

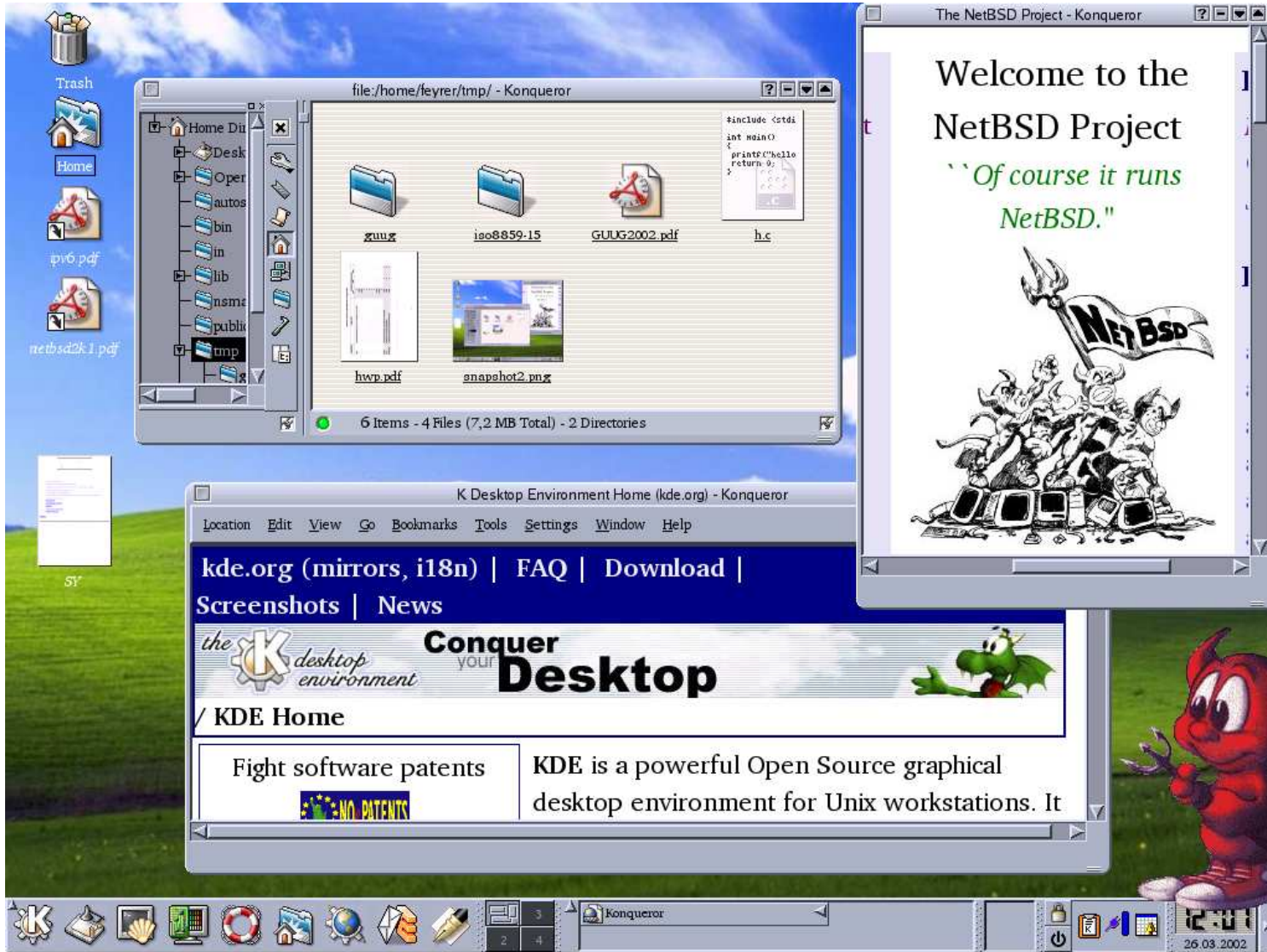


Status Report Summer/Fall 2004

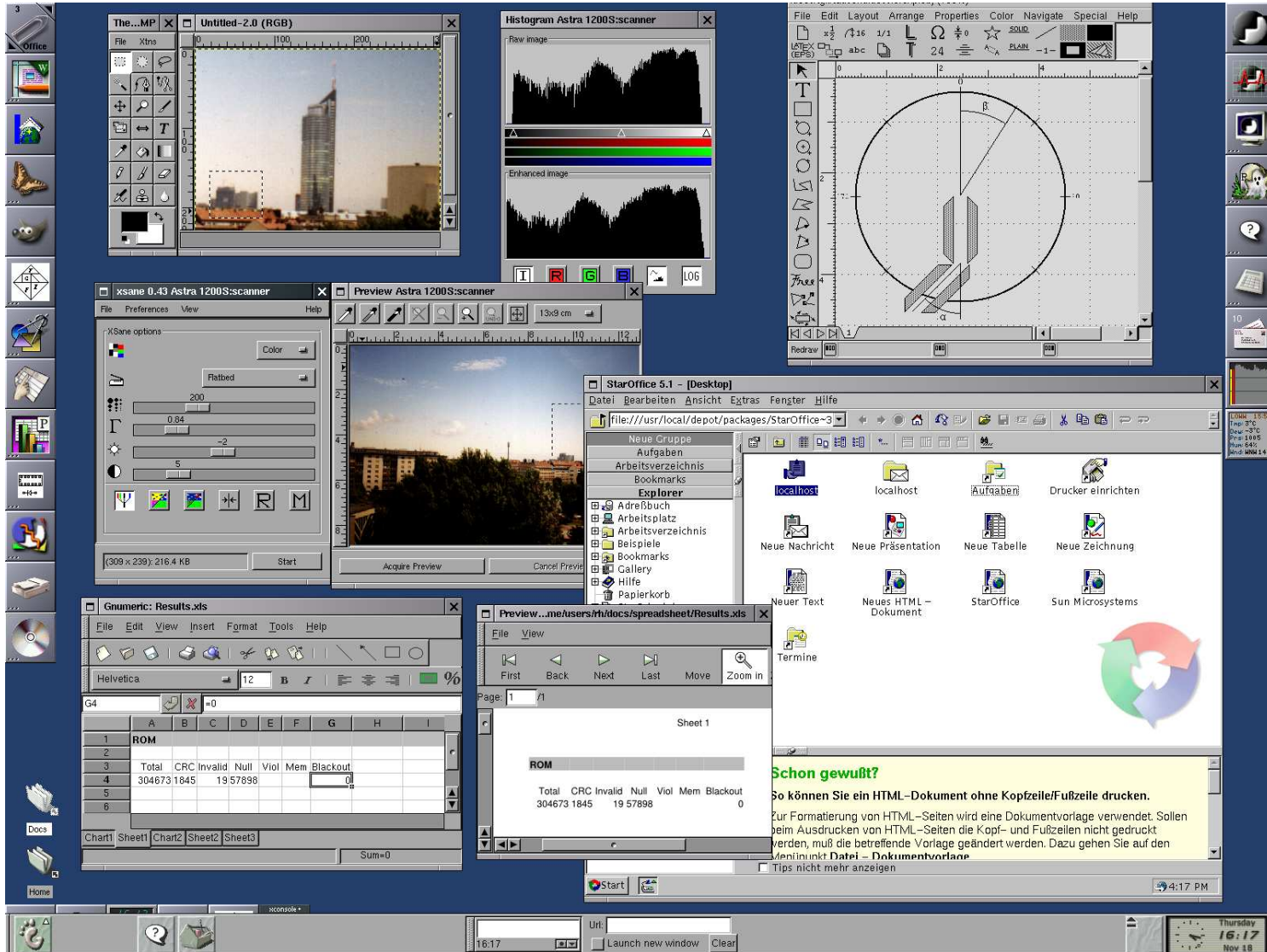
Hubert Feyrer <hubertf@NetBSD.org>

What does NetBSD look like?

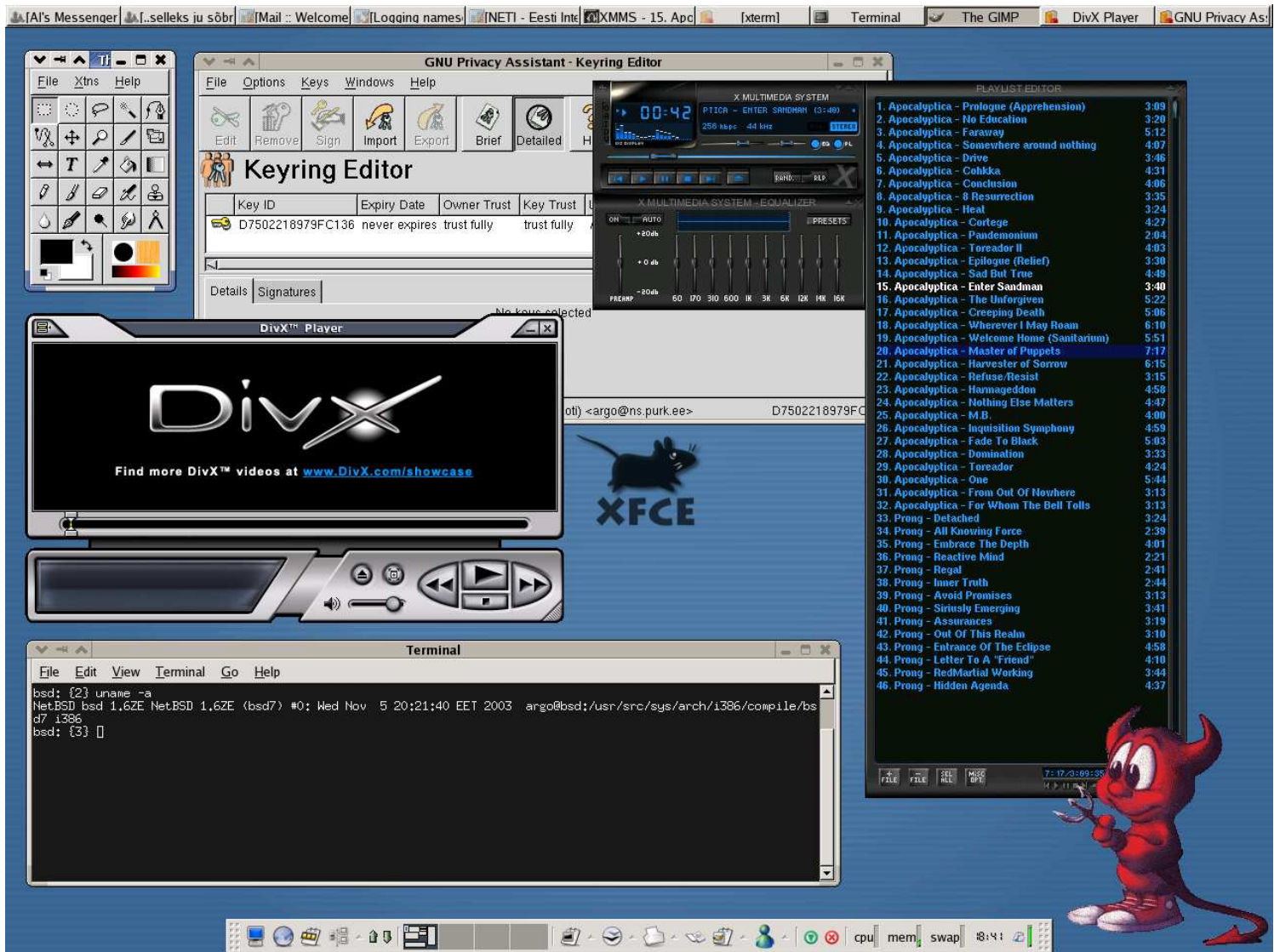
NetBSD looks like KDE



NetBSD looks like GNOME



NetBSD looks like Xfce



So what is NetBSD?

NetBSD is ...

- a general purpose Operating System
- Unix/Linux-compatible
- free
- secure
- highly portable
- hype-free :)

NetBSD runs on Your Hardware

- for embedded systems: SH3/4/5, PowerPC, ARM/StrongARM, Xscale, MIPS
- for handheld systems: HP Jornada, Compaq Cassiopeia etc. with hpcarm, hpcsh and hpcmips
- for workstations: i386, sparc, amd64, etc.
- for servers systems : sparc, sparc64, alpha, x86, AMD64/Opteron

Total:

- 54 Platforms
- 14 different CPUs

NetBSD has all Your Software

- Desktop: Mozilla, Open Office, GNOME, KDE, ...
- Servers: Apache, MySQL, Samba, Perl, PHP, ...
- Programming: C, C++, C#, Fortran, perl, python, ...

Total:

- More than 5.700 3rd party packages available
- Easy installation either from source or via precompiled binary
- Proper dependency handling

History

History: The Beginning

- Descendant of AT&T Unix
- Based on 4.4BSD code by UCB
- Small intermezzo: 386BSD & Patchkit
- NetBSD founded as own project in 1993
- Primary goal: multi platform & portability

History: Past Releases

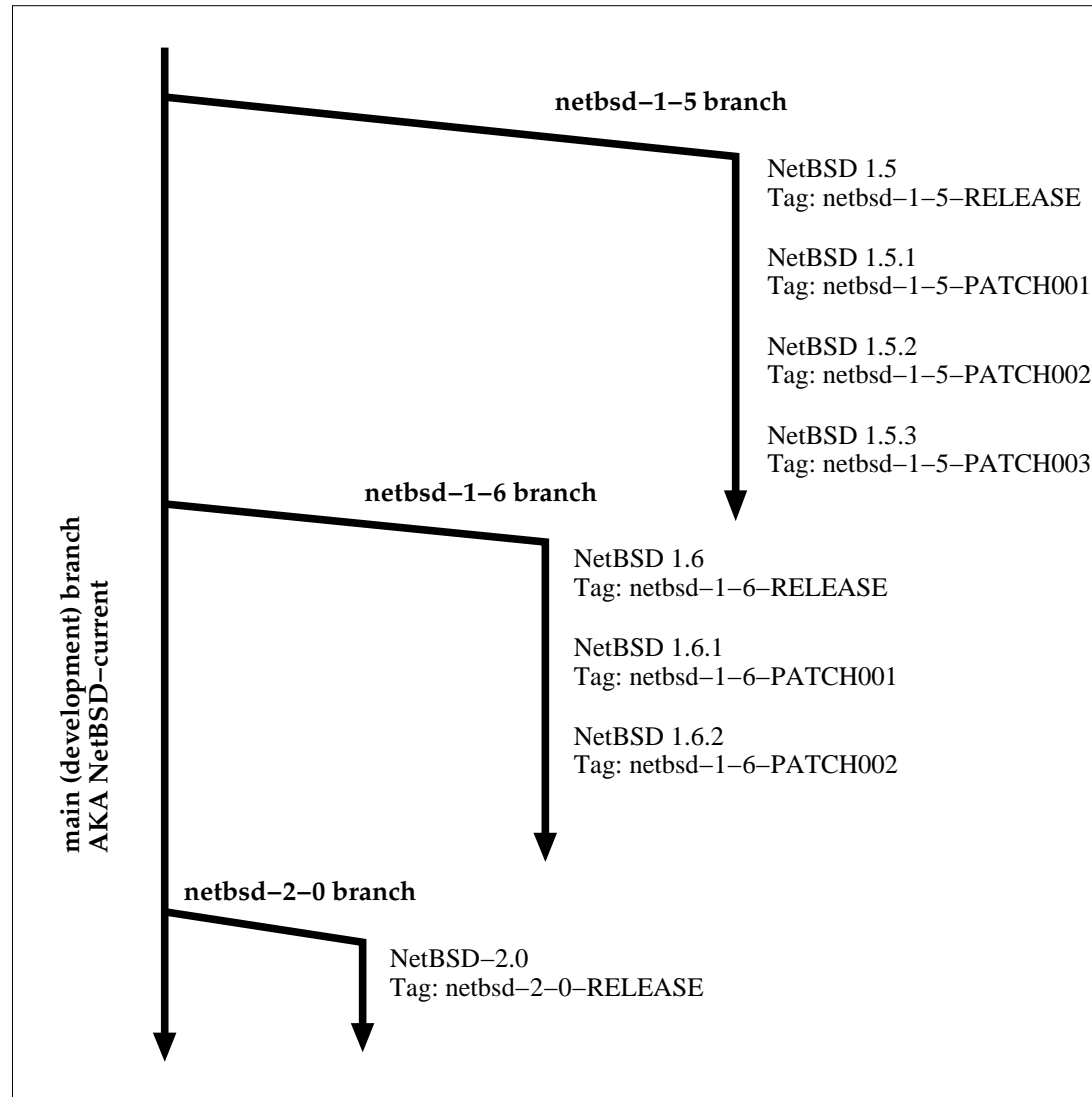
- 0.8: First NetBSD release (Apr 19th 1993)
- ...
- 1.0: Major release: 4.4BSD merged (Nov 1994)
- ...
- 1.6: Major release (Sep 2002)
- 1.6.1: Patch release (Apr 2003)
- 1.6.2: Patch release (Mar 2004)
- 2.0: Major release (est. Sep 2004)

History: Present and Future Releases

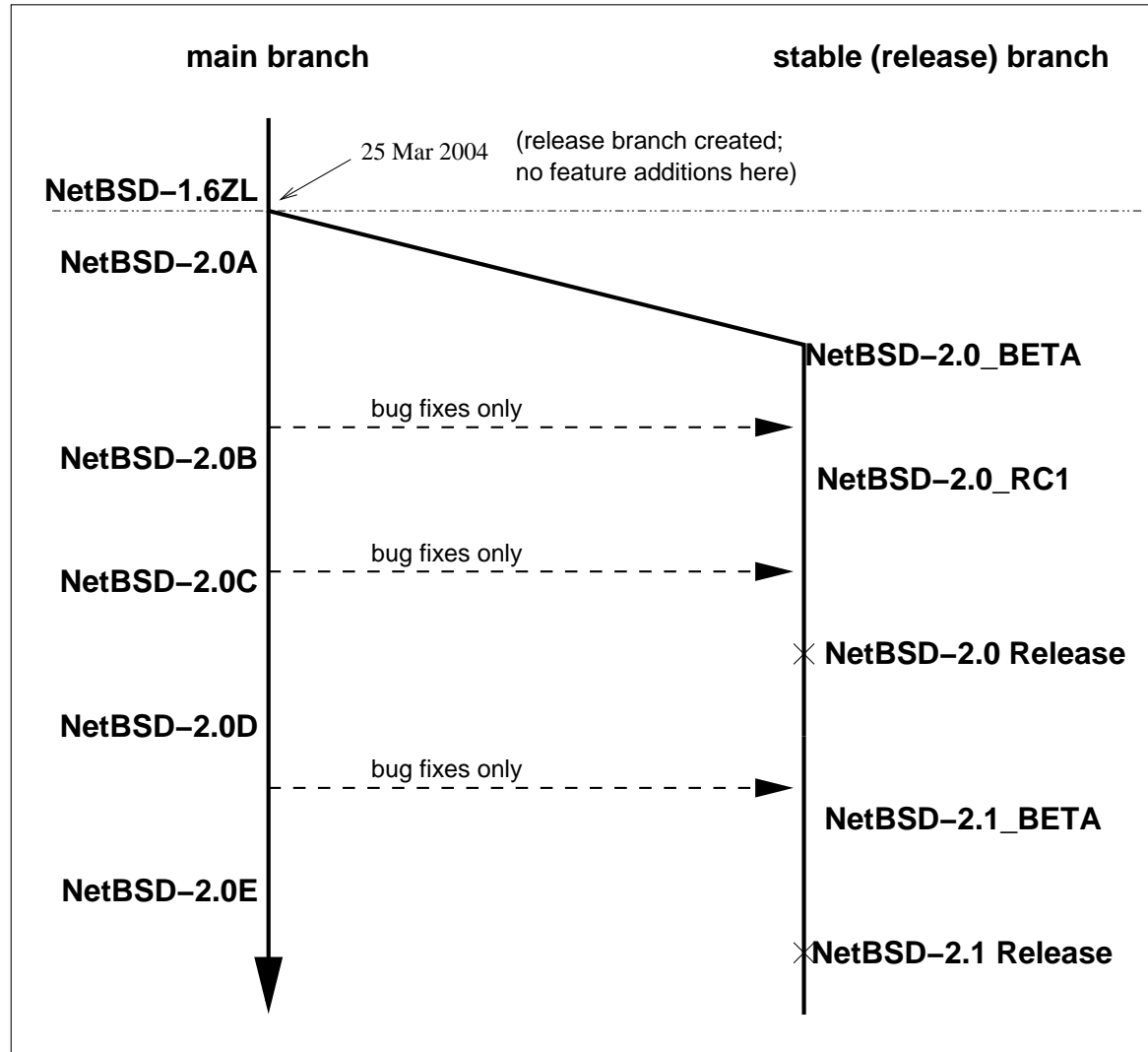
- 2.0: Major release (est. Sep 2004)
- 2.1: Patch release (est. summer 2005)
- 2.2: Patch release (est. spring 2006)
- ...
- 3.0: Major release
- ...

Development Model

Development Model (1/2)

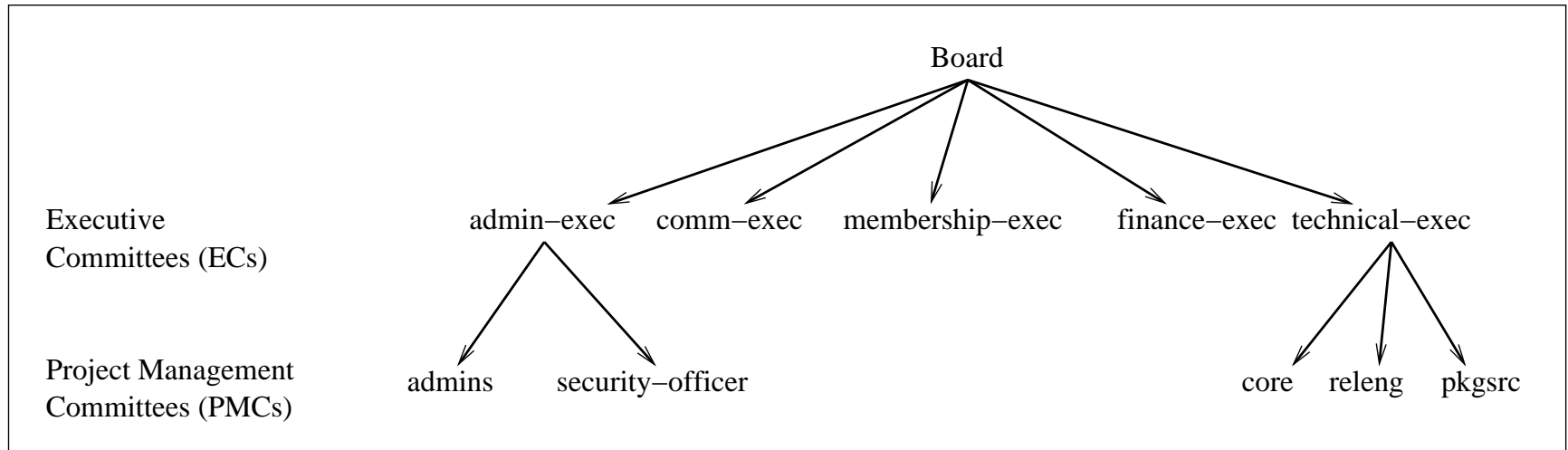


Development Model (2/2)



Project Structure

The NetBSD Foundation (TNF)



- **Board of Directors: Management**
- **Executive Committees (ECs):** small groups to report from PMCs to board
- **Project Management Committees (PMCs):** groups managing various areas

What does TNF do?

- Non profit organization
- Tax exempt in the US – 501(c)(3) status
- Legal entity that owns the “NetBSD” and “pkgsrc” trademarks
- Legal entity that owns the TNF-copyrighted code
- Tracks code ownership via Problem Report numbers, CVS Commit logs and Copyright headers
- Members of The NetBSD Foundation: developers

New Features in NetBSD 2.0

New Features: Buzzword Bingo!

Areas:

- Hardware
- Storage
- Kernel-internals
- Packages System
- Performance Tuning
- System Building
- Security
- Miscellaneous

New Features: Hardware

- amd64 for >2 years, with real 64-Bit & SMP
- HPPA (hp700) Port slowly progressing
- Support for Super-H SH-5 CPU added
- IBM RS/6000 40P platform (prep) and MPC 601 (powerpc)
- IDE driver split per chipset
- IEEE 802.11 infrastructure for access points
- Support for RAID-controller, wireless-cards, GBit-ethernet
- T CPA driver under development
- Patchkit for Firewire-support available

New Features: Storage

- File systems: Apple UFS, UFS2
- SMB filesystem (mount -t `\\server\share /mnt`)
- Crypto Disk: `cgd(4)`
- Volume Management: Vinum
- SATA drivers: Intel i31244, Silicon Image SATALink, ...
- Filesystem Snapshots: `fss(4)`

New Features: Kernel-internals

- SMP for i386, amd64, sparc, powerpc, ...
- Scheduler Activations (m:n-Mapping)
- POSIX-Threads Library -lpthread
- Systrace, allows policies for system calls (Jail++)
- Kernel event notification: kqueue(2)

New Features: Packages System (1/2)

- xpkgwedge is now on by default (no more pkgs in /usr/X11R6!)
- pkgsrc developers met at pkgsrcCon 2004 in Vienna
- We try to keep stable pkgsrc branches now, latest: pkgsrc-2004Q2
- More than 4700 packages in pkgsrc
- SourceForge's pkgsrc-wip has another 800 packages
- Buildlink3 used for most packages, to create a sandbox only with depends installed (using symlinks, no chroot)

New Features: Packages System (2/2)

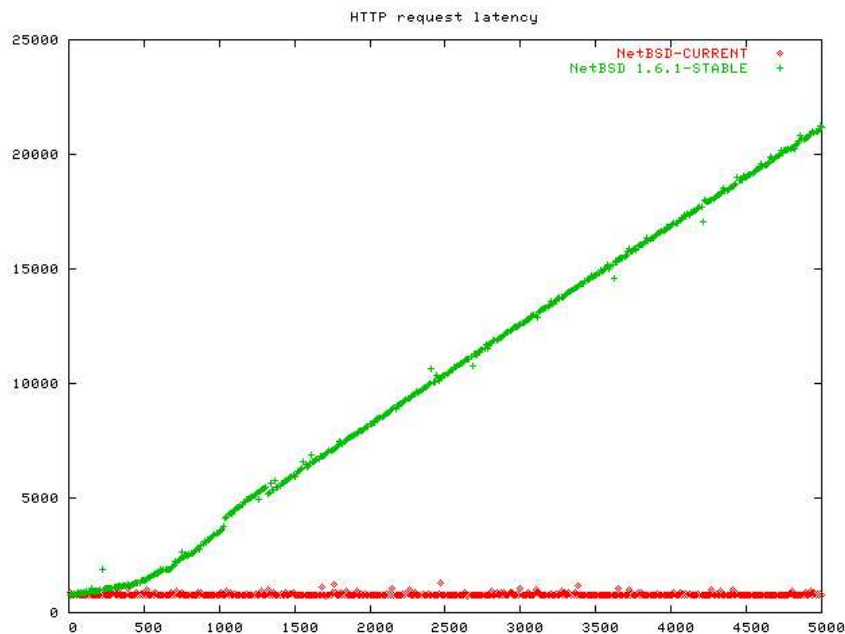
- pkgviews progressing slowly, to keep several versions of a package installed
- pkgsrc works on NetBSD, FreeBSD, OpenBSD, Darwin/MacOS X, Linux, Solaris, Irix, Tru64, HP-UX

New Features: Performance Tuning

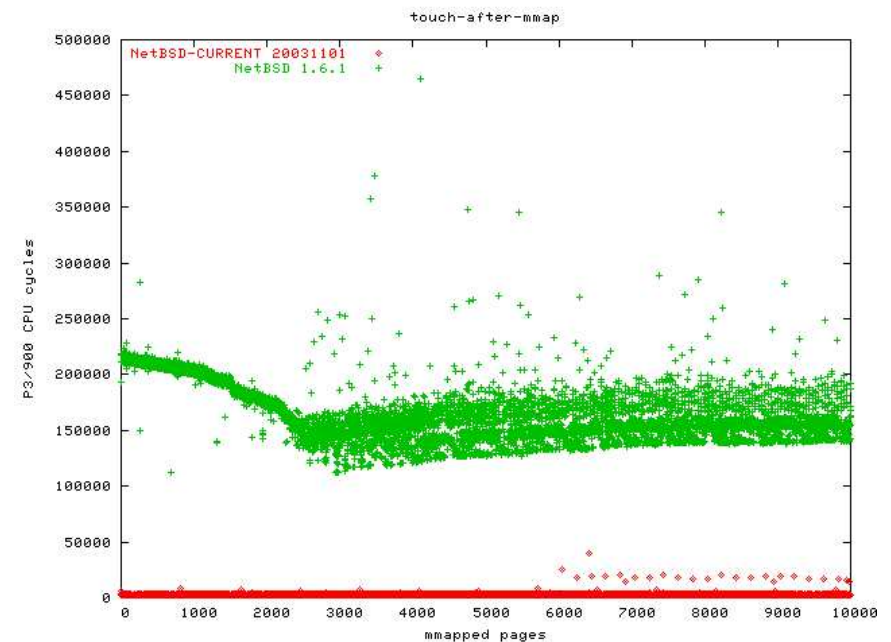
- Performance Counter API: pmc(4)
- Zero Copy TCP (partly)
- TCP/IP checksumming in Hardware
- Kernel event notification: kqueue(2), kevent(2)
- Internet2 Landspeed Record w/ 69.073 Petabit-m/s (4.2GB/s sustained over 30min and 16.000km)

New Features: Performance Tuning

- Performance improvements after fefe's benchmarks:



HTTP request latency



Touching pages after mmap

(Source: <http://bulk.fefe.de/scalability/>)

New Features: System building

- System fully crosscompileable, for all platforms, including kernel, userland and X11
- Daily snapshots: <ftp://releng.netbsd.org/>
- Latest GNU toolchain: gcc 3.3.3, gdb 5.3, binutils 2.14
- Building of X integrated: src/x11 as reachover-infrastructure (no more Imakefiles!)
- This allows crosscompiling X!

New Features: Security

- Still 0 open ports in the default-installation
- Non-Exec Stack und Heap
- Random PID allocation
- "Verified Exec" in-kernel executable checksumming
- Systrace: Enforces system call policies on programs
- Crypto Disk: cgd(4)
- The usual 3rd-party-updates: OpenSSL, OpenSSH, BIND, sendmail, Kerberos, yadda, yadda
- Filtering with IPFilter on bridge(4) is now possible
- OpenCrypto framework

New Features: Misc (1/3)

- Improved Linux-emulation:
for Java, OpenOffice, Flash, Acrobat, ...
- MacOS X emulation: `compat_mach` / `compat_darwin`
- MAKEDEV script now created automatically
- Dynamic sysctl interface
- 3rd Party Software updated: `pppd`, `tcpdump`, `file`, `named`, `gcc`, `binutils` (`as`, `ld` etc.), `postfix`, `sendmail`, `cvs`, `routed`, `texinfo`, `diff`, `grep`, `amd`, `openssh`, `openssl`, `racoon`, `less`, `ipfilter`, `heimdal`, ...
- X server for NetBSD/`sgimips` on Indy

New Features: Misc (2/3)

- pkg_add can now install dependencies (incl. wildcards!) via HTTP
- utmpx support for long Hostnames (also for wtmpx, lastlogx)
- Fully dynamic system (incl. /bin etc), with /rescue for emergencies (2,5MB)
- Installer has improved partition handling, asks for preferred password encryption algorithm and root shell, and is internationalized (available languages: en, de, fr, pl)
- Experimental DRI support for Radeon Mobility 9000

New Features: Misc (3/3)

- Compile time of userland is now in /etc/release
- Replaced a bunch of GPL'd programs: gzip, tar, pax, patch, awk, sort
- wscons now has scrolling support
- Sun GridEngine and Java ported to (native!) NetBSD
- ptm(4) POSIX pty multiplexor device (/dev/ptmx)

New Features: Want more details?

If you want to know more details, see:

- `src/doc/CHANGES`
- <http://mail-index.netbsd.org/source-changes/>
- <http://cvsweb.netbsd.org/>

Upcoming Changes: after 2.0

- statvfs(2) replaces statfs(2)
- Support for SpeedStep and Enhanced SpeedStep for i386
- Booting from RAIDframe mirrors & sysinst support
- GUI support for Darwin / MacOS X applications
- More DRI support
- PCI (and other) driver kernel modules
- PF packet filter integration
- pkg'ized system sets
- Fine-grained Kernel locking

Thanks for Your Interest in NetBSD!

<http://www.NetBSD.org/>

<ftp://ftp.NetBSD.org/>

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