What is FreeBSD?

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The FreeBSD Project
Overview

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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

Doc Manager

Core Team

Ports Manager

Committers

Contributors
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