BSD is Dying

A cautionary tale of Sex and Greed
Prologue
What is BSD?
What is UNIX?
What is an Operating System?
What is a Computer?
What is a user?
Who am I?
SysAdmin
networks
firewalls
tweaking
Programmer
(sorta)
THE C PROGRAMMING LANGUAGE

Brian W. Kernighan • Dennis M. Ritchie
Consultant
DixonGroup
Consulting
Employee
Lover
Why am I here?
To talk about why...
... is dying.
What is BSD?
What is UNIX?
What is an Operating System?
What is a Computer?
computer [kuh m-pyoo-ter]

n.

1. A device that computes, especially a programmable electronic machine that performs high-speed mathematical or logical operations or that assembles, stores, correlates, or otherwise processes information.

2. One who computes.
What does a Computer do?
pr0n
REST IN PEACE

Conan 0 Au
poisoned by a rotted kobold corpse

2001

* * *

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Sayonara Conan the Samurai...
How... ?
foundation
kernel +
libraries +
userland applications
= operating system
What is a kernel?
management
processes
memory
peripheral devices
And by extension...
networking
security
disks and file systems
user interfaces
userland applications
pr0n
REST IN PEACE

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2001

* * *

Sayonara Conan the Samurai...
much, much more...
[ pause ]
In summary...
BSD is a UNIX-derived Operating System. Enables users to harness the power of a computer to process information. It uses a kernel to manage processes, memory, and peripheral devices. By extension, we can perform networking, enforce security, read from and write to storage devices, and interface visually to applications like text editors, mail clients, web browsers, multimedia players, and games.

[ catch breath ]
Genesis
In the beginning...
(1960s)
Multiplexed Information and Computing Service
Life was Good (TM)
Life was Good (TM)
commercial failure
Ken Thompson
Space Travel
What is an assembly programmer to do?
Dennis Ritchie
1970
Uniplexed Information and Computing System
number of users
UNIX
text processing
roff
text editor
patents
1973
rewrote UNIX
portable
source code available
1974
1977
Bill Joy
Berkeley Software Distribution
1BSD
Pascal compiler
1978
csh
3BSD
VMUNIX
(Virtual VAX/UNIX)
Computer Systems Research Group
1980
4BSD
job control
delivermail
curses
1981
4.1 BSD
performance on VAX
1983
4.2BSD
TCP/IP
Berkeley Fast File System
Marshall Kirk McKusick
1986
4.3BSD
performance improvements over 4.2BSD
1988
4.3BSD-Tahoe
initially designed for Power 6/32
“Tahoe” platform
some machine-independent code
Net/1
separated networking code from AT&T UNIX code
permissive BSD license
1990
4.3BSD-Reno
MACH virtual memory system
Sun-compatible NFS
moving towards POSIX
1991
Net/2
all AT&T code and utilities were replaced or removed
basis for 386BSD and BSD/386
William Jolitz
386BSD
Exodus
Unix System Laboratories
USL v. BSDI
1-800-ITS UNIX
\( \text{Net}/2 + 6 \text{ files} \)
Dickinson R. Debevoise
complaint narrowed
recent copyrights
possibility of the loss of trade secrets
state court
countersuit
not coincidentally...
USL
Ray Noorda, CEO
1994
settlement
2004
• 4.4BSD-lite to be released containing no disputed files. University to encourage licensees to switch from Net-2.
• University to cease distribution of certain files.
• USL to grant three months grace period to users of disputed files.
• Certain files distributed by University to carry USL copyright notice.
• Certain files distributed by USL to carry University copyright notices.
• USL to permit free distribution of certain files.
• University not to actively assist in legal attempts to challenge USL's rights to certain files.
4.4BSD-Encumbered
(USL license)
4.4BSD-Lite
(BSD license)
Resurrection
Intel x86
Intel x86

Intel Itanium
Intel x86
Intel Itanium
AMD64
Intel x86
Intel Itanium
AMD64
Alpha
Intel x86
Intel Itanium
AMD64
Alpha
Sun UltraSPARC
jail

access control lists

mandatory access controls

historically, strong TCP/IP and SMP performance

dtrace

ZFS
over 50 hardware platforms from a single source tree
forked from NetBSD 1.0
Alpha
Alpha

i386
Alpha
AMD64
i386
Alpha
AMD64
i386
MacPPC
Alpha
AMD64
i386
MacPPC
SGI
Alpha
AMD64
i386
MacPPC
SGI
Sparc
Alpha
AMD64
i386
MacPPC
SGI
Sparc
Sparc64
Alpha
AMD64
i386
MacPPC
SGI
Sparc
Sparc64
VAX
Alpha
AMD64
i386
MacPPC
SGI
Sparc
Sparc64
VAX
Zaurus
new release every 6 months
“secure by default”
full disclosure
full disclosure
audits
full disclosure
audits
privsep & revocation
full disclosure
audits
privsep & revocation
chroot jails
full disclosure
audits
privsep & revocation
chroot jails
random pids
full disclosure
audits
privsep & revocation
chroot jails
random pids
ProPolice
PF
authpf
PF
authpf
CARP
PF
authpf
CARP
pfsyncd
PF
authpf
CARP
pfsyncd
sasyncd
PF
authpf
CARP
pfsyncd
sasyncd
bioctl
PF
authpf
CARP
pfsyncd
sasyncd
bioctrl
hoststated
logical continuation of FreeBSD 4.8
SMP revamp
others
Revelations
Why is BSD dying?
Because IDC says so.
market share <1%
Netcraft confirms these findings.
Last place,
SysAdmin networking test

LOSER
Open-source projects are giving away **free** software.
Free Software == Terrism

BSD... Bad!
Inability to adapt.
Source: MCSE Weekly, Feb. 2003
Loss of talent.
FreeBSD has lost 93% of their core developers.
Not all is lost.
Fortunately, a few small companies still use BSD.
Epilogue
technological challenges
virtualization
DRM
political challenges
blobs
NDAs
closed documentation
diversity
unity
the end