", there are two different ones. Always use "kcopy-ah" unless you have a Bustec SCSI controller. When asked which drive contains the root-fs put the "file-system-fd" in the drive and press the right key.

From here you'll be asked all sorts of questions about the division of disk space. It's important to use the same geometry (ie. the cylinders/head/sector number) as the BIOS uses, otherwise you're likely to have problems later on. All the usual trouble with 1024 cylinders cannot be avoided.

When you have taken a deep breath and answered YES, it starts making file systems, etc. on the disk.

> ***"It's mostly a matter of taste which free UNIX to prefer"***

When it has been spinning with this for a while, you'll have to boot from the kcopy-fd again, but this time you don't have to change diskettes, just press A. Then you type "copy" and tell to which disk it shall copy.

Yet a reboot this time from the harddisk. Now copy the last diskette, "cpio-fd", wait a while and reboot again.

Now you have a minimal UNIX system on the harddisk. Now you'll just have to extract the binary installation and you're airborne.

The binaries (and the source) are in a lot of files, each 240640 bytes in size. When you have copied them onto the harddisk use "extract bin" ("extract src" later on if you like), answer a few questions and enjoy the result.

Of course you'll have to put all jumpers, etc. in their right positions before booting, so in figure 1 there's a list of where to set everything to have it recognized at boot. If you for some reason need to put a controller in a different address you'll have to build a new kernel with the right informations.

The system looks for two floppy drives and a floppy-tape (QIC) drive on fdc0, two drives on each of wdc0 wdc1 plus four SCSI disks, two SCSI tape stations and CD-ROM drives on all SCSI controllers. You'll have to set up the Adaptex 1742 right in the EISA bus to have it recognized automatically.

As can be seen the ad-

dress 0x300 is very popular so you don't have to put very much into your PC before you'll need a modified kernel.

What about the rest?

There are alternatives: Linux, NetBSD, BSD/I, etc. Linux has a time advantage and thus far more facilities but its network is behind FreeBSD's. It's mostly a matter of taste which to prefer, I don't like Linux personally, I find it too SysV, DOS, MS Windows-like. NetBSD is much closer to FreeBSD, and the reason that the two haven't joined forces are based on differences on a personal level.

NetBSD works with other platforms besides the PCs so if you didn't get rid of your old Amiga you might want to use it as an X terminal.

BSD/I is a commercial product, behind it are a lot of the people from BSD/CSGR/UUnet. I know too little about BSD/I to comment on the product. They can be contacted at <info@bsdi.-com>.

❑

Name	IO-address	Interrupt	DMA	Memory	Description
fdc0	0x3f0	6	2		Floppy Controller
wdc0	0x1f0	14			IDE/EDSI controller
wdc1	0x170	15			IDE/EDSI controller
ahb0					Adaptec 1742 EISA SCSI
aha0	0x330	11	5		Adaptec 1542 SCSI
wt0	0x300	5	1		Wangtec Streamer
mcd0	0x300	10			Mitsumi CD-ROM
sio0	0x3f8	4			"COM1"
sio1	0x2f8	3			"COM2"
sio2	0x3e8	5			"COM3"
sio3	0x2e8	9			"COM4"
lpa0	0x378				"LPT1"
lpa1	0x278				"LPT2"
lpt0	0x3BC				"LPT3"
ed0	0x280	5		0xd8000	WD/3com/Novell ethernet
ed1	0x300	5		0xd8000	WD/3com/Novell ethernet
ie0	0x360	7		0xd0000	ATT ethernet
is0	0x280	10	7		Isolan Ethernet

Figure 1

Review of BSD/386

It Works! It Works!

BSD/386 is not free, on the other hand it's far from being expensive. If you need professional support for your UNIX it's worth taking a look at BSD/386

This article has previously appeared in the USENIX newsletter "**;login**".

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Tuesday

FedEx package arrives. Open it. Very professional looking package inside. "BSD/386. March 1993. Version 1.0." Traditional shiny, slick paper. Inside the box is a CD-ROM with this weird gekko printed on it. Only one problem. I don't have a CD-ROM drive. Well, when all else fails, read manual. What do you know? It's very readable!

Wednesday

Order the latest and greatest CD-ROM drive. Then worry - will this system recognize it?

Saturday: Pick up new CD-ROM drive form El Cheapo Computer Company. Connect it to my SCSI controller. Boot machine. Well, it only sort of works. Try another SCSI address — 6! CD-ROM drive sighted by boot. Machine comes up and mounts drive! Decide to backup existing disks before proceeding further.

Sunday

Finish backup onto ancient, slow but trustworthy QIC-24 tape drive. Ancient, venerable machine, survivor of the infamous FaceSaver campaign is a 386-16 with 10 MB of memory. Machine currently has one MFM drive (about 100 MB) and one SCSI drive (1.2 GB).

Now to install this puppy. The goal is to have BSD/386 running without loosing the ability to boot either DOS or Xenix from existing partitions. Anticipated the usual nightmares of incompatible disk partitioning schemes. After further reading of the manual, it was apparent that I would have to move the Xenix partition. Took all day.

> ***"Hack-a-bit and there you are, thank you"***

Finally started the BSD/386 installation — it was a breeze! First convince DOS that I only had a 1 GB disk, and to use a partition at the beginning. Then BSD/386 used the rest, out to the real limit! Then load the system.

Since I had the CD-ROM version and enough space, I just loaded almost everything and went to sleep.

Configuration

Now to configure the system — let's see —- need UUCP. But wait! My modem is not in the list of modems... ahhh... **I have source**! Just like the olden days. Quick hack to put in my own modem's idiosyncrasies. Bidirectional TTY ports work fine. I need PCNFS. No problemo! Just RTFM and turn on the right daemons. Now I am a file server and my wife is happily working away on her DOS/Windows machine. Postscript printer which needed cat2dit to work with Xenix troff now up and running directly out of groff.

How about real adventure? Install SLIP/PPP mods to kernel. Kernel rebuilds right out of the CD-ROM by a neat hack. Bringing up PPP itself takes a little more work, mostly because the how-to's and why-for's aren't exactly clear in any book I could find. It now works, and I have my very own Internet connection.

Import Eudora and POP. POP installs right away. Now mail can be read from my Mac (don't ask why!). Get a Mac-to-lpd utility. Mac printing spools through the BSD/386 lp spooler to printer. No longer have to push that dorky little switch on the back of the printer where I can hardly reach it (and can't see the interface number in the little window anyway) to go back and forth between local talk and parallel port.

Need to be able to convert AutoCAD plot files to EPSI form (PostScript with included TIFF preview image). No problem! Get small utility from the net. Use Ghostscript (provided) and pbmplus (provided). Hack-a-bit and there you are, thank you.

Evaluation

It is really a great relief having this system. It is even better than the good old days. First, anything I thought I might want seems to be there. Second, there is a VERY active mailing list which have an excellent signal-to-noise ratio and carries lots of good info. Third, the system is supported! Response to phone calls was good, though E-mail response to the reporting of bugs or problems was uneven. Unlike any of the other systems I have used (SunOS, Solaris, HP-UX, IRIX, Xenix, SCO UNIX, AIX, A/UX) there are no crucial missing pieces — no "PostScript not included", nor compiler to be found in a separate licensed package.

> ***"It's really a great relief having BSD/386 — actually even better than the good old days"***

I am hardly a speed or performance freak (with my antique equipment), but it seems that this system, under somewhat greater load due to the PCNFS functions is about the same speed as the Xenix system I ran on identical hardware. It seems to support enough of the

mainstream peripherals so that I had no problems with borrowed SCSI DAT drives as well as my old QIC cartridge drive. The system comes with X11, but I haven't exercised it yet, since I need a more reasonable VGA card first.

> ***"This is not a perfect product, but in my environment it has been very stable"***

Besides all the utilities you would expect to find in a UNIX nowadays, as well as full, up to date networking support, there are also perl, elm, netfax, mh, TeX, nenscript, ispell, RCS, and access to DOS file systems on hard and floppy disks. There is enough interest on the net in this system that lots of software seems to come with BSD/386 as one of the possible compile options. **And there is source** (remember source?). If the man pages don't tell you what you want to know, you can always read it. And you can change it too.

This is not a perfect product, but in my environment it has been very stable, had all the features and functions I needed and does what I want. I would not hesitate to use it in a production setting, nor to install it on a client's machine. Some of the users have reported BSD/386 configurations running as network access servers with multiple dial-in lines, and as file servers. Unlike other commercial vendors, the folks at BSDI have not gone crazy and priced a "PC" product like it ran on a mainframe. Further good news is that they expect to provide support for some of the binary formats of the other systems in the (near) future. This would make it very attactive to configure, for instance, database and word processing applications in a real commercial environment, because the clients could buy and use commercially and widely available packages.

Most of the problems I had were with the documentation. Many of the man pages were obviously the original BSD pages, and had not been edited to change path or file name references. Although one is supposed to be able to make changes to source and to compile a package from the CD-ROM, this only worked some of the time — the scripts to point to revised source didn't always work. This is more an annoyance than a fatal flaw, but it does waste some time. I eagerly await the 1.1 release, which may have some of the binary support and other neat features. If the BSDI folks put a reasonable effort into documentation and bug fixes this system could be around for a long time!

As Karl Malden might (but doesn't) say, "BSD/386, don't leave home without it!" BSD/386 V1.0 prices for CD-ROM Source + Binaries $1045, Binaries only $545. Version 1.1 is due to be released soon.

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UniForum 94

Lene Abild
Uniware Danmark A/S

For the second year in a row DKUUG managed to send a small group to UniForum - the worlds largest UNIX exhibition.

We flew to San Francisco on Saturday March 19th, and stayed at a cozy hotel close to the harbour and the many seafood restaurants.

Sunday

Most of us spent Sunday playing tourists. The weather was nice and San Francisco is an incredibly charming city.

Monday

Everybody met at UniForum to receive their registrations and attend the first tutorials. For some strange reason almost everybody had troubles with their registrations. The staff had problems locating the names of people with

the Danish characters "æ", "ø " and "å" in their names. And their computer kept crashing due to overload (I hope it wasn't a UNIX system). After some efforts from Kim Biel-Nielsen at last everybody got their access badges, material for the conferences and last but certainly not least a free ticket for the Beach Boys concert.

Tuesday

Kim Biel-Nielsen and I were at the UniForum Association meeting as DKUUG representatives. There were representatives from UNIX user groups all over the World. For instance two representatives from China where the user group has 140 members. Even a small island nation like Trinidad & Tobacco were there - they have only nine members yet but since they only started last year who knows... Each country gave a short presentation of their organization and activities. Brazil started by saying they had serious problems attracting members - a possible explanation were their very high member fee (about $2500 a year) and the lack of activities. It was suggested that they lower the fee .

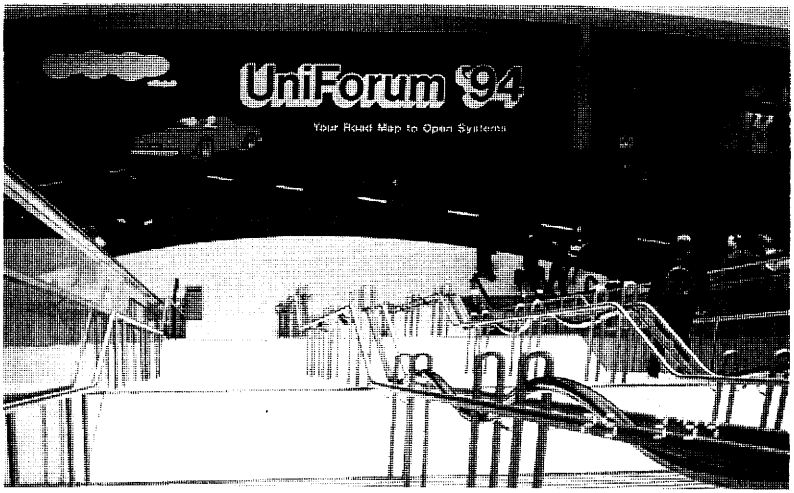
DKUUG are doing pretty well on the international scene. We have the largest members/inhabitants ratio in the world and more activities than any other group, like seminars, magazine, etc.

More cooperation between the various groups in areas like exchange of ideas and common activities were suggested at the meeting. One problem is the vast differences between the countries, but everybody are interested in cooperation. UniForum suggested making a "bank of speakers" which would make it easier to find speakers for conferences, etc. Furthermore, efforts will be put into establishing Internet services like an online catalogue of products.

Wednesday

The exhibition itself started alongside some interesting seminars. The opening was in true American fashion by Andrew Grove, "the Man who

We really couldn't feature an article on a conference in San Francisco and not have a picture of the Golden Gate Bridge



created Intel". First we followed his tour from Intel to the exhibition on a large video screen and then he drove onto the stage in a red sportscar. He gave his view of the UNIX market and talked about some of the dangers to UNIX like Windows NT. With the many new powerful PCs a need for standard shrink-wrapped enterprise operating systems exists. He named the new machines Standard High Volume Computers and emphasized that these machines now are capable of replacing mainframes. This represents a giant challenge to UNIX which should be dealt with before it's too late.

The announcement of the Common Open Software Environment (COSE) last year at UniForum haven't yet shown any major results. The development at the UNIX suppliers has been moderate. In the same period of time Microsoft has delivered 250000 NT packages.

What are todays demands to an operating system? Here the following main areas were named:

- 100% reliability
- Standard solutions for controlling the system setup
- A hierarchical and user friendly system for storage management

Neither UNIX nor Windows NT can deliver in all of these areas today.

After this little speach the first rush into the large exhibition halls started. Here you could see everything in tomorrow's technology. IBM had built a complete cinema where they spoke on IBM's vision of the future and showed the new, not yet released, PowerPC machines. The reward for watching a short seminar was a T-shirt. You were given all kinds of presents if you would fill out questionaires at the exhibition.

UniForum 94 also brought an end to the war between Sun and OSF. In the future a "slim" version of OSF will be the common organization for all leading suppliers of UNIX. The new OSF have among its primary sponsors SUN, Novell, IBM, Digital and Hewlett Packard. The primary tasks for OSF in the future will be the COSE initiative and SPEC 1179. The work with OSF/1, DME and DCE will be continued in a far more decentralized manner.

This new role for OSF gave rise to a number of jokes about the organization changing name to OMF (Open Middleware Foundation) or perhaps Oppose Microsoft Forever.

The Internet also got a lot of attention. The Clinton plan for building an "Information Superhighway" and the exponential growth in the number of machines on the Internet had raised great interest. Many showed ideas for goods and services based on the net.

The exhibition was open from wednesday to friday and it was so large that one could easily spend all three days there.

Friday

Friday night DKUUG invited its members to a splendid dinner at the famous restaurant The Cliff House, where you have a fantastic view of the Pacific Ocean. The sky was clear and we saw the most incredible sundown. So while we enjoyed the food and wine we discussed the week's many experiences and hoped to meet again next year — at UniForum 95 in Dallas.

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The DKUUG delegates, except Kim Biel-Nielsen who took the picture

X Consortium Looks Past Transition to X11 Release 6

Don Dugdale
UniForum Monthly

This article previously appeared in UniForum Monthly February 1994.

Despite the almost simultaneous loss of its president and its separation from the Massachusetts Institute of Technology late last year, the X Consortium Inc. today is moving steadily towards release 6 of its ubiquitous X Window System, scheduled for April.

Heading up the effort is the organization's founder and the X Window System's creator, Robert Scheifler. Scheifler, acting in the role of interim president of the 80 member organizations, had planned to leave the X Consortium this month and return to primary research at MIT. He had to scramble to keep the consortium on track when its president of 10 months, Luther Abel, suddenly resigned in November.

"He came to the conclusion, and the board agreed with him, that we need somebody to run the organization who was in much closer touch with the X technology - that is able to not just piece together a vision from other people but to be the primary focus for developing the vision," Scheifler said. "We're starting up a new search to find a new person, and I hope we find that person soon." He said he now expects to leave four to seven months from now, after a transition.

The split from MIT, which involved moving off the campus to a new location in Cambridge, Mass., occurred for two main reasons, Scheifler said. Constrained by MIT salary levels, the X Consortium could not pay its staff enough to keep top-notch people. In addition, its role of advancing standards and technology in the industry did not conform to MIT's primary goals of supporting students and faculty.

The split "hasn't changed our charter much at all," Scheifler said. "What it will allow us to do is react more quickly to changes in the industry. Within the confines of MIT, in the bureaucratic process, it was time-consuming to make a particular project happen. As a standalone organization, we can react in a more timely fashion to what our members want. Also, we can lower out overhead rates."

As a side benefit to MIT, the X Consortium has endowed a $2 million perpetual chair in computer science, which was filled about the time the split took effect.

What's in store?

The X Window System's forthcoming release, X11R6,

will contain a hefty payload of advanced features, including the following:

- A new C++-based toolkit called Fresco, based on the Common Object Request Broker Architecture (CORBA) model developed by the Object Management Group (OMG). It allows a seamless interface without having to deal with differences between local and remote objects. Network-based objects become easier to access. The toolkit "comes with fairly rich support for structured graphics," Scheifler says, "so its focus is not just on the borders of your application menus, but on supporting the inside of your application as well. The toolkit can port to Windows NT or Macintosh."
- Support for multithreading on the lower-level libraries, Xlib and Xt. "In general, multithreading can make application development a lot easier, because you can put separate tasks in separate threads and not have to deal with complicated mechanisms to try to structure what are independent computations and a single flow of computations," Scheifler said. " As people start to write threaded applications, of course they want to have each of those separate threads of control in their applications able to manipulate the user interface."
- Session management. The users will be able to save and restore the state of their sessions, meaning that they can log off at the office, go home and log into an X terminal at home and restore their session there. Or they can do the same thing when moving from office to office.
- Improved font support and improved security mechanisms through support for Kerberos, an authentication mechanism.
- Support for running X applications on Windows NT.
- The X Image Extension (XIE), which opens up the general image-processing market to X application developers. "The main facilities of XIE are the ability to transport compressed images across the network between applications from the display, and then do a variety of image processing operations inside the X server prior to presenting those images to the user, " Scheifler says.
- Improvements such as native language input and text display, and support for access by persons with disabilities.

Scheifler was uncertain whether Release 6 would include support for low bandwidth, which would allow data transfer using 9600-baud modems or over ISDN connections.

The X Window System graphical user interface standard is used by virtually every computer hardware and software company in the world outside of the personal computer industry.

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A European Public Domain Encryption Algorithm

An open letter from Marten van Gelderen

At the memorable fall 1988 EUUG conference in Estoril, Portugal I had the privilege of announcing an initiative based on ideas by Leen Kuiper and Leon Oostrijk from the Netherlands.

At that time the Reagan administration was in office in the USA. Referring to national interest there was put a ban on the export of all technology (it being hardware or software) that involved encryption techniques. The ultimate consequence was that AT&T had to deliver two different versions of UNIX: one for the domestic market that included crypt.o and one for the international market that did not include crypt.o.

The UNIX manual page for crypt.o in fact featured a disclaimer which ran along the lines that due to export restrictions the software (i.e. crypt.o) was not guaranteed to be available outside the USA in the standard distribution.

In Europe dissatisfaction with this policy grew. It was felt unfair that US citizens were allowed to use certain software whereas all other world inhabitants were not, purely based on their nationality. That was completely against the basic ideas expressed in bodies like X/Open and OSF. And above all that, persistent rumors spreaded that the algorithms implemented in the various encryption software were not mathematically sound. That is, serious suspicion still exists that the NSA or similar bodies (perhaps the KGB) indeed can decrypt, within an acceptable amount of time, encrypted messages when the above software is used.

In Portugal the idea was presented to solve this problem once and for all. It was suggested that EurOpen should organize a competition to produce a European/EurOpen public domain, mathematically sound, encryption algorithm. The competition should provide the winner (and perhaps serious contenders too) with an interesting, sizable amount of prize-money. Therefore it was suggested that EurOpen should seek support from the EEC. To guarantee the mathematical soundness it was proposed to ask a number of well known mathematicians/cryptologists of different nationalities to enroll as members of the jury. Part of the support of the EEC could be used to give the

members of the jury an acceptable compensation for their effort. Then a rather basic problem arose: who will organize all this?

- Find out if the idea is viable and report to EurOpen
- Write a draft "fact-sheet" outlining the ideas
- Contact the EEC and look for funding
- Contact possible members for the jury
- Set up the rules of the game
- Set up an infra-structure for contenders
- Set up reporting facilities for the jury to the contenders, the GB and perhaps the EEC
- Etc. etc. etc.

At the time of the conference in Portugal unfortunately only two persons were willing to help organizing the PD Crypt competition: Teus Hagen and myself. It is evident that this was not enough. Five years have gone by and let's face it: there is still no genuine, generally available and accepted encryption algorithm.

So here we are again.

EurOpen seeks a number of persons who think that the idea is viable and who is willing to help in organizing the activity. I am still available. I do not know about Teus, but I like to guess that he is still interested, too. We need at least four to five additional persons, preferably from a different European countries, who are willing to invest a considerable amount of time. If the organizing committee comes to the conclusion that the idea is not worthwhile investigating after all, the amount of time that was initially invested may even stay within reasonable limits!

Interested parties may announce their willingness to participate to:

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marten@xirion.nl
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Forthcoming EurOpen Events

Here's a calendar of EurOpen events within the next 3 months

April

25-29	Spring Event	Moscow, SUUG

May

	FUUG's 10th Birthday	
4-5	System Development	DKUUG
4-6	EDV als Erfolgsfaktor im Unternehmen "Koexistenz der Welten"	Messegelande, Vienna, UUGA
18-20	Annual i2u Convention	Milan, Italy, i2u
TBA	Networking	Ede, The Netherlands, NLUUG
TBA	UNIX 94	Paris, AFUU
TBA	Spring Conference (Networking)	CSUUG
26	New LAN Technologies	DKUUG

June

8-10	Summer Technical Conference	Boston, USA, Usenix