

What is FreeBSD?

Christian Brüffer <brueffer@FreeBSD.org>
The FreeBSD Project

Overview

- What is FreeBSD?
- BSD/FreeBSD History
- Organizational Structure
- License
- Release Engineering
- Main Features

What is FreeBSD?

- NOT yet another Linux distribution
- Open source project
- UNIX-like operating system
- Based on 4.4BSD-Lite

BSD/FreeBSD History

- Original UNIX written 1969 in assembler
- Rewritten in C by Thompson and Richie in 1973
- First UNIX system in Berkeley in 1974
- Ken Thompson writes Pascal system, Bill Joy and Chuck Haley write several utilities and editors
- Berkeley Software Distribution (BSD) released in 1977

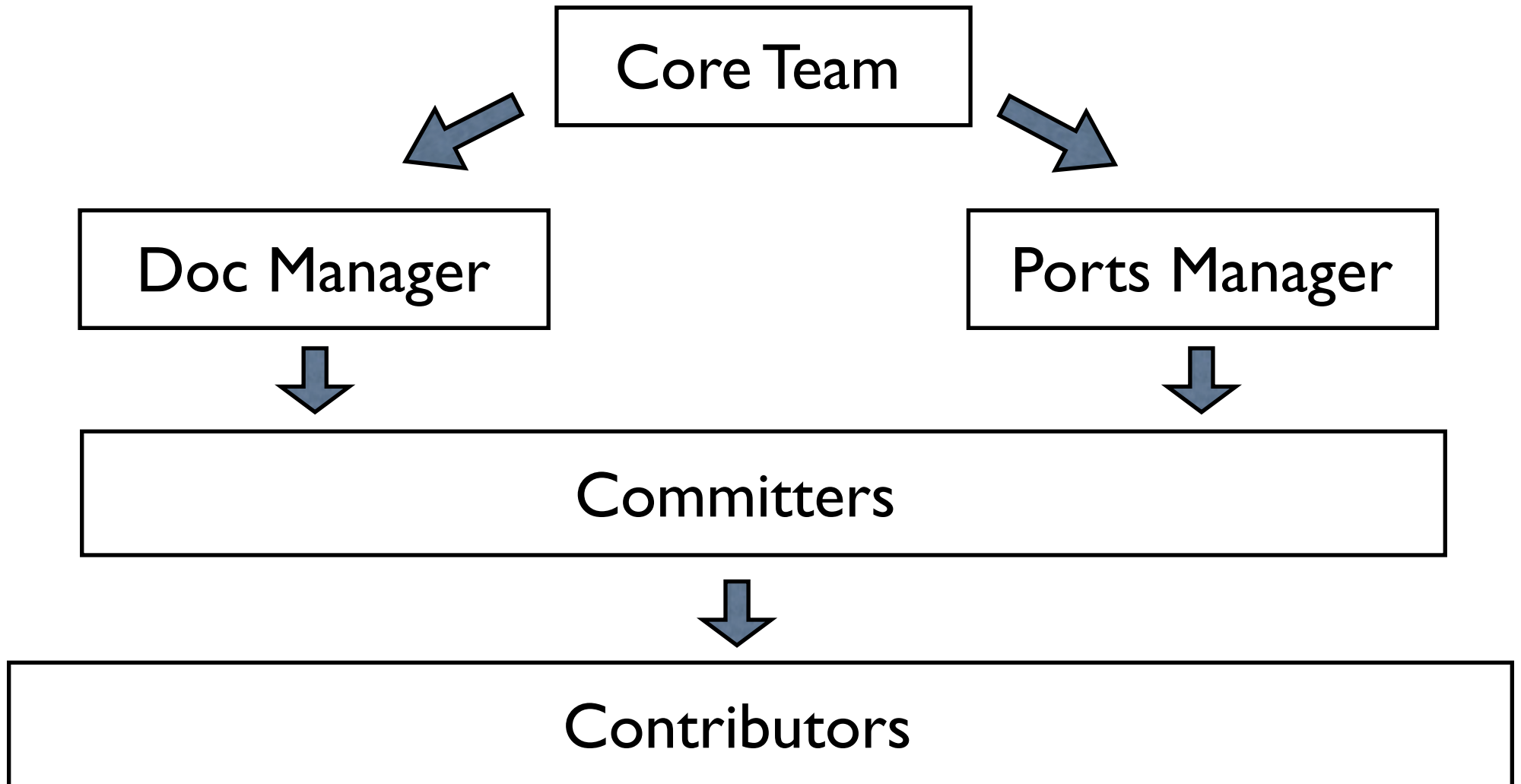
- 2BSD released in 1978, including termcap and everyone's favorite editor, vi ;-)
- Ozalp Babaoglu and Bill Joy port virtual memory (VM) support to V/32, the VAX UNIX
- VM + ported utilities + Pascal = 3BSD, first VAX distribution from Berkeley
- Berkeley gets DARPA contract, Computer Science Research Group (CSRG) founded
- 1980 4BSD, including job control, auto reboot and a 1K block filesystem

- 4.2BSD first official release to include TCP/IP networking, the Fast Filesystem (FFS) and Interprocess Communication (IPC)
- 4.3BSD, Net/1, 4.3BSD-Tahoe, Net/2, 4.3BSD-Reno come and go
- Net/2 release enhanced to 386/BSD by Bill Jolitz
- Group of 386/BSD users form the NetBSD group to further develop the system

- The FreeBSD Project formed in 1993 by Rodney Grimes, Nate Williams and Jordan Hubbard
- Project directed at x86 platform and not so technically inclined users
- 1992, UNIX System Laboratories (USL) sued BSDI and Berkeley over the term UNIX and loss of trade secrets
- Settlement reached in 1994, three files from Net/2 were removed plus a couple of other changes

- 4.4BSD-Lite released, which met the terms of the settlement
- FreeBSD 2.0 released in November 1994
- Subsequent releases made throughout the years
- FreeBSD 5.0 released in January 2003
- 2,5 million sites powered by FreeBSD in May 2004

Organizational Structure



License

- Two clause FreeBSD license
- “Don’t sue us and don’t claim to have written our code”
- Original BSD license with advertising clause
- Both let you distribute modified code in binary form without having to accompany the source code

Release Engineering

- CURRENT branch with latest development sources
- Code that is found stable gets merged into the STABLE branch
- RELEASES from the STABLE branch for maximum stability

Main Features

- Ports and Packages Collection
- Easy System-Updates
- Systemwide `make` Framework
- Securelevels
- Linux Compatibility Layer
- Documentation
- Other Stuff

Ports and Packages

- Framework for building applications from source
- Complete handling of dependencies
- Config knobs for easy customization
- More than 10000 ports available, e.g. KDE, Gnome, OpenOffice.org, mplayer...
- Possible to use binary packages

Easy System-Updates

- System sources usually updated using cvsup
- Kernel configuration through plain text files
- New system is build by `make buildworld` and `make buildkernel`
- mergemaster takes care of config file updates

Systemwide `make` Framework

- All compiler options and more can be set in a central place, `/etc/make.conf`
- `make.conf` options are automatically used by ports and system source builds

Securelevel

- Five security levels
- Level can be raised by super-user process, it can't be lowered
- Reach from “immutable and append-only flags can't be turned off” to various network related restrictions

Linux Compatibility Layer

- Linux system calls are mapped onto FreeBSD system calls
- Runs most Linux binaries, e.g. Acrobat Reader, Quake3, Oracle, Mathematica...
- Usually no noticeable speed degradation

Documentation

- FreeBSD Handbook, more than 900 pages
- Complete set of manual pages, including commands, drivers, system calls, libc functions...
- Various other articles and handbooks (porters-handbook, architecture handbook...)

Other Stuff

- Jails
- GBDE, transparent filesystem encryption
- MAC framework
- Filesystem snapshots
- Integrated IPsec, firewalls, traffic shaping

Q & A