The BSD
Family of
Operating
Systems

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The BSD Family of Operating Systems

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What is BSD?

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"The two most famous products of Berkeley are LSD and
BSD."
Berkeley Software Distribution (BSD) is a family of Unix-like
operating systems ultimately derived from Versions 5, 6, and 7
AT&T Unix. Most are free and open-source software
distributed under the BSD license.

BSD is not...

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- A Linux distribution
- An upstream version of macOS
- A legacy system

Historical significance

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- BSD can be considered the first free operating system.
- The BSD TCP/IP network stack greatly spread the protocol to be the *de facto* default option for computer internetworking, and is embedded in some form in nearly every other operating system.
- Many utilities considered integral to Unix-like systems, such as `vi` and `sendmail`, originated from BSD.

BSD license

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The BSD license is a *permissive* license that does not require redistributors of a program to also share the source code or push their extensions upstream.

The original BSD license had four clauses. In gist, all software that use BSD code from a particular party must:

- Credit the original authors in the source code.
- Credit the original authors somewhere in the excutable.
- Credit the original authors in all advertisements.
- Not promote itself as being derived from that project.

The last two terms in particular were controversal, and most BSD flavors use a license with only the first two clauses for new code.

The mascot

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The

BSD daemon is a mascot for BSD in general, but is most associated with the FreeBSD project. Its most popular depiction was created by John Lasseter. Other names include "Beastie" and "Chuck."

Gallery

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BSD for Linux users

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- BSD systems are usually completely vertically integrated. The kernel and userspace are maintained by the same team of people.
- Different BSD systems are not likely to be binary-compatible with each other. Something compiled for FreeBSD will not run on OpenBSD, NetBSD, Darwin, etc..
- GPL code tends to be avoided in the base system because it encumbers distribution – any variant of the GPL is more restrictive than even the most stringent BSD variant.

- The Linux distributions most similar to the BSDs are Gentoo, Void, and Alpine, with the former two originally created by BSD contributors.
- In essence, use BSD like you would a minimalist Linux distribution that avoids both Systemd and Glibc.

BSD for macOS users

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- The macOS kernel has a BSD component layer derived from jointly from 4.4BSD and FreeBSD.

- The macOS userspace is mostly derived from FreeBSD.

- Most kernel interfaces added to FreeBSD since the release of macOS 10.0 have not been ported to Darwin.

How is it distributed?

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BSD operating systems distinguish themselves from each other
and Linux by each trying to satsify a particular niche.
Let's do a rapid-fire round of introductions:

FreeBSD

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FreeBSD is the most popular currently-maintained variant of BSD. It aims to be a formidible option for reasonably modern high-performance, mission-critical servers and workstations, but also finds many embedded uses where reliability is a high concern.

- "The power to serve."

NetBSD

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NetBSD is a BSD flavor that focuses upon portability and compatibility with as many different devices as possible. This naturally leads to it being lightweight and cleanly organized.

- "Of course it runs NetBSD"

OpenBSD

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Originally a fork of NetBSD from one of its founding members, OpenBSD is a security-focused system that aims to be compliant with as many standards as possible while remaining lightweight and reasonably compatible with the hardware its developers use. OpenSSH and LibreSSL are both OpenBSD projects.

- "Only two remote holes in the default install, in a heck of a long time!"

That's all, folks!

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Questions and/or answers?