FreeBSD: Not a Linux Distro

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Overview

- What is FreeBSD?
- A Brief History of BSD
- Features
- Futures
Existential Background

- Network Protocol and Security Practitioner
- Twenty year veteran of BSDs and Operating Systems in general
- Coauthor of *The Design and Implementation of the FreeBSD Operating System*
- Member of FreeBSD’s Elected Core Team
- Director of the FreeBSD Foundation
- ACM Queue’s Kode Vicious
What is FreeBSD?

- Complete Operating System
- Tools and Source
- More than 24,000 3rd Party Open Source Packages
- Complete Documentation
- An Open Source Community
Who uses FreeBSD?

- NetApp
- EMC/Isilon
- Dell/KACE
- Panasas
- Apple
- Limelight Networks
- Norse
- Swisscom
- Sentex

- WhatsApp
- Juniper Networks
- Verisign
- Perseus Telecom
- Sony
- Hudson River Trading
- McAfee
- NYI
- Yahoo
Why?

- History of innovation
- Great Tools
- Mature release model
- Documentation
- Business Friendly License
History: 30+ years in 3 minutes

- Chaos reigned
- MULTICS
- UNIX (Bell Labs)
- Berkeley Tools Tapes
  - ex/vi
  - Pascal Compiler
  - Tools for UNIX
- CSRG, DARPA and the Internet
- Removal of last bits of AT&T Code
- Rewrite of all non open source code
- AT&T Lawsuit
- BSD is Free
Flavors and Branch Dates

NetBSD  Broad platforms support (1993)
FreeBSD  Rock Solid Performance (1993)
OpenBSD  Security (1996)
PC-BSD  Desktop (2006)
The FreeBSD Philosophy

- Don’t Sue Us
- Use our code
- Produce a whole system ready for development
Produce a Whole System

- Operating System
- Drivers
- Compilers and associated Tools
- Debugging Tools
- Editors
- Packaging System
- Ready for Coding when Install is Done
Some Recent Features and Innovations

- UFS2
- ZFS
- DTrace
- VNet
- Jails
- LLVM/Clang/LLDB
- Capsicum
- MAC Framework
- netmap/VALE
- Linuxulator
Filesystems

- UFS
  - Traditional Unix Filesystem
  - High Performance
  - Snapshots
  - Journaled Soft Updates

- ZFS
  - Zetabyte Filesystem
  - Volume Manager
  - RAID
  - Fully up to date in FreeBSD
Security Features

- Jails
- MAC Framework
- Capsicum
Tools

- LLVM/Clang
- LLDB
- DTrace
DTrace

- Complete system transparency
- See inside any call or return
- System Calls
- Disk, NFS, Networking subsystems
- DTrace Toolkit
Networking

- IPFW and PF
- Dummynet
- netmap
- VALE
- VXLAN
Up Next

- Scaling
  - Cores
  - Queues
  - NUMA
- ARM64
- Virtualization Features
- MPTCP
- DCTCP
- Secure Boot/UEFI
Where to now?

- Website: www.freebsd.org
- FreeBSD Foundation: www.freebsdfoundation.org
- Mailing Lists
- Forums
- FreeBSD Handbook
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