Introduction to the FreeBSD Project

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BSD-PL

May 24, 2018
History

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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).

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

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<thead>
<tr>
<th>Repository</th>
<th>Total</th>
<th>Up to date</th>
<th>Outd.</th>
<th>Unique</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>FreeBSD Ports</td>
<td>27316</td>
<td>16000</td>
<td>5111</td>
<td>6138</td>
<td>32497</td>
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<tr>
<td>Raspbian Testing</td>
<td>30976</td>
<td>14714</td>
<td>7529</td>
<td>8859</td>
<td>31443</td>
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<tr>
<td>Debian Unstable</td>
<td>28252</td>
<td>14601</td>
<td>6058</td>
<td>7580</td>
<td>33296</td>
</tr>
</tbody>
</table>

Source: Repology
Community

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Bugzilla

Total open number of bugs

Source: bugs.freebsd.org
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FreeBSD mailing lists

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FreeBSD, the product

Source: @FreeBSDHelp
### The FreeBSD support model

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

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, Omp);
- geli(8) (pjd);
- pf(4), ipfw(8) (mkaniewski);
- netmap(4);
- EKCD (def), GZIO, ZSTDIO, NETDUMP.
- Linux ABI support (linux(4));
- DTrace (dtrace(1));
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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

**Netperf v2.7.0**
Server: 192.168.1.111 - Test: TCP Request Response - Duration: 60 Seconds

<table>
<thead>
<tr>
<th>Operating System</th>
<th>Transaction Rate Per Second</th>
<th>Source Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ubuntu 16.10</td>
<td>263.02</td>
<td>pipe -fexcepts -fstack-protector -m64 -mtune=native -malign-num=8</td>
</tr>
<tr>
<td>Clear Linux 12020</td>
<td>587.89</td>
<td></td>
</tr>
<tr>
<td>CentOS 7</td>
<td>187.06</td>
<td></td>
</tr>
<tr>
<td>FreeBSD 11.0</td>
<td>965.21</td>
<td></td>
</tr>
<tr>
<td>Fedora 25</td>
<td>111.74</td>
<td></td>
</tr>
<tr>
<td>DragonFlyBSD 4.6.1</td>
<td>398.99</td>
<td></td>
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<td>Debian Linux 8.6</td>
<td>352.81</td>
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Source: Phoronix Test Suite, OpenBenchmarking.org
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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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- (UNIX) History & Timeline, The Open Group
- 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?