



Ein Vortrag von Martin 'Ventilator' Ebnöther

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NetBSD 1.6.1 (BRICK) #0: Fri Sep 26 05:00:30 CEST 2003

venty@brick:/usr/src/sys/arch/sparc/compile/BRICK

total memory = 32624 KB

avail memory = 29576 KB

using 128 buffers containing 512 KB of memory

bootpath: /sbus0/esp@0,800000/sd@0,0

mainbus0 (root): SUNW,Sun 4/50

cpu0 at mainbus0: cache chip bug; trap page uncached: W8601/8701 or MB86903

@ 40 MHz, on-chip FPU

cpu0: 64K byte write-through, 32 bytes/line, hw flush: cache enabled

memreg0 at mainbus0 iaddr 0xf4000000

clock0 at mainbus0 iaddr 0xf2000000: mk48t02: hostid 5776176d

timer0 at mainbus0 iaddr 0xf3000000 ipl 10: delay constant 17

auxreg0 at mainbus0 iaddr 0xf7400003

zs0 at mainbus0 iaddr 0xf1000000 ipl 12 softpri 6

zstty0 at zs0 channel 0 (console i/o)

zstty1 at zs0 channel 1

zsl at mainbus0 iaddr 0xf0000000 ipl 12 softpri 6

zsl: channel 0 not configured

zsl: channel 1 not configured

audioamd0 at mainbus0 iaddr 0xf7201000 ipl 13 softpri 4

audio0 at audioamd0: full duplex

sbus0 at mainbus0 iaddr 0xf8000000: clock = 20 MHz

dma0 at sbus0 slot 0 offset 0x400000: dma rev 1+

esp0 at sbus0 slot 0 offset 0x800000 level 3: ESP100A, 20MHz, SCSI ID 7

scsibus0 at esp0: 8 targets, 8 luns per target

le0 at sbus0 slot 0 offset 0xc00000 level 5: address 08:00:20:76:17:6d

le0: 8 receive buffers, 2 transmit buffers

le1 at sbus0 slot 1 offset 0xc00000 level 5: address 08:00:20:76:17:6d

le1: 8 receive buffers, 2 transmit buffers

cgsix at sbus0 slot 3 offset 0x0 level 7 not configured

fdc0 at mainbus0 iaddr 0xf7200000 ipl 11 softpri 4: chip 82072

fd0 at fdc0 drive 0: 1.44MB 80 cyl, 2 head, 18 sec

scsibus0: waiting 2 seconds for devices to settle...

sd0 at scsibus0 target 0 lun 0: <SEAGATE, ST32550N, 0016> SCSI2 0/direct  
fixed

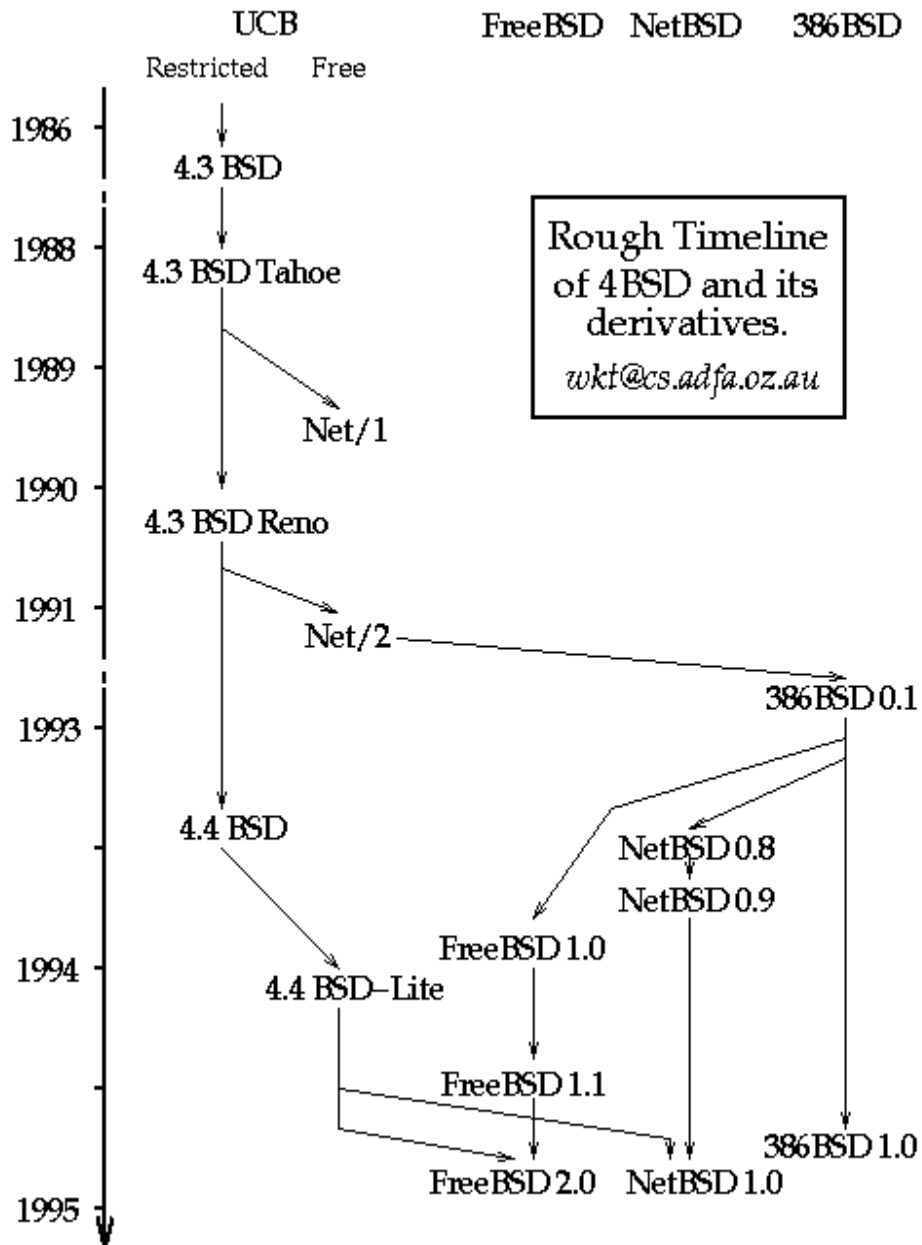
sd0: 2047 MB, 3511 cyl, 11 head, 108 sec, 512 bytes/sect x 4194058 sectors

sd0: sync (248.0ns offset 15), 8-bit (4.032MB/s) transfers, tagged queueing

root on sd0a dumps on sd0b

root file system type: ffs

# Ursprung von NetBSD



- Erste Version 0.8 im April 1993
- Version 1.0 im Oktober 1994
- Aktuelle Version ist 1.6.1

## Installation von NetBSD

- Booten des Installationsystems

```
Welcome to sysinst, the NetBSD-1.5 system installation tool. This
menu-driven tool is designed to help you install NetBSD to a hard disk, or
upgrade an existing NetBSD system, with a minimum of work. In the following
menus, you may change the current selection by either typing the reference
letter (a, b, c, ...). Arrow keys may also work. You activate the current
selection from the menu by typing the enter key.
```

If you booted from a floppy, you may now remove the disk.

Thank you for using NetBSD!

```
*****
* NetBSD-1.5 Install System *
* *
*>a: Install NetBSD to hard disk *
* b: Upgrade NetBSD on a hard disk *
* c: Re-install sets or install additional sets *
* d: Reboot the computer *
* e: Utility menu *
* x: Exit install system *
*****
```

```
You have chosen to install NetBSD on your hard disk. This will change
information on your hard disk. You should have made a full backup
before this procedure! This procedure will do the following things:
```

- a) Partition your hard disk
- b) Create new BSD file systems
- c) Load and install distribution sets

(After you enter the partition information but before your disk is
changed, you will have the opportunity to quit this procedure.)
Shall we continue?

```
*****
* yes or no? *
* *
*>a: No *
* b: Yes *
*****
```

- Vorbereiten des Mediums (Partitionieren und Formatieren)

```

Edit your DOS partition table. The highlighted partition is the currently
active partition. The partition table currently looks like:

Total disksize 6281856 sec.

start(sec) Size(sec) End(sec) Kind
-----
0: 63      2088516   2088579   DOS FAT16, >32MB
1: 2088579 4193277   6281856   NetBSD
2:
3:
      unused
      unused

*****
* Choose your partition *
*
*>a: Edit partition 0 *
* b: Edit partition 1 *
* c: Edit partition 2 *
* d: Edit partition 3 *
* e: Reselect size specification *
* x: Exit *
*****

```

Partitionieren

```

We now have your BSD-disklabel partitions as (Size and Offset in MB):

Size  Offset  End  FStype Bsize Fsize Mount point
-----
a: 212   1019   1231  4.2BSD 8192  1024  /
b: 384   1232   1616  swap
c: 2047  1019   3066  unused
d: 3067  0      3066  unused
e: 1449  1617   3066  4.2BSD 8192  1024  /usr

*****
* Partitions ok? *
*
*>a: Change a partition *
* b: Partitions are ok *
*****

```

Slices einrichten

- Installation des Betriebssystems via FTP, HTTP, CD-ROM, Floppies, lokales Dateisystem

```

The following is the list of distribution sets that will be used.

Distribution set  Use?
-----
Generic Kernel:  Yes  +*****+
Base             :  Yes  * Selection toggles inclusion *
System (/etc)   :  Yes  *
Compiler        :  Yes  *>a: Kernel
Games           :  Yes  * b: Base
Manuals         :  Yes  * c: System (/etc)
Miscellaneous   :  Yes  * d: Compiler Tools
Text tools      :  Yes  * e: Games
X11 clients     :  Yes  * f: Online Manual Pages
X11 fonts       :  Yes  * g: Miscellaneous
X11 servers     :  Yes  * h: Text Processing Tools
X11 contrib     :  Yes  * i: X11 base and clients
X programming   :  Yes  * j: X11 fonts
X11 misc        :  Yes  * k: X11 servers
                * l: X contrib clients
                * m: X11 programming
                * n: X11 misc
                * x: Exit
                +*****+

```

Auswahl der Basis-Pakete

```

Your disk is now ready for installing the kernel and the distribution sets.
As noted in your INSTALL notes, you have several options. For ftp or nfs,
you must be connected to a network with access to the proper machines. If
you are not ready to complete the installation at this time, you may select
"none" and you will be returned to the main menu. When you are ready at a
later time, you may select "upgrade" from the main menu to complete the
installation.

*****
* Select medium *
*               *
*>a: ftp
* b: nfs
* c: cdrom
* d: floppy
* e: unmounted fs
* f: local dir
* g: none
*****

```

Auswahl des Installationsmediums

- Installation des Basis-Systems abschliessen und Freude haben. =:-)

```
The extraction of the selected sets for NetBSD-1.5 is complete. The system
is now able to boot from the selected harddisk. To complete the
installation, sysinst will give you the opportunity to configure some
essential things first.

*****
* Hit enter to continue *
*                               *
*>a:  ok                          *
*****
```

Basis-Installation abgeschlossen

- Installation der pkgsrc-Sammlung
- Installation zusätzlicher Software aus pkgsrc.

## Vorzüge von NetBSD

- Portabler und sauberer Code
- Frei verfügbar samt Quellcode unter der BSD-Lizenz
- Hohe Stabilität
- Wenig Sicherheitslöcher
- Einheitliche Bedienung auf allen unterstützten Plattformen
- Einfache Installation von Software dank pkgsrc
- 'Of course it runs NetBSD!' (52 unterstützte Architekturen!)

## Features

- Einfache Installation von zusätzlicher Software über Packages oder aus dem Source-Code mittels pkgsrc-Sammlung
- Packet Filter, IPv6 und IPsec im Kernel
- Diverse Netzwerkprotokolle (IPv4, IPv6, AppleTalk, ...)
- Diverse Filesysteme (ext2fs, AmigaFS, ISO9660, FAT16/32, NTFS, ...)
- Emulation anderer Betriebssysteme (Linux, FreeBSD, IRIX, SunOS, und viele andere mehr) Abhängig von der Hardware-Plattform
- Hervorragende Dokumentation in deutsch und englisch



## Aufbau des Dateisystems von NetBSD

|                        |   |
|------------------------|---|
| /                      | Hier ist der Kernel (netbsd)                            |
| /bin und /sbin         | Binaries des Basissystems                               |
| /etc                   | Konfigurationsdateien des Basis-Systems                 |
| /home                  | Homedirs der User<br>(meist ein Symlink nach /usr/home) |
| /root                  | Homedir von root (Superuser)                            |
| /tmp                   | Temporäre Dateien                                       |
| /usr/bin und /usr/sbin | Binaries des Basissystems                               |
| /usr/home              | Homedirs der User                                       |
| /usr/local             | Selbstcompilierte Software (nicht aus pkgsrc)           |
| /usr/pkg/etc           | Konfigurationsdateien für Software aus pkgsrc           |
| /usr/pkgsrc            | pkgsrc-Sammlung   |
| /usr/pkgsrc            | Software installiert aus pkgsrc                         |
| /usr/src/              | Sourcen des Systems und Welt                            |
| /usr/src/sys           | Sourcen des Kernels                                     |
| /var                   | Logfiles, Package-Datenbanken, ...                      |

/, /var und /usr sollten nach Möglichkeit separate Slices sein.

|      |                |
|------|----------------|
| /    | 200 MByte      |
| /var | 250 MByte      |
| /usr | Der ganze Rest |

Allenfalls sollte man bei Multiuser-Systemen /home auf ein separates Slice legen.

## Die Package-Sammlung pkgsrc

- Downloaden und entpacken von pkgsrc.tar.gz nach /usr

- cd /usr/pkgsrc

```
root@brick:/home/venty> cd /usr/pkgsrc/
```

```
root@brick:/usr/pkgsrc> ls
```

```
.cvsignore      chat            graphics       parallel
CVS             comms          ham            pkglocate
INDEX           converters    inputmethod   pkgtools
Makefile        corba          japanese      print
Packages.txt    cross         lang          security
README          databases     licenses      shells
README-IPv6.html devel         mail          sysutils
README-all.html distfiles      math          templates
README.html     doc           mbone         textproc
archivers       editors        meta-pkgs     time
audio           emulators     misc          wm
benchmarks      finance       mk            www
biology         fonts         net           x11
cad             games         news
```

```
root@brick:/usr/pkgsrc/editors> ls
```

```
CVS             ex             manedit        ted-da         vim-gtk
Makefile        gbib          matlab-mode    ted-de         vim-gtk2
README.html     gconf-editor  mg2a          ted-en-gb     vim-kde
TeXmacs        gedit         mined          ted-en-us     vim-motif
abiword         gice          mule          ted-es         vim-share
beav           gnotepad     mule-ucs      ted-fr         vim-xaw
beaver         gnuserv      nano          ted-it         wily
biew           hexedit       ne            ted-nl         xcoral
bvi            hnb          nedit         ted-no         xemacs
ce             jde           ng            ted-pl         xemacs-
current
ce-doc          jed           nvi           ted-pt         xemacs-
nox11
ce-x11         joe           nvi-m17n     ted-sv         xemacs-
packages
conglomerate   jove         pico          treetext      xjed
cooledit       kile         sam           uemacs        xvile
easyedit       leim         speedbar      ve            yudit
emacs          leim20       ssam          vigor          zile
emacs-nox11    lpe          tamago        vile
emacs-packages lyx-qt       ted           vilearn
emacs20        lyx-xforms   ted-cs        vim
```

```
root@brick:/usr/pkgsrc/editors> cd joe/
```

```
root@brick:/usr/pkgsrc/editors/joe> ls
```

```
CVS             Makefile      README.html   patches
DESCR          PLIST         distinfo
```

```
root@brick:/usr/pkgsrc/editors/joe> cat DESCR
```

JOE is the professional freeware ASCII text screen editor for UNIX. It makes full use of the power and versatility of UNIX, but lacks the steep learning curve and basic nonsense you have to deal with in every other UNIX editor. JOE has the feel of most IBM PC text editors: The key-sequences are reminiscent of WordStar and Turbo-C. JOE is much more powerful than those editors, however. JOE has all of the features a UNIX user should expect: full use of termcap/terminfo, excellent screen update optimizations (JOE is fully useable at 2400 baud), simple installation, and all of the UNIX-integration features of VI.

- Installation des gewünschten Programmes durch Wechsel in das entsprechende Verzeichnis und ausführen von `make install`
- Die globale Konfigurationsdatei für pkgsrc ist in `/etc/mk.conf`  

```
venty@brick:/etc> cat mk.conf
ACCEPTABLE_LICENSES+=no-profit
MANZ+=yes
USE_STARTTLS=yes
```
- Alternativ zu `mk.conf` können auch bei jedem einzelnen Package die benötigten Optionen angegeben werden.

## Unterschiede zu Linux

- Tools und Utilities sind BSD, nicht GNU
- Kein YaST oder Ähnliches
- Alles ist in Manpages zu finden
- Netzwerkkarten heissen nicht einfach `eth0`, `eth1` etc. sondern haben Namen abhängig vom Typ (z.B. `le0`, `le1`, `de0`, etc...)
- Slices, keine Partitionen
- Standardshell ist die `csh`. `bash` kann aus `/usr/pkgsrc/shells/bash2` nachinstalliert werden
- Bootmessages werden in `/var/run/dmesg.boot` gespeichert
- Kernel wird über eine Textdatei konfiguriert
- Packetfilter `ipf`
- BSD-Lizenz

## Links

- NetBSD Webseite (Deutsch und Englisch)  
<http://www.netbsd.org/de/>
- NetBSD downloaden  
<http://www.netbsd.org/mirrors/>
- ISO-Images von NetBSD  
<http://www.netbsd.org/mirrors/#iso>
- Dokusammlung (Englisch)  
<http://www.netbsd.org/de/Documentation/>
- NetBSD Handbuch (Deutsch)  
<http://www.lindloff.com/netbsd/handbuchintro.html>
- Das NetBSD-1.6 Buch vom Verlag C&L (Deutsch)  
<http://www.cul.de/netbsd.html>
- Mailinglisten zu NetBSD (Englisch)  
<http://www.netbsd.org/de/MailingLists/>
- Newsgroups (Deutsch)  
de.comp.os.bsd (Für alle BSD-Derivate)
- Newsgroups (Englisch)
  - comp.unix.bsd.netbsd.announce
  - comp.unix.bsd.netbsd.misc
- BSD-Google
  - <http://www.google.com/bsd>

## Rechts