Introduction to the FreeBSD Project

Konrad Witaszczyk
def@FreeBSD.org

BSD-PL

May 24, 2018

History

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- ► 1975 - Ken Thompson comes to UC Berkeley and helps to install Version 6 on PDP-11. Bill Joy and other graduate students start improving UNIX.
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FreeBSD is not Linux

2018 - FreeBSD 11.2 and FreeBSD 12.0 will be released.

The FreeBSD Project

Goals

- FreeBSD development;
- Release engineering (including distribution);
- Resolving and reporting security incidents;
- Ports maintenance;
- Package distribution;
- Documentation maintenance.

Project Management

Teams

- Core Team.
- Documentation Engineering Team.
- Port Management Team.

Committers

Commit bits

- src - `base/` and `doc/` changes, managed by core@ (215);
- doc - `base/`, `doc/` and `ports/` documentation changes, managed by doceng@ (57);
- ports - `ports/` changes, managed by ports@ (185).

Statistics collected on 20 May, 2018.

Teams

Release Engineering, Secretaries, Internal Administration

- Accounts Team
- Backup Administrators
- Bugmeisters
- Cluster Administrators
- Core Team Secretary
- DNS Administrators
- Donations Team
- FTP/WWW Mirror Site Coordinators
- Forum Administrators
- GitHub Repository Mirror
- Jenkins Continuous Integration Testing Administrators
- Perforce Repository Administrators
- Phabricator Code Review Administration
- {**Primary, Builders**} **Release Engineering Team**
- Port Management Team Secretary
- Postmaster Team
- SVN Administrators
- **Security Team**
- Security Team Secretary
- Vendor Relations
- Webmaster Team

The FreeBSD Foundation

- Collects donations;
- Funds FreeBSD projects (e.g. AES-CTR and AES-GCM in OpenCrypto, auditdistd, Capsicum);
- Provides Travel Grants;
- Organizes BSD and non-BSD related events;
- Sponsors conferences;
- Promotes TeachBSD;
- Publishes FreeBSD Journal;
- Contacts companies to improve FreeBSD's development;
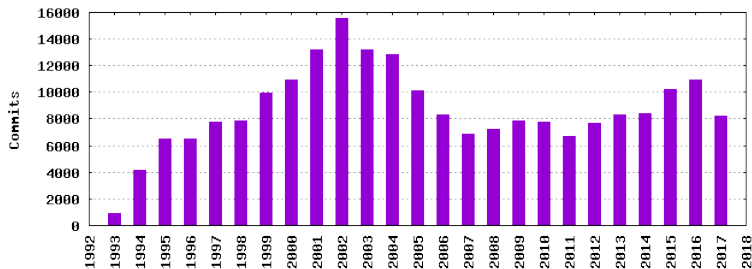- Sponsors and maintains hardware for the FreeBSD's infrastructure.

Community

- ▶ **Repository**
- ▶ Ports
- ▶ Bugzilla
- ▶ Mailing lists
- ▶ Netperf Cluster

- ▶ Jenkins
- ▶ Phabricator
- ▶ Wiki
- ▶ Conferences
- ▶ DevSummits

Repository

Source: https://people.freebsd.org/ eadler/datum/src/activity.html

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Ports

Port Count
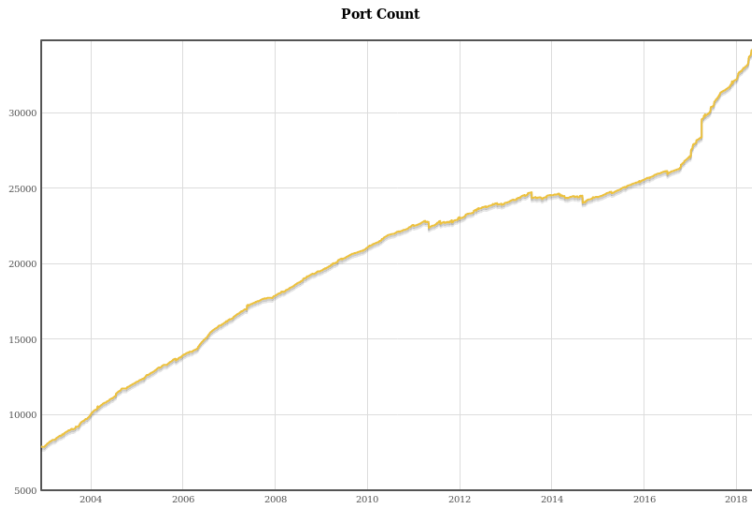
Source: FreshPorts

Ports

Repository	Total	Metapackages		Unique		Total
		Up to date	Outd.			
FreeBSD Ports	27316	16000 75.8%	5111	6138 22.5%		32497
Raspbian Testing	30976	14714 66.2%	7529	8859 28.6%		31443
Debian Unstable	28252	14601 70.7%	6058	7580 26.8%		33296

Source: Repology

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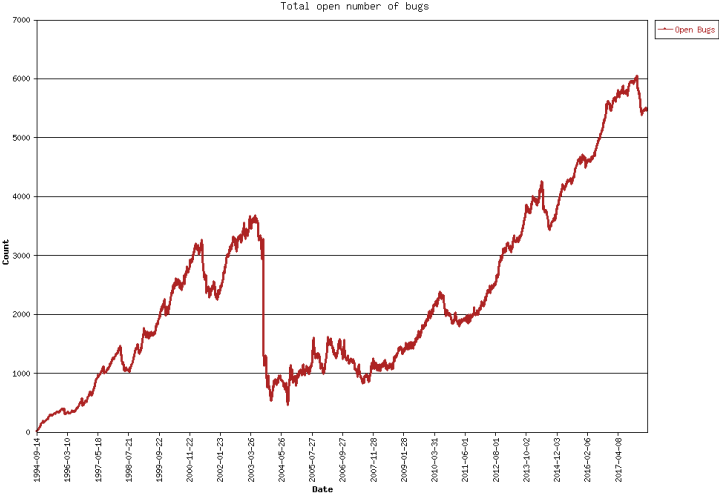
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Bugzilla

Source: bugs.freebsd.org

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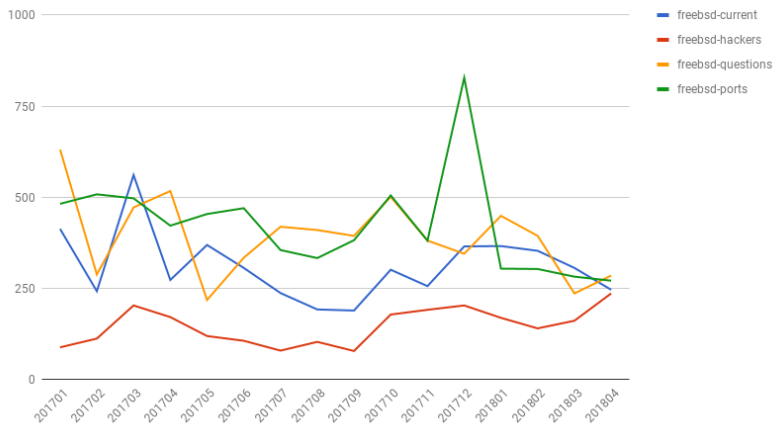- DevSummits

Mailing lists

FreeBSD mailing lists

Source: lists.freebsd.org

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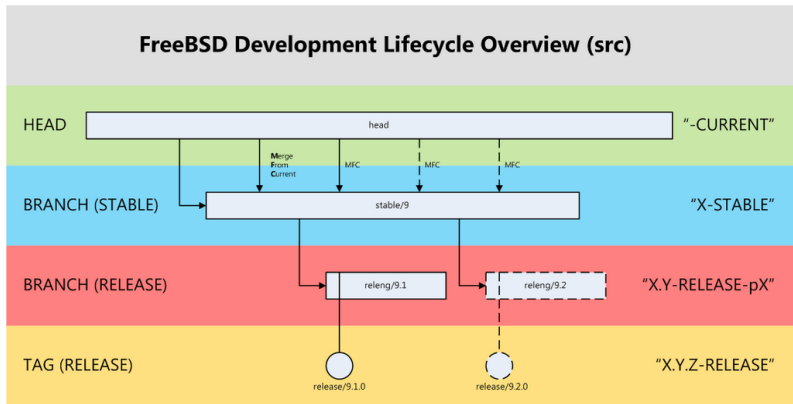
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FreeBSD, the product

Source: @FreeBSDHelp

The FreeBSD support model

Branch	Type	Release Date	Expected EoL
stable/10	n/a	n/a	October 31, 2018
releng/10.4	Normal	October 3, 2017	October 31, 2018
stable/11	n/a	n/a	September 30, 2021
releng/11.1	n/a	July 26, 2017	11.2-RELEASE + 3 months

Source: FreeBSD Security Information

Features

- BSD License;
- amd64, arm, **arm64**, i386, mips, powerpc, **riscv**;
- TCP/IP stack;
- ZFS (pjd);
- Capsicum (pjd, oshogbo);
- jail(8);
- bhyve(8);

- audit(4) (pjd, 0mp);
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- pf(4), ipfw(8) (mkaniewski);
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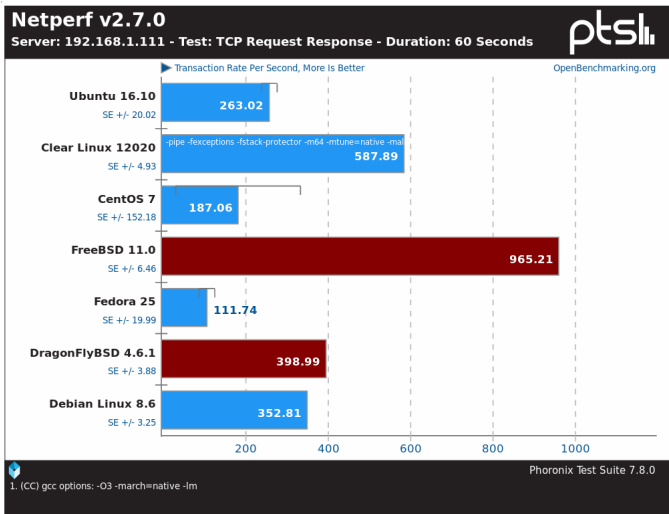
TCP/IP stack

- FreeBSD's TCP/IP stack was always considered as stable, reliable and efficient;

- In 2014 Facebook was looking for developers.
  'Our goal over the next few years is for the Linux kernel network stack to rival or exceed that of FreeBSD'.

- In December 2016 Phoronix made some tests...

TCP/IP stack

Source: Phoronix Test Suite, OpenBenchmarking.org

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Personal computer

Wireless, touchpad, sound, graphics works out of the box on X1 6th Gen.
Source: Lenovo US, FreeBSD Wiki

Industry

Examples of companies using or supporting FreeBSD

- Apple (macOS)
- Intel
- iXsystems (TrueNAS, FreeNAS, TrueOS)
- Juniper Networks (JunOS)
- NetApp
- Netflix
- Panasonic
- Sony (Playstation)
- Trivago
- WhatsApp
- Wheel Systems (Cerb, Fudo, Lynx)

Research

- Swinburne University of Technology (Multipath TCP)
- University of Cambridge (Capsicum, CheriBSD, TeachBSD, TrustedBSD)
- University of Pisa (netmap)

(Possible) future changes

- Port flavors;
- Package flavors in the FreeBSD package repository;
- Base packaging;
- Lua as a scripting language in the boot loader;
- ASLR;
- GNU-free base;
- lld;
- Replacement for rc(8) (OpenRC?);
- Wayland enabled by default.

Summary

- FreeBSD survived 25 years;
- It's developed by the FreeBSD Project, a well organized open source community with support from research institutions and industry;
- Committers develop features keeping utilities minimalistic but still powerful and useful for both personal computer users and companies;
- Code review and style are very important to developers which makes it easier to extend features and eliminate bugs;
- Source changes are well documented;
- Ports provide a wide selection of 3rd party software.

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References

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- Twenty Years of Berkeley Unix, Marshall Kirk McKusick
- A Brief History of FreeBSD, FreeBSD Handbook
- FreeBSD 2.0 Release Notes
- Company History, FreeBSD Mall
- A Narrative History of BSD, Marshall Kirk McKusick
- How the FreeBSD Project Works, Robert Watson

FreeBSD is not dying!

Questions?