

Welcome

To Advance through Presentation
Use Page Up and Page Down Keys



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Developers
Conference



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Developing With Darwin

Brett Halle

Manager,
Core OS Engineering

Developing with Darwin OS

- What is Darwin OS?
- Getting details on the technology...
- Where we're going...
- How to get started with real code...



What Is the Darwin OS?



What Is the Darwin OS?

- Open Source distribution of the Mac OS X Server Core OS



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Plus...



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Plus...

- BSD application environment



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And...



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Plus...

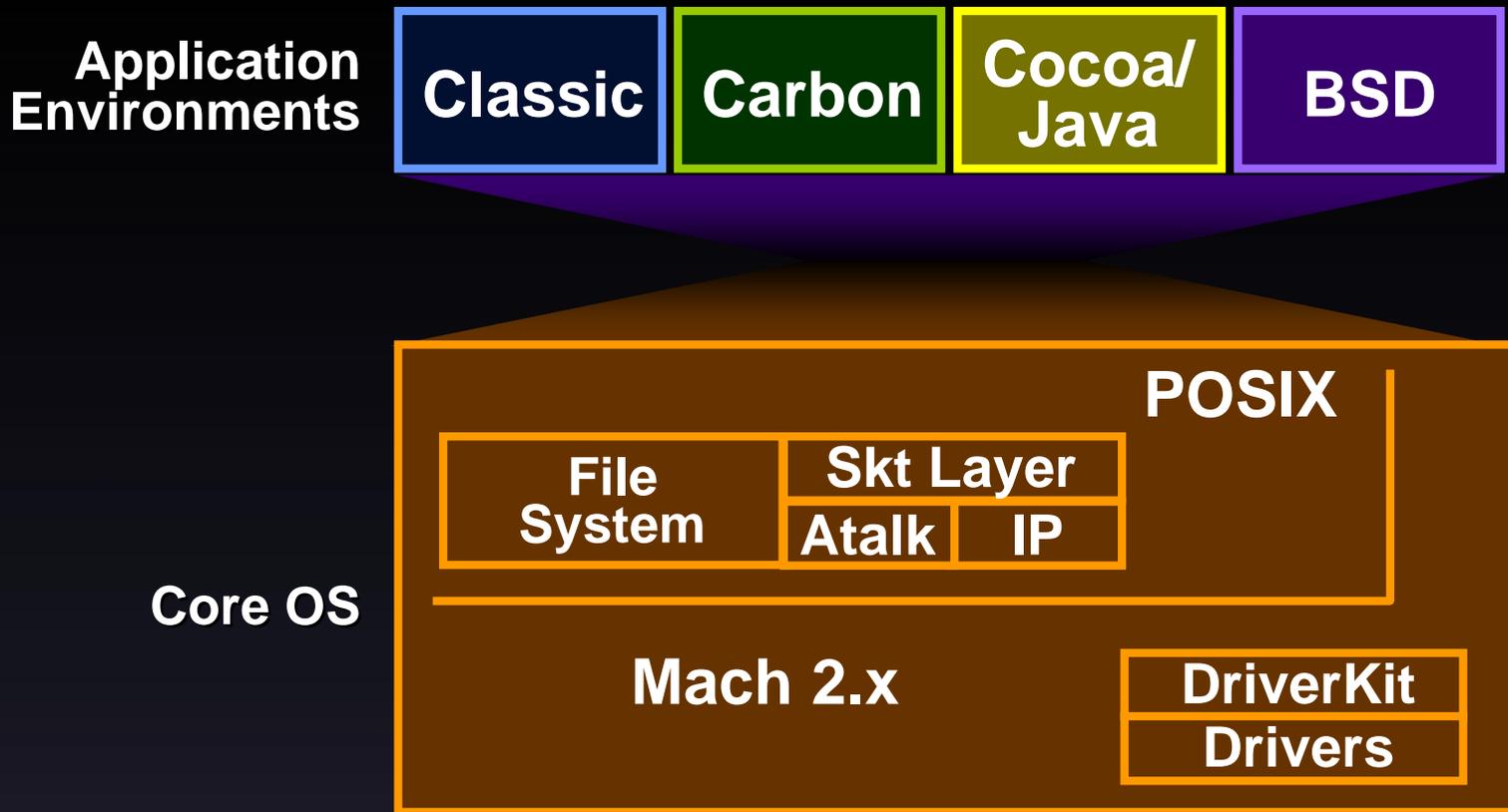
- BSD application environment

And...

- Big pile of tools



Mac OS X Server



Darwin OS

Application
Environments

BSD

Core OS

POSIX

File
System

Skt Layer
Atalk IP

Mach 2.x

DriverKit
Drivers



Roadmap

**Introduction to Open
Source at Apple**

Tape

Core OS Overview

Room A1
Tue., 1:00pm

Mac OS X Kernel

Room A1
Wed., 9:00am

Mac OS X BSD Support

Room A1
Thur., 10:15am



Roadmap

IOKit

Room A1
Thur., 1:00pm

Mac OS X N & C

Room A2
Fri., 9:00am

Mac OS X File System

Room A1
Fri., 2:30pm



So, What's the Plan?

- Darwin OS will sync with Mac OS X Core OS later this year
- Some components are evolving
 - Mach, IOKit, . . .
 - See Core OS sessions for details
- Meanwhile, there's lots you can do . . .





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Diving into Darwin OS

Wilfredo Sánchez
Technical Lead
Darwin Project

Topics

- Why Open Software?
- Why Darwin?
- Apple's role in other projects
- Working with the Darwin OS



Writing an OS Is Hard

- What's in the OS, again?
- Users and developers want a lot of functionality
- It takes a lot of code
- If the code breaks, people get upset



We Don't Have To!

- Mach + BSD provides much of what we need
- It comes with source and is free
- BSD is well designed and tried-and-true
- BSD has an active developer community



Extra Goodies

- Apache
- Standard “Unix” services
- Emacs (or vi)
- Tools
- Perl
- ...



- CoreOSMakefiles
- Csu
- DriverKit
- DriverTools
- Libc
- LibcAT
- Libcompat
- Libcurses
- Libedit
- Libinfo
- Libkvm
- Libm
- Librpcsvc
- Libstreams
- Libtelnet
- Libutil
- Liby
- SoundKit
- adv_cmds
- apache
- architecture
- at_cmds
- autoconf
- automount
- awk
- bash
- basic_cmds
- bc
- bison
- boot
- bootp
- bootstrap_cmds
- bsdmake
- buildtools
- cctools
- cvs
- developer_cmds
- diskdev_cmds
- doc_cmds
- dpkg
- driverLoader
- drvEIDE
- drvEISABus
- drvPExpert
- emacs
- enscript
- file_cmds
- files
- flex
- gawk
- gm4
- gnunmake
- gnutar
- gnuzip
- grep
- groff
- hfs
- isoutil
- kernel
- kernload
- keymaps
- less
- libgpp
- m4
- mail_cmds
- misc_cmds
- ncftp
- netinfo
- network_cmds
- ntp
- objc
- objc4
- patch_cmds
- pb_makefiles
- perl
- project_makefiles
- rsync
- sendmail
- shell_cmds
- sounds
- system_cmds
- system_config
- tcl
- tcp_wrappers
- tcsh
- text_cmds
- usrtemplate
- vi
- volfs
- wget
- yacc
- zlib
- zsh



So Why Do We Need Apple?

- But dude—I can get that stuff for free
- BSD only gives you core functionality



So Why Do We Need Apple?

- We need more stuff:
 - Application tool kits
 - Hardware integration
 - Good user experience
 - Style



History with Open Software

- The NetBSD Foundation, Inc.
- FreeBSD, Inc.
- The Apache Group
- The GNU Project
- Others



Why Darwin?

- Our BSD is different
 - Mach + BSD combination
 - dyld
 - Engineered primarily to support top layers
 - Otherwise “hidden”

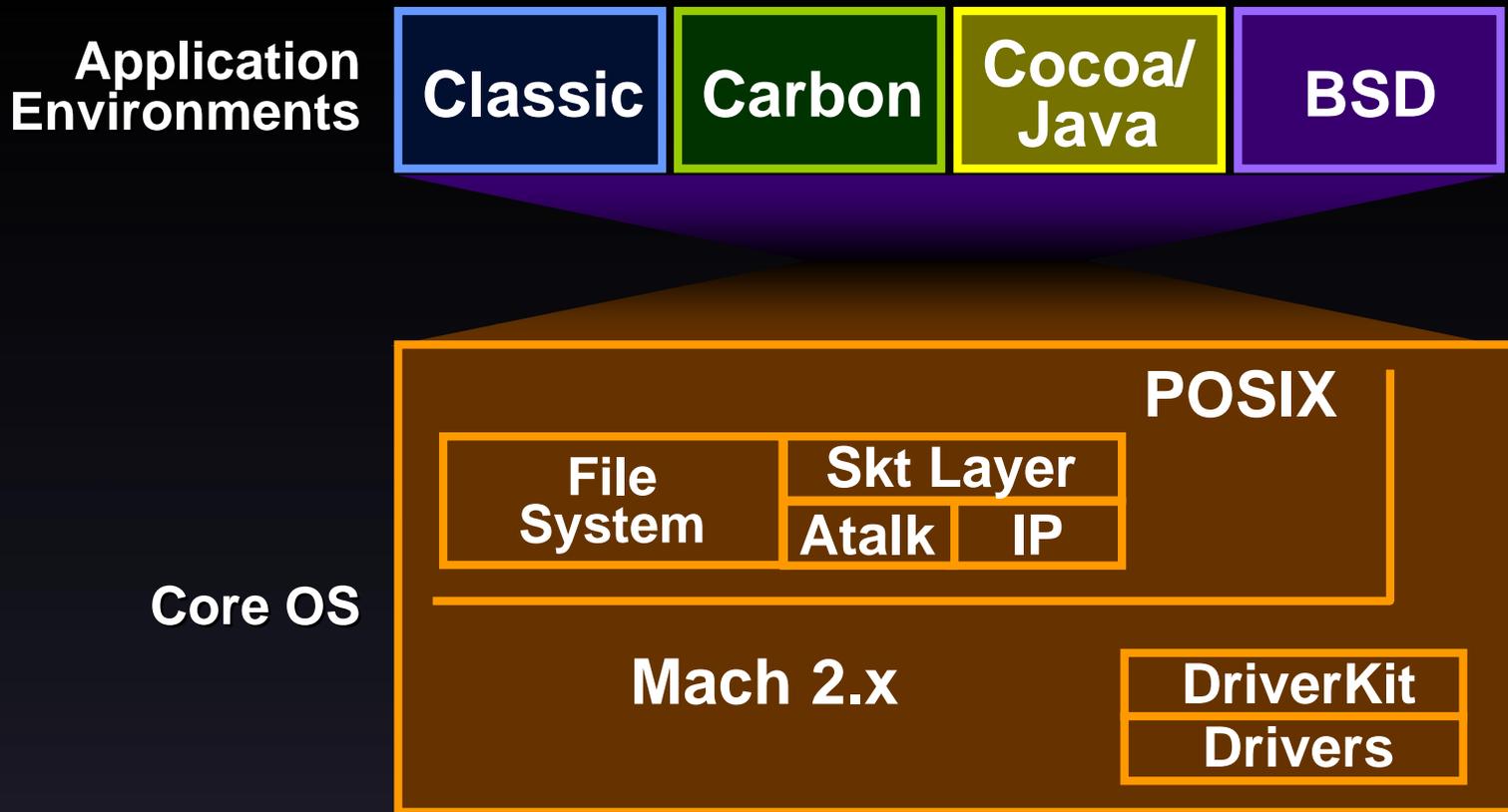


Why Darwin?

- Apple technology
 - HFS+
 - NetInfo
 - AppleTalk
- Covered by Apple Public Source License



What's in Darwin OS?



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Installing Darwin

- Apple System Restore
 - Spews bits to your disk
 - Fixed UFS partition size
 - Rest is HFS +
- You can get ASR, System Disk, and the image file from Apple



The Darwin Packaging System

- Based on the Debian packaging tools
- Reference counting
- Dependency checking





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Demo: Building and Installing Packages

Starring: Klee Dienes

Getting Involved

- Be visible
- Code contributors
- Port maintainers
- Package owners
- Documentation



Some Good Projects

- System installation
- Package installer
- Port GNUStep
- Display system—X Windows
- NetInfo ports
- Device Drivers
- AFS/Arla/Coda



Where We're Headed

- Mach 2.x → Mach 3.0
- DriverKit → IOKit
- FreeBSD 3
 - Kernel update
 - Libraries update



Resources

- @public.lists.apple.com:
 - PublicSource
 - PublicSource-Announce
 - Darwin-Announce
 - Darwin-Development
- www.publicsource.apple.com
- :pserver:user@anoncvs.publicsource.apple.com:/cvs/Darwin





Think different.TM



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