



Mac OS X



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Mac OS X Part 1

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Macintosh Support
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We Will Cover

- Classic Mac OS evolution — Overview
- UNIX evolution — Overview
- How Classic Mac OS & UNIX combine



We Will NOT Cover

- Troubleshooting
- Networking
- File System



Summary



1984 — Classic Mac OS



1969 — UNIX



2000 — Mac OS X



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Macintosh Revolution



Xerox's Palo Alto Research Center (PARC)



Apple studies GUI



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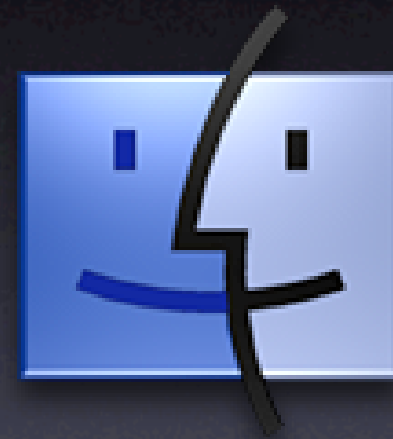
Macintosh Revolution

- Xerox Alto: \$32,000 just to build in 1979.
- Xerox Star: \$16,600 in 1981.
- Apple Lisa: \$10,000 in 1983.
- Apple Macintosh: \$2,500 in 1984.



Macintosh Evolution

- 1984 — System 1
- 1985 — System 2
- 1986 — System 3
- 1987 — System 4
- 1988 — System 6
- 1991 — System 7.0



Need for a New OS

- New Hardware Standards
 - New processor (PowerPC)
 - Expandability (PCI)
 - Better Networking (Ethernet)
 - Storage (CD-ROM, HDD)



Need for a New OS

- New Software Standards
 - Networking (TCP/IP)
 - Graphics (OpenGL)
 - Sharing Data (PDF)
 - Emerging Internet Standards



Need for a New OS

- **Fewer Crashes** (Protected Memory)
- **Memory Management** (Virtual Memory)
- **Simultaneous Programs** (Preemptive Multitasking)
- **Responsiveness** (Multithreading)
- **Speed** (Multiprocessing)



The Copland Fiasco

8 Copland

- Would have been Mac OS 8
- Release dates slipped three times
- Release delayed by two years

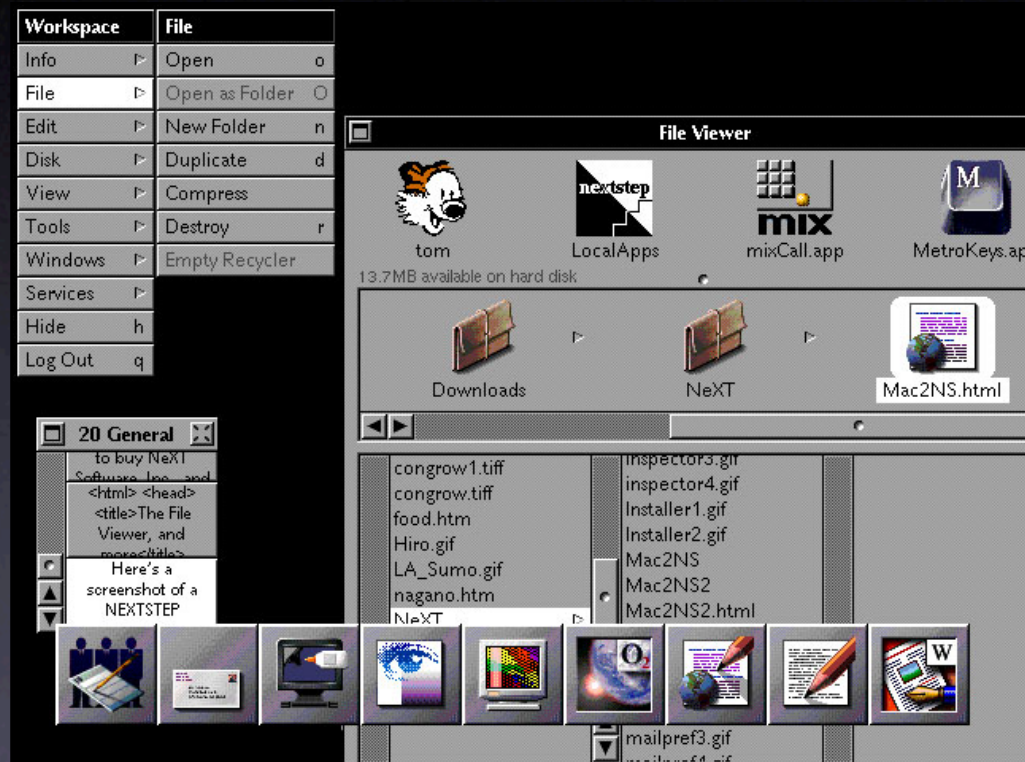
9 Gershwin

- Would have been Mac OS 9
- Never more than a code name



Other Candidates

- ✓ NeXT OS
- Be OS
- Sun OS
- Windows NT



Mac Evolution Con't

- 1997 — Mac OS 8
- 1999 — Mac OS 9
- Increasingly designed to work with Mac OS X
- Booting off Classic is no longer supported



UNIX Evolution

- 1965 — Multics
- 1969 — Bell Labs withdraws from Multics
- 1970 — UNIX
- 1978 — UC Berkeley (BSD)
- 1985 — CMU (Mach)



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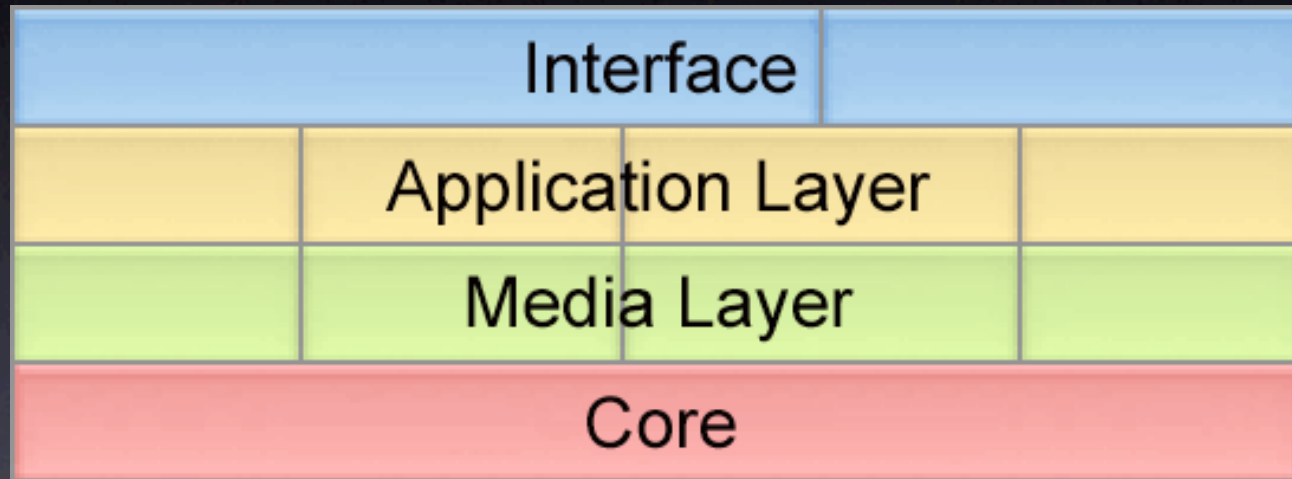


UNIX in Mac OS X

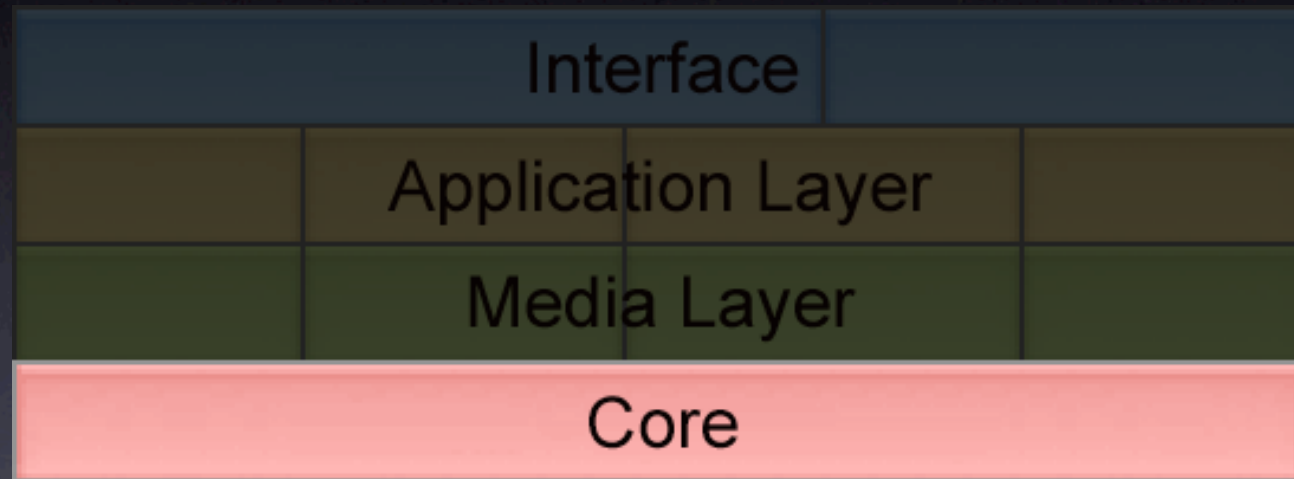
- Processor Scheduling
- Memory Management
- Device Management
- UNIX Compatibility (POSIX)
- Network System
- Open Step



Mac OS X Structure



Core



Core

- Darwin
- Networking
- Internet
- Security



Darwin

- **Memory management** (Protected and Virtual Memory)
- **Simultaneous Programs** (Preemptive Multitasking)
- **Responsiveness** (Multithreading)
- **Peripherals** (I/O Kit)
- **Speed** (Symmetric Multiprocessing)
- **Open Source**



Demo:

Protected Memory

(Stability)



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Demo: Multitasking

(Simultaneous Programs)



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Demo:

Multithreading

(Responsiveness)



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Demo: Peripherals

(True Plug and Play)



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Networking

- Older Mac Servers (AFP)
- Windows Servers (SMB/CIFS)
- UNIX Servers (NFS)
- Network Browsing (Rendezvous)
- Internet File Servers (WebDAV)



Demo:

Mac File Server

(Apple Filing Protocol)



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Demo:

Windows File Server

(Server Message Block)



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Demo: WebDAV

(Web-based Distributed Authoring and Versioning)



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Internet Support

- Web Server (Apache)
- Scripting (Perl)
- Web Applications (Java 2)
- Uses Correct Interface (Multihoming)
- Media Streams (RTP/RTSP)
- Information (LDAP)

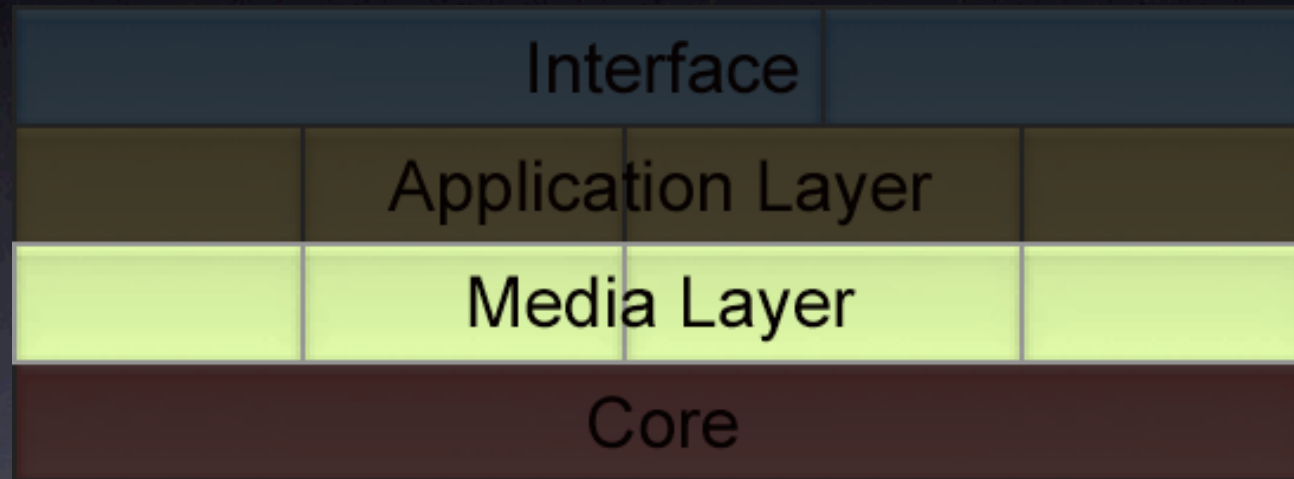


Security

- Authentication (Kerberos)
- Secure Terminal (OpenSSH)
- Web Certificates (OpenSSL)
- Wireless Encryption (WEP)
- Secure Remote Access (VPN)
- Secure Default Configuration



Media Layer



OpenGL

- Open Graphics Library
- Used by graphics-intensive programs
- Platform Agnostic (Windows, Mac OS, UNIX)
- Vendor-Neutral (ATI Cards, NVidia Cards, etc.)
- Simplified Software Development



QuickTime

- **Video** (QuickTime, MPEG-1, -2, -4, AVI, 3GPP, Others)
- **Audio** (AIFF, AU, MIDI, MPEG-3 (.mp3), WAV)
- **Graphics** (BMP, GIF, JPEG, PNG, Others)
- **Streaming Content**



Quartz

- Mac OS X windowing environment
- Based on PDF standard
- Quartz Extreme in Jaguar
 - Ability to save anything as a PDF
 - Takes advantage of hardware acceleration



Demo:

Save as PDF

(Portable Document Format)

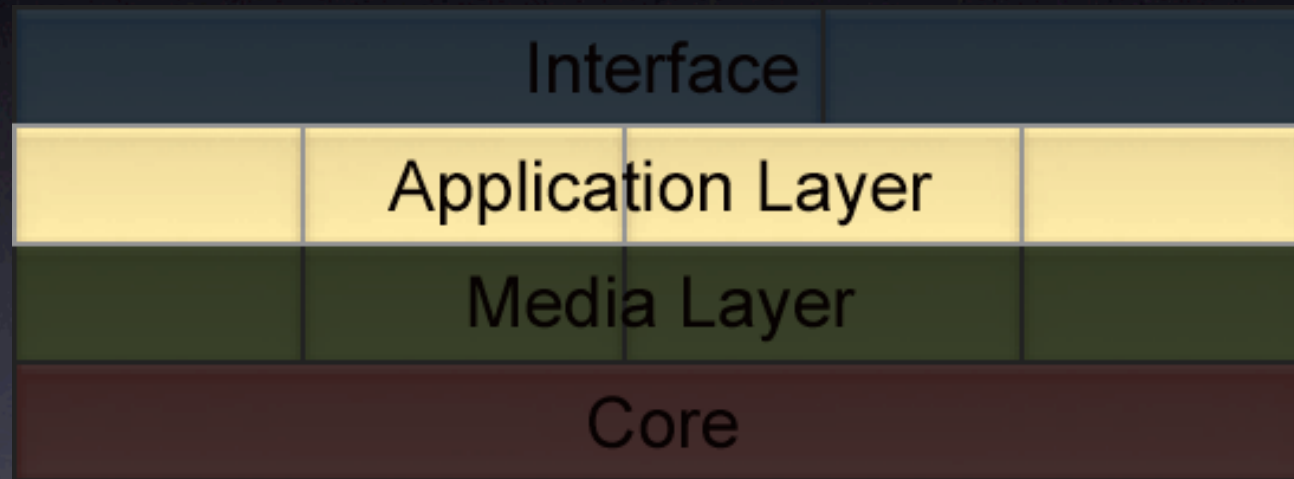


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Application Layer



Classic

- Emulation Environment
- Runs old Mac OS software
- Doesn't use Mac OS X's abilities
- Intended to “Get By” Until Native Apps are Finished



Demo: Classic

(Old Mac Software)



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Carbon

- Old Applications Can be Quickly Ported to Carbon
- Takes advantage of Mac OS X
- Runs on Either Mac OS 8.1 or Later, or Mac OS X
- Meant as a Transition Phase



Java 2

- Java 2 Support Integrated into the OS
- Fast Java 2 Apps
- Java 2 Apps Can Run Like Any Mac OS X Programs
- Cross-Platform Programs



Demo: Java

(Applets run like normal programs)



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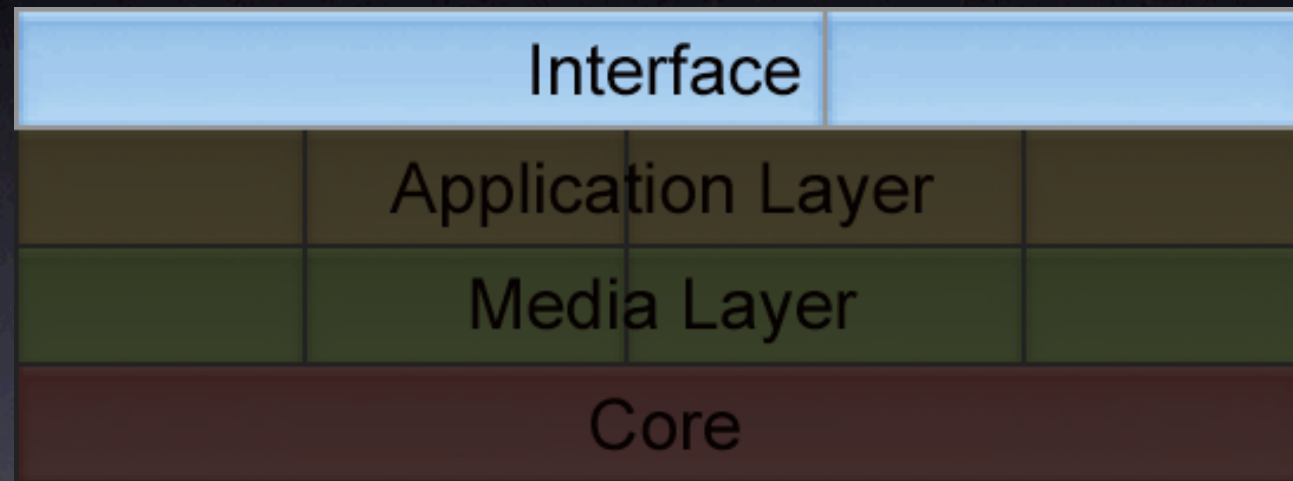


Cocoa

- Mac OS X-Only Applications
- Descended from Open Step
- Rapid Development
- Quickly Bring UNIX Programs to Mac OS X's Interface



Interface



Aqua

- Based on the General Look and Feel of Mac OS
- Uses the Media Layer to Create a Rich Interface
- Minute Attention to Detail to Offer a Wealth of Visual Cues.



Demo: Aqua

(Attractive, sophisticated, advanced)



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Mac OS X Evolution

- Mac OS X Public Beta
- Mac OS X 10.0 — “Cheetah”
- Mac OS X 10.1 — “Puma”
- Mac OS X 10.2 — “Jaguar”
- Mac OS X 10.3 — “Panther”



Next Class

- Mac OS X Part 2
 - Friday, September 19, 2003
 - 9:00 AM — 10:30 AM
 - MMC 1745



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More Classes

- Mac OS X Part 1 — Sept. 12
- Mac OS X Part 2 — Sept. 19
- Mac OS X Part 3 — Oct. 17
- Mac OS X Part 4 — Oct. 24
- Mac OS X Part 5 — Oct. 31



Survey

How did we do?

Please take a minute to fill out the survey.



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Contact Information

- Web — www.macos.utah.edu
- Email — mac@scl.utah.edu
- Offices — Multimedia Center (Room 1705), ask at the service counter for someone from the “Mac Group.”



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Questions and Answers



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