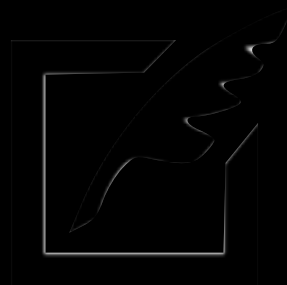


There And Back Again

The Journey To Lonely Mountain



**Every Chapter Is
Meant To Tell A Story**

Chapter 1

The Evolution of Apple Device Management

Once upon a time, in a land far, far away, the Mac existed in a vacuum. Unmanaged and left behind in the grand scheme of the corporate enterprise, it was at best overlooked by Windows-centric IT departments and at worst, marked for retirement and removal. In those times, it was common to see a Mac network running as a silo, often with a dedicated cable modem for Internet access and sometimes even with a dedicated mail server to support the creatives. And yes, it was pretty much exclusively creatives.

The platform seemed to be dying, as Apple's sales slumped and Microsoft's offerings dominated the consumer and enterprise markets. Gradually, deployments of Apple equipment shrank to small workgroups with one exception: education.

Schools around the world continued to embrace the Apple platform throughout the tough times at Apple. During those times, anyone with large-scale Apple management experience was almost certainly working in a school or for a school district. But everything started changing with the advent of the iPhone. Suddenly enterprises were looking to education for guidance on how to deploy large numbers of Apple devices, CIOs were asking their IT departments why IT wasn't supporting the CEO's new MacBook Air, staff at some schools started moving into large companies, and some of the requirements we faced started to change.

Or have they?


(No offense to anyone)

Main Points

- Access to the Kernel seemed cool - until it didn't
- The management philosophy hasn't changed since 1984 - but privacy concerns have
- The pace isn't that fast for a mobile OS
- The iOS-ification of the Mac is good but the Hacker Ethic is strong with some

True or False:
Apple Has Been Releasing
Operating Systems More
Frequently Than Ever?

Mac OS Versions Over time

- System 1: 1984
 - System 2: 1985
 - System 3: 1986
 - System 4: 1987
 - System 5: 1987
 - System 6: 1988
 - System 7: 1991
 - Mac OS 8: 1997
 - Mac OS 9: 1999
 - Mac OS X 10.0: 2001
 - Mac OS X 10.1: 2001
 - Mac OS X 10.2: 2002
 - Mac OS X 10.3: 2003
 - Mac OS X 10.4: 2005
 - Mac OS X 10.5: 2007
 - Mac OS X 10.6: 2009
 - Mac OS X 10.7: 2011
 - Mac OS X 10.8: 2012
 - Mac OS X 10.9: 2013
 - Mac OS X 10.10: 2014
 - Mac OS X 10.11: 2015
 - macOS 10.12: 2016
 - macOS 10.13: 2017
 - macOS 10.14: 2018
 - macOS 10.15: 2019
- 

25 operating systems in 35 years

The Classic Mac Operating System

Gandhi Assassinated

Margaret Thatcher

CDs

AIDs first identified

Magnum, PI

The First Mac

Phil Collins

The Cars

The A-Team

1984

Wham!

The Terminator

Beverly Hills Cop

Gremlins

Indiana Jones and the Temple of Doom

Rain Man

Ghostbusters

Karate Kid

Care Bears

AT&T Broken Up

The A-Team

Season 2: Stranger Things

The First Mac

- Began development in 1979
- No Multi-tasking
- AppleTalk
- Macintosh File System (1984) and then HFS in 1985 (System 2)
- 4 times the number of PC software titles
- Desk Accessories

Desk Accessories

- Limited device drivers
- Control Panel
- Chooser
- Some semblance of multi-tasking
- Similar to DOS GEMs
- Drivers had no elevated privileges

**Steve Jobs Leaves
Apple in 1985**

Crack

Helmut Kohl

A Brief History of Time

First transatlantic fibre cable

Prozac

Transformers

Soviets withdraw from Afghanistan

Guns N' Roses

Twins

1988

Gorbachev

Gloria Estefan

The First Stealth Bomber

The first computer virus

Ronald Reagan

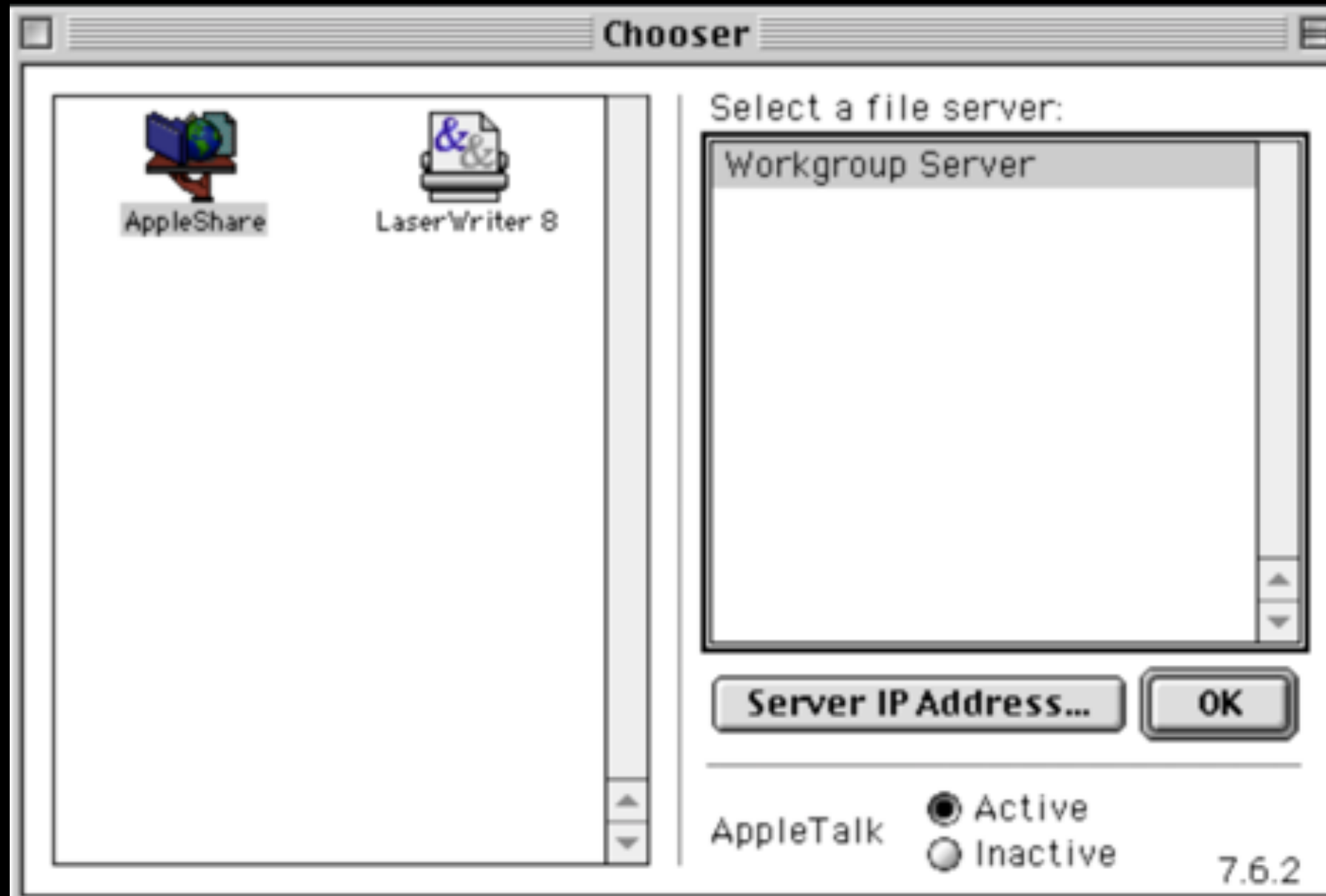
Die Hard

Beetlejuice

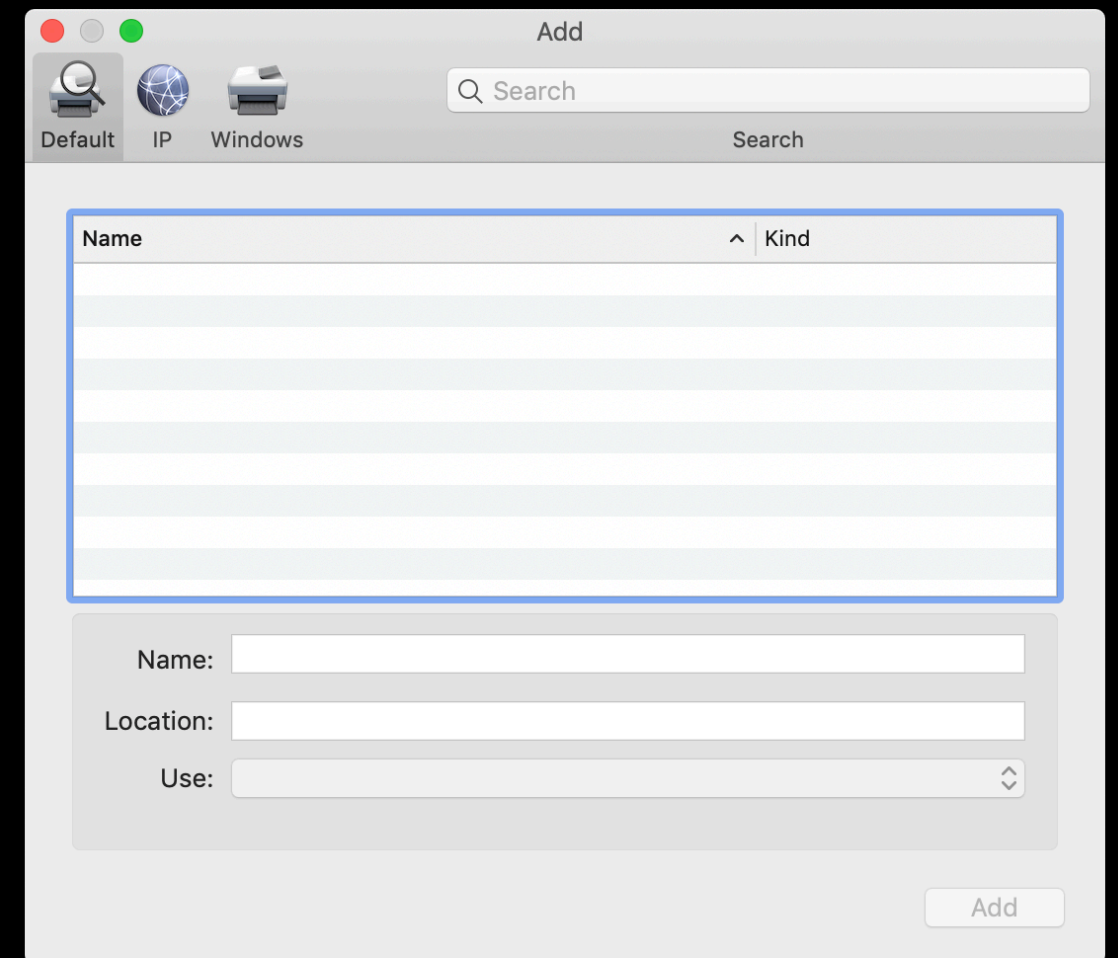
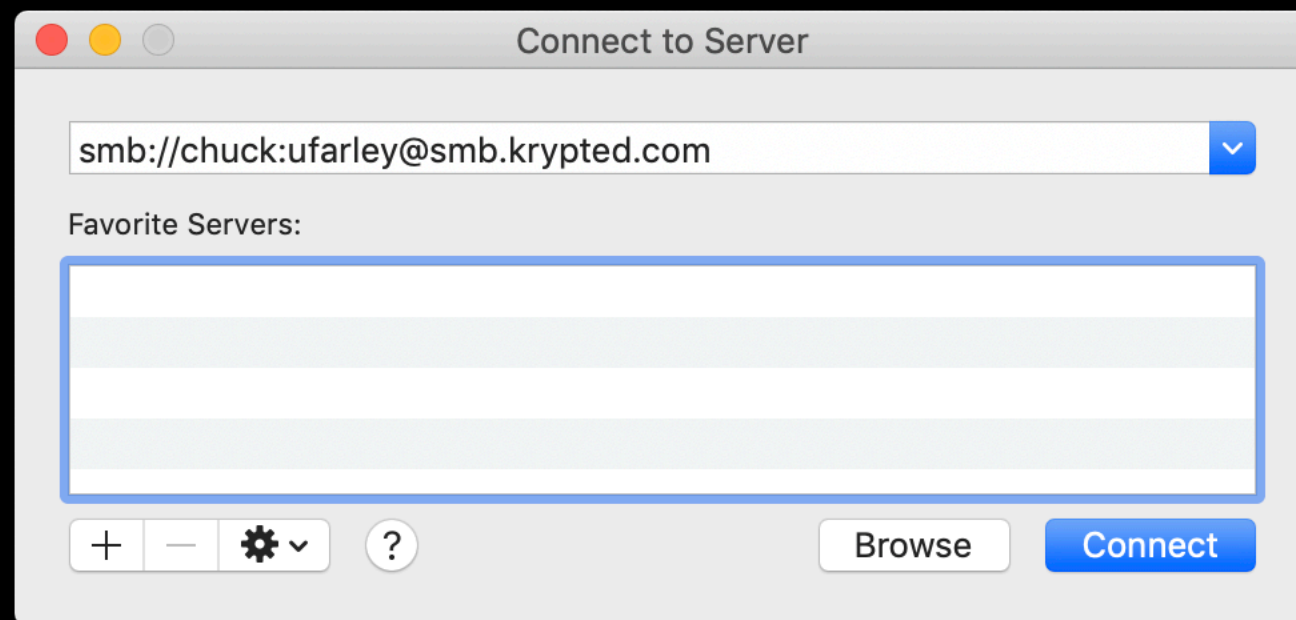
Robert Palmer

System 6

- MultiFinder (System 5, I guess)
- 15 Desk Accessory maximum (including Chooser)
- Scrapbook moved to a Desk Accessory
- Control Panel
- Trash emptied when the Finder terminated (Joel thinks we should bring this back)



The Chooser



Connect to Server & Printers Sys Pref Pane

Window Work

Open MacroMaker
Start Recording

Word

(O.S.)

F5

(V.O.)

F6

Business

F2

Camera

F4

Dialog

F3

Scene head

F1

Another File...

About MacroMaker...

Untitled

AppleScript <> <No selected element> <>

Description

WindowWork

Open MacroMaker
Start Recording

Word

(O.S.)F5

(U.O.)F6

BusinessF2

CameraF4

DialogF3

Scene headF1

Another File...

About MacroMaker...

Untitled

LibraryMedia

RecordStopStopRun

ActionsVariables

Name

Library

Calendar

Contacts

Developer

Files & Folders

Fonts

Internet

Mail

Movies

Music

PDFs

Photos

Presentations

System

Text

Utilities

Most Used

Recently Added

Activate Fonts

Add Attachments to Front Message

Add Color Profile

Add Configuration Profiles

Add Grid to PDF Documents

Add Packages a...ost-Install Scripts

Add Songs to Playlist

Add Thumbnail Icon to Image Files

Add to Album

Add to Font Library

Add User Account

Apple Versioning Tool

Apply ColorSync Profile to Images

Apply Quartz Co...ter to Image Files

Apply Quartz Filt...PDF Documents

Apply SQL

Apply System Co...uration Settings

Ask for Confirmation

Ask for Finder Items

Ask for Movies

Ask for Photos

Ask For Servers

Ask for Songs

Ask for Text

Backup Specified Devices

Bless NetBoot Image Folder

Build Xcode Project

Burn a Disc

Change System Appearance

Change Type of Images

Choose Connected Devices

Drag actions or files here to build your workflow.

Log

Duration

Activate Fonts

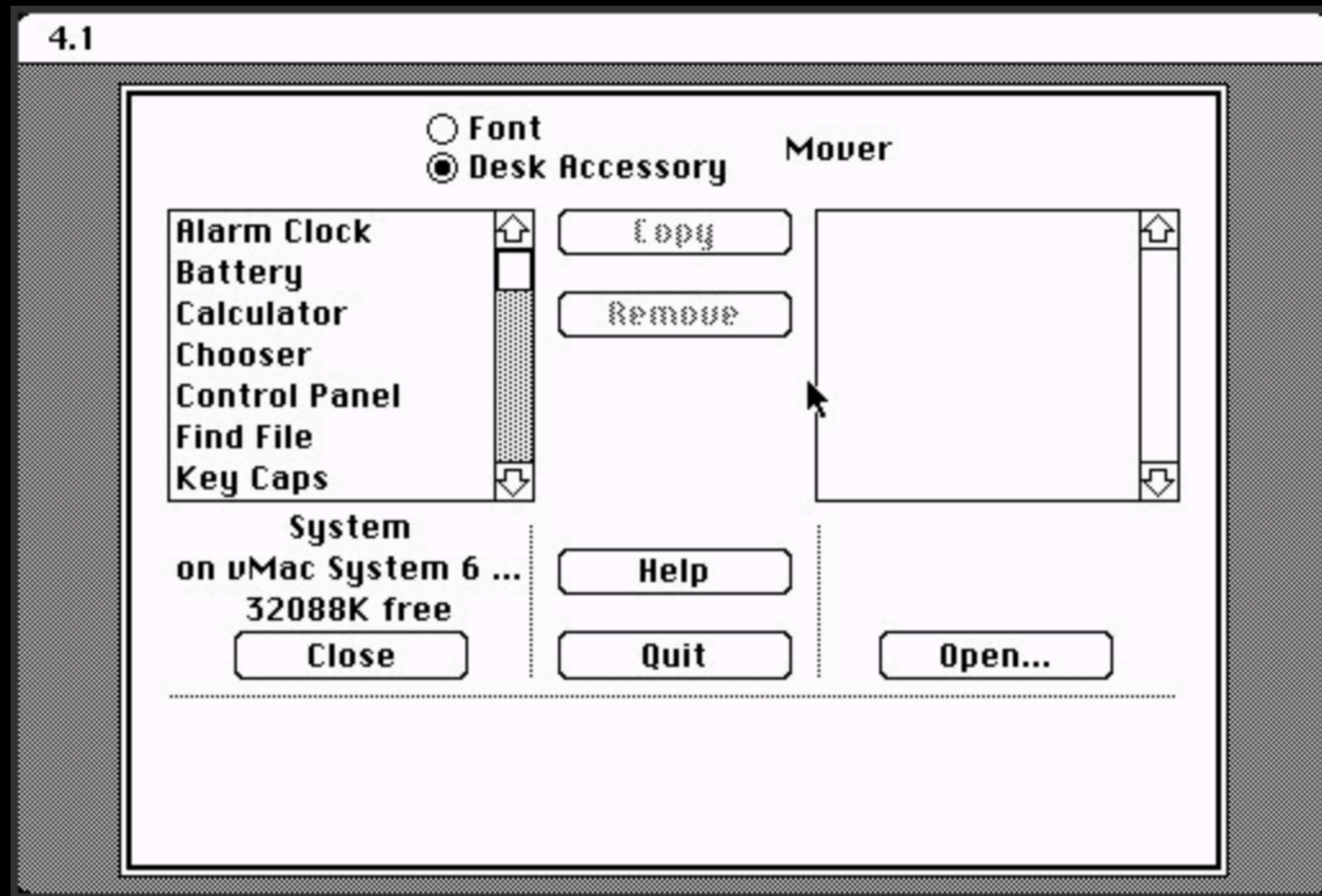
This action activates the fonts passed from the previous action.

Input: Font Book typeface

Result: Font Book typeface

Version: 5.0

4.1



Font/DA Mover

The Hubble Telescope Launched

Dances with Wolves

Madonna Releases “Justify My Love”

Silence of the Lambs

The USSR Ends

Michael Jordan and the Bulls Beat LA 4-1

John Grisham’s The Firm

1991

Terminator 2

Magic Johnson Retires

Roseanne

Home Alone

C&C Music Factory Releases “Gonna’ Make You Sweat”

Full House

System 7

- The “Big Bang”: 3 years in the making, lasted for 6 years
- The Blue Meanies
- CDs and File Sharing
- Started the move to 32-bit
- AppleScript and Apple Events
- System Extensions subfolder in System and Extensions Manager

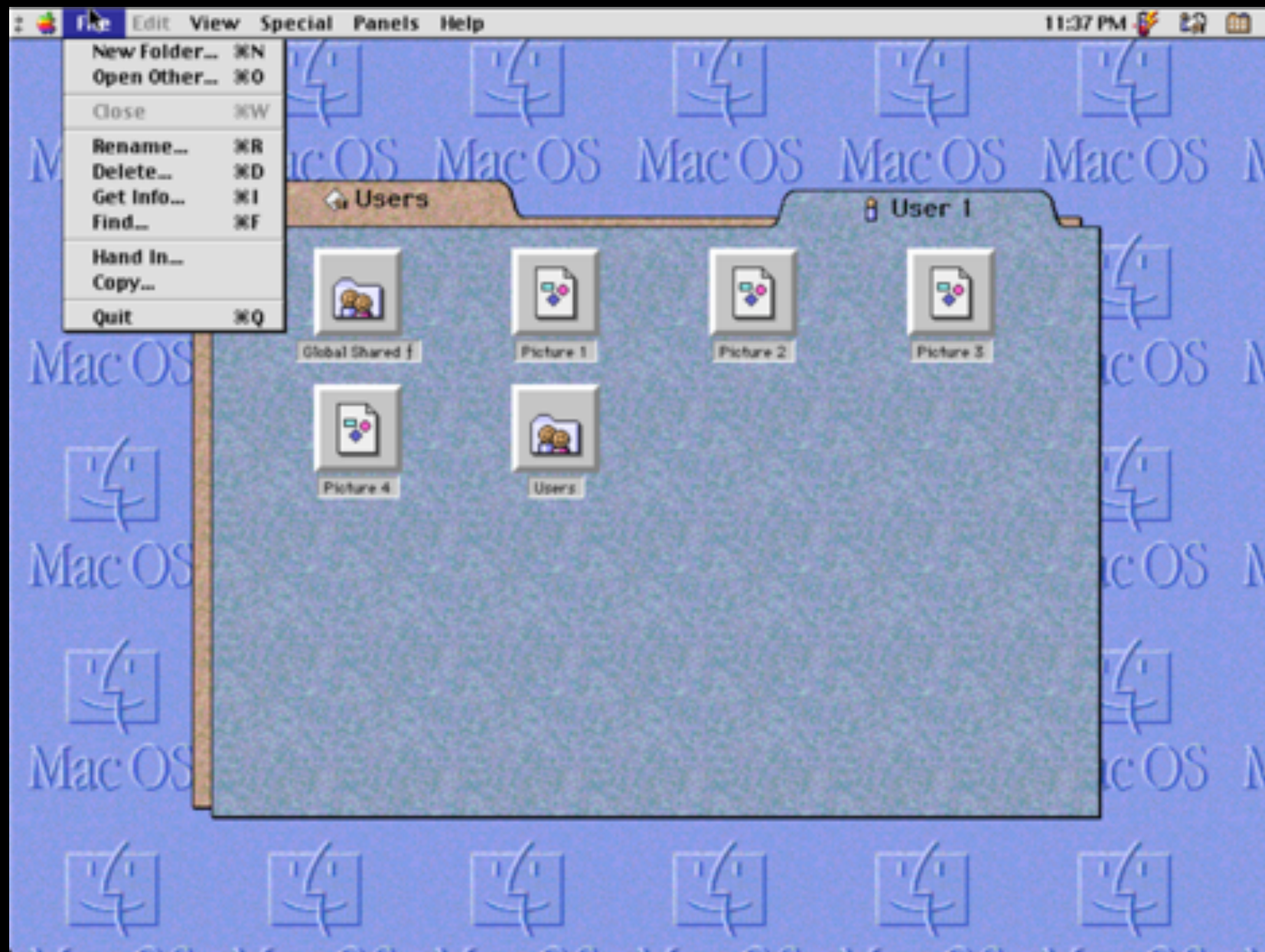


Extensions Manager

Early Device Management Tools

At Ease for Workgroups

- Client Configurations
- Restricted Finder Mode
- Home Folder Stored on AppleShare IP
- eMate for Classrooms




Restricted Finder


Edit Workgroup

Name:

Workgroup Data Volume:

Environment for this workgroup:

☒  Restricted Finder

☐  At Ease Panels

☐  Finder



Folders

Members of this workgroup will have access to the following special folders, which are located on their workstation's startup disk:

Special Folders:



Folder privileges for:

<none selected>

- ☐ Allows users to open documents
- ☐ Allows users to save documents
- ☐ Allows users to open applications

Add...

Remove

☐ Make other items on the startup disk invisible (except the System Folder)

Select special folders for this workgroup.

Cancel


Done


Edit Workgroup

Name:

Workgroup Data Volume:

Environment for this workgroup:












☒  Restricted Finder

☐  At Ease Panels

☐  Finder



Items For This Workgroup:

-  Acrobat™ Reader 3.0
-  Graphing Calculator
-  Internet Explorer
-  Mail
-  Netscape Communicator™
-  Network Browser
-  Note Pad
-  QuickTime Player
-  Scrapbook
-  Sherlock 2
-  SimpleText

Remove

Add Applications...

Add Documents...

Find Items...

Other Items...

Select the applications and documents this workgroup can use.

Cancel


Done


Edit Workgroup

Name:

Workgroup Data Volume:

Environment for this workgroup:

☒  Restricted Finder

☐  At Ease Panels



☐  Finder



Menus

Menu items that are not selected will not be available to this workgroup.



- ☒  Chooser
- ☐  Control Panels
- ☒ *(Show Other Items)*



Warning: This menu item may compromise security!

Select menu items for this workgroup.

Cancel


Done


Edit Workgroup

Name:

Workgroup Data Volume:

Environment for this workgroup:

☒  Restricted Finder

☐  At Ease Panels

☐  Finder



Locations

☐ Allow members to open and save documents in any location

☒ Allow members to open and save items in the following locations only:

Location	Members may:	
User Documents Folder	<input checked="" type="checkbox"/> Open	<input checked="" type="checkbox"/> Save
Removable Media	<input checked="" type="checkbox"/> Open	<input checked="" type="checkbox"/> Save <i>(except CD-ROMs)</i>
Workgroup Shared Folder	<input checked="" type="checkbox"/> Open	<input checked="" type="checkbox"/> Save
Volume Shared Folder	<input type="checkbox"/> Open	<input type="checkbox"/> Save
Workgroup Hand In Folder		<input checked="" type="checkbox"/> Save

☐ Allow members to open approved applications on removable media

Select locations for this workgroup to open and save items.

Cancel

Done

LIBRARY

- Apps
- Books
- Devices
- Device Groups
- Users
- Groups

ACTIVITY

- Active Tasks
- Completed Tasks

Everyone
All Users

Replicants
No Members

Workgroup
1 Group, 1 User

Replicants

No Members

About Settings Apps Books Members Activity

General

groupname replicants

Restrictions

- ☒ Allow access to My Devices Portal (<https://odr.krypted.com/mydevices>)
 - ☒ Allow configuration profile downloads
 - ☒ Allow device enrollment and unenrollment
 - ☒ Allow device lock
 - ☒ Allow device passcode to be cleared
 - ☒ Allow device wipe
- ☐ Allow enrollment during Setup Assistant for devices configured using Device Enrollment Program
- ☐ Allow enrollment during Setup Assistant for devices configured using Apple Configurator
- ☐ Restrict enrollment to placeholder devices
 - ☐ Restrict enrollment to assigned devices

Learn about restrictions

In Groups with assigned Restrictions, Settings, Apps or Books, or VPP enabled

Not in any Groups

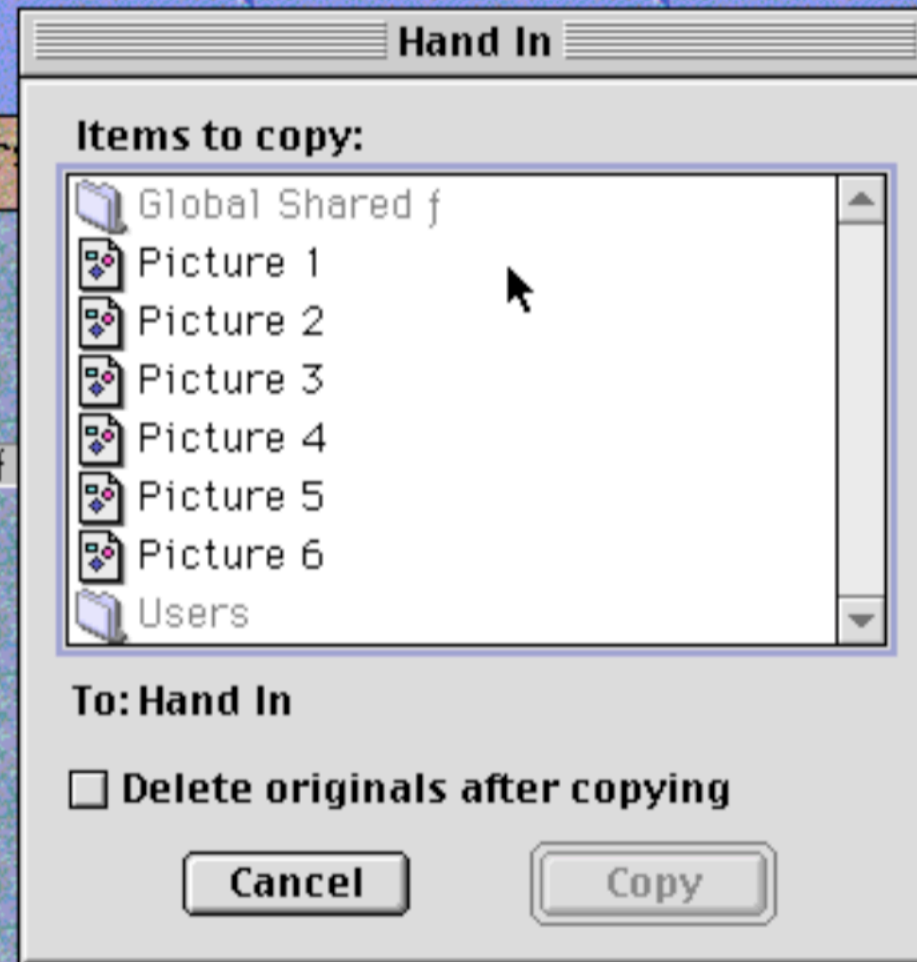
Revert Save

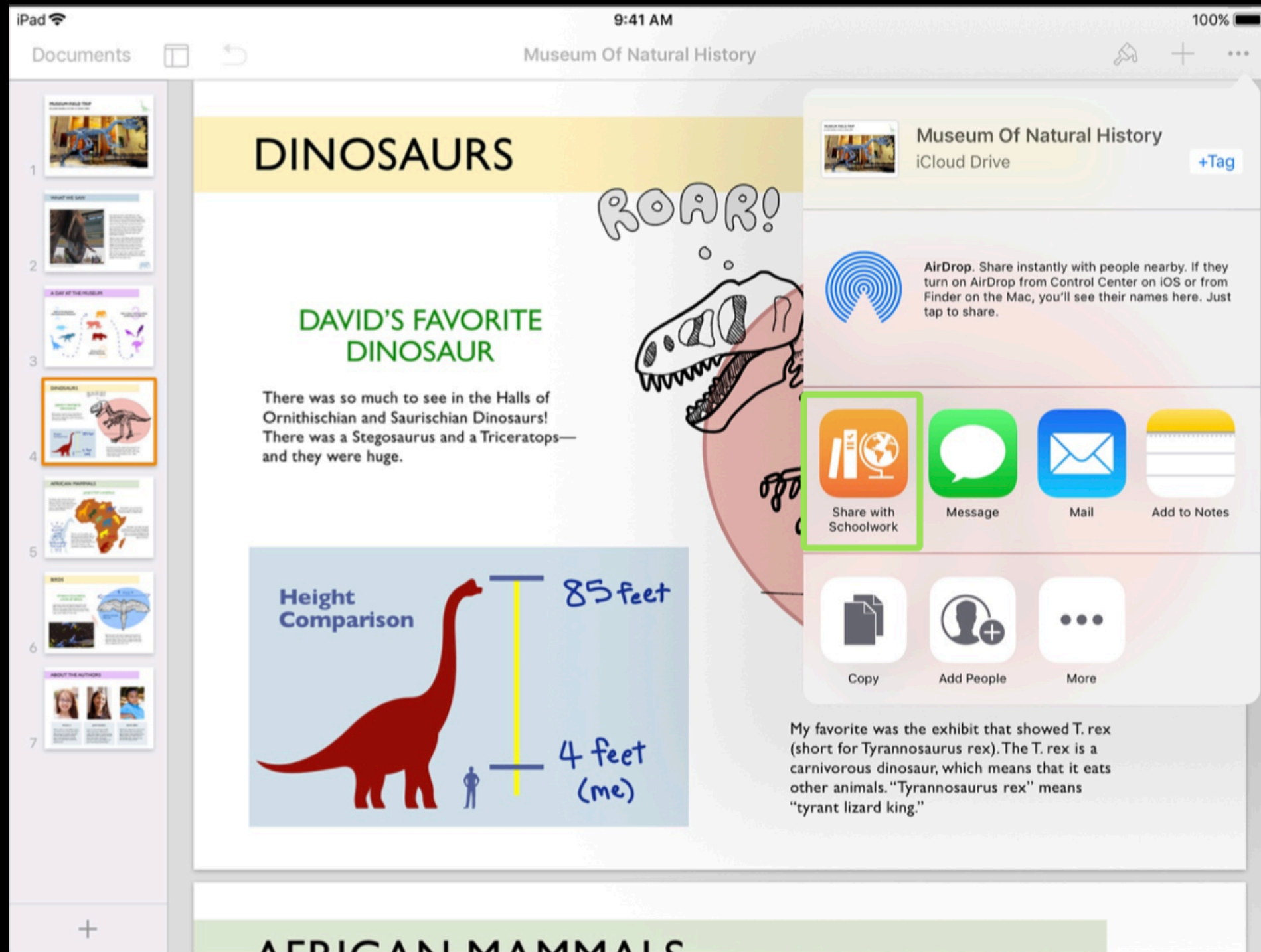
eMate Classroom Exchange

eMate Classroom Exchange Preferences

Listen for connections on <ul style="list-style-type: none"><input checked="" type="checkbox"/> AppleTalk network<input type="checkbox"/> Serial, using the Printer-Modem Port<input type="checkbox"/> Serial, using the Internal Modem	Store student documents in <ul style="list-style-type: none"><input checked="" type="radio"/> Named folders, created as needed<input type="radio"/> Named folders, created in advance<input type="radio"/> At Ease documents folder<input type="radio"/> One folder named "Student Data"
Backup <ul style="list-style-type: none"><input checked="" type="radio"/> Newton Works only<input type="radio"/> Newton Works and selected applications	Advanced <ul style="list-style-type: none"><input type="checkbox"/> Erase data from eMate after backup<input type="checkbox"/> Allow navigation outside student folder

Cancel **Save**





Apple Schoolwork

1991: The First Website

**1991: NetOctopus
launched at Macworld
Boston**

**1993: Windows NT
Released**

**1996: Thursby
releases DAVE**

The Smashing Pumpkins

Nintendo 64

Hong Kong Returned to China

Men in Black

Bill Clinton

Jacques Chirac

Steve Jobs Returns to Apple

The Scots cloned a sheep

Microsoft Buys Stake in Apple

Princess Diana's Funeral

1997

Tiger Woods

Tony Blair

Microsoft Worlds Most Valuable Company

Playstation

Titanic

Spice Girls

OJ Simpson

Nelson Mandela

Radiohead

Mac OS 8

- PowerPC
- AFP over IP
- AppleTalk Remote Access
- HFS+
- Bundled with Internet Explorer
- NetBoot

Mac OS 9 (1999)

- Keychains
- iTools/MobileMe
- Printer sharing
- G3, G4, and G5
- Automated software updates
- Multiple users (ish)

Install ANAT Workstation

Custom Install ▼

Help

Check features to be installed

- ☐ At Ease Workstation Software
- ☐ Network Assistant Workstation Software



Disk space available: 2,097,144K

Selected size: zero K

Destination Disk

.

Macintosh HD

Eject Disk

Switch Disk

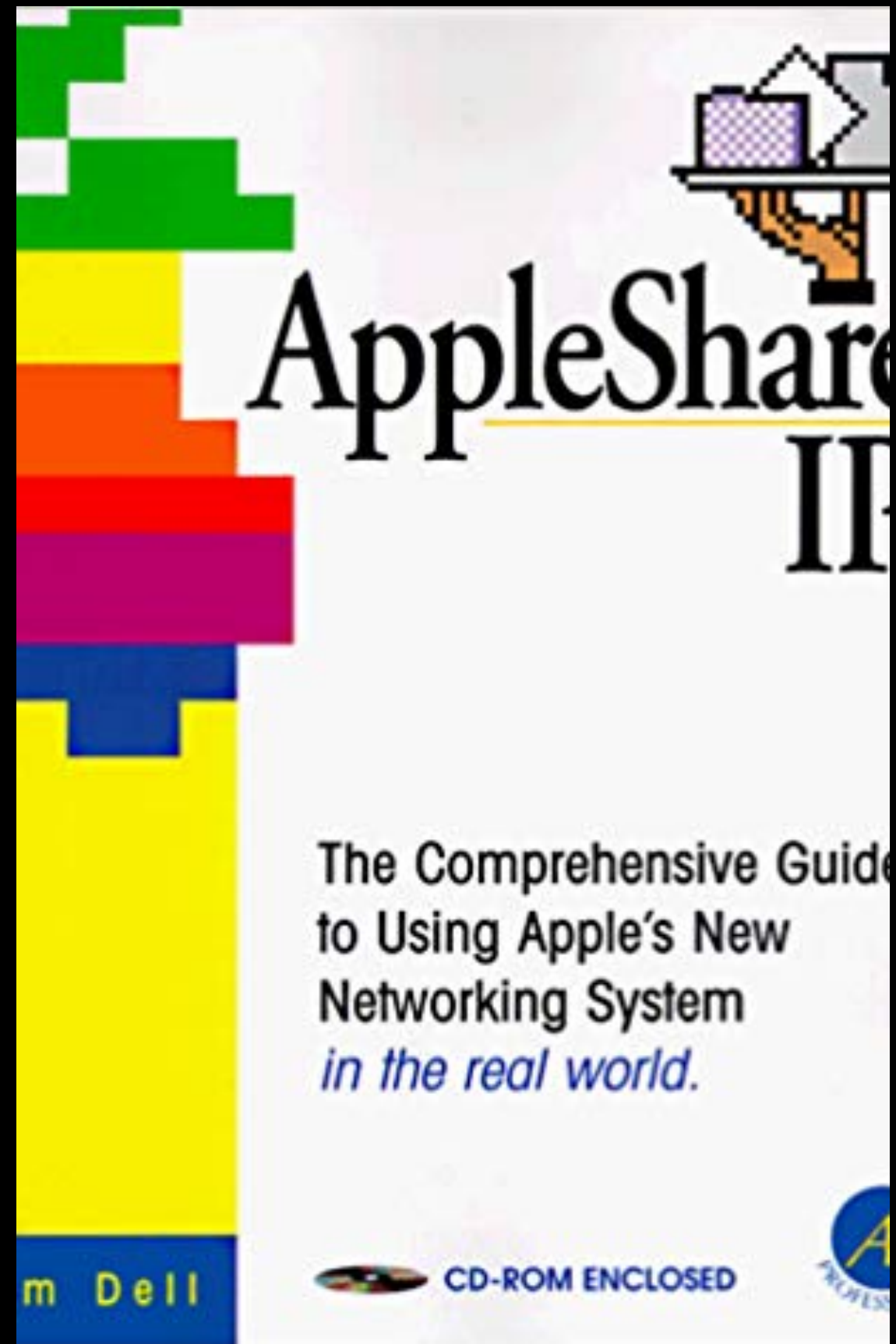
Quit

Install

AppleShare IP

Web server
File sharing
Print Server
Mail Server
Open relay
FTP Server

TCP and FTP





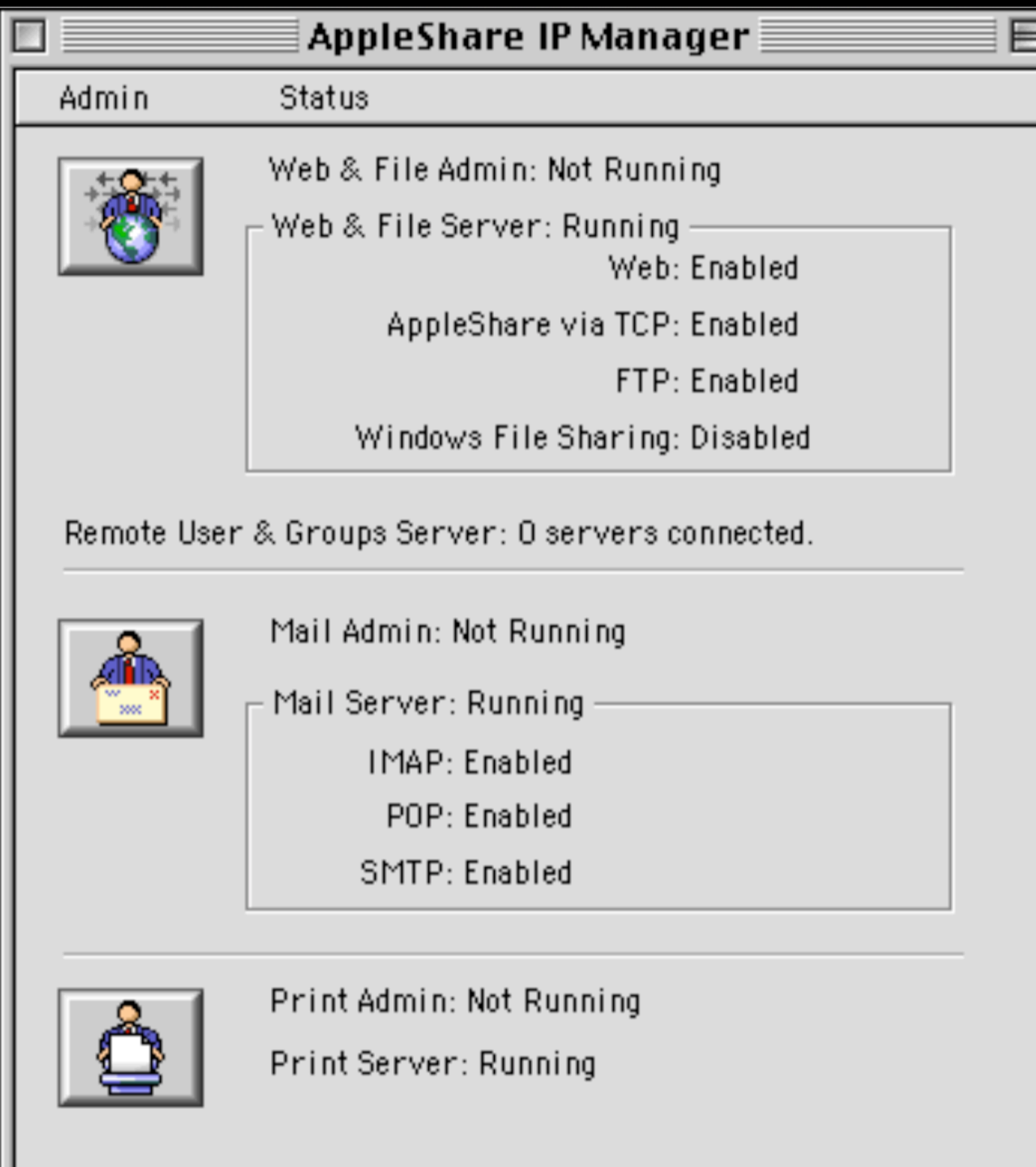
AppleShare IP

Version 5.0



© Apple Computer, Inc. 1986 - 1997

Continue...



Web & File Server Activity

Status: Running

Current User Activity:

Name: WGS-ASIP5

Sharing

Search

Computer Name: CE's MacBook Pro

Computers on your local network can access your computer at:
CEs-MacBook-Pro.local

Edit...

Connected User

Admin

Admin

On Service

☒ Screen Sharing☐ File Sharing☐ Printer Sharing☐ Remote Login☐ Remote Management☐ Remote Apple Events☐ Internet Sharing☐ Bluetooth Sharing☐ Content Caching☐ Screen Sharing: Off

Screen Sharing allows users of other computers to remotely view and control this computer.

Computer Settings...

Allow access for: ☐ All users☒ Only these users:

+ -

?

Macintosh HD

LaserWriter 300

Stop Server

User name

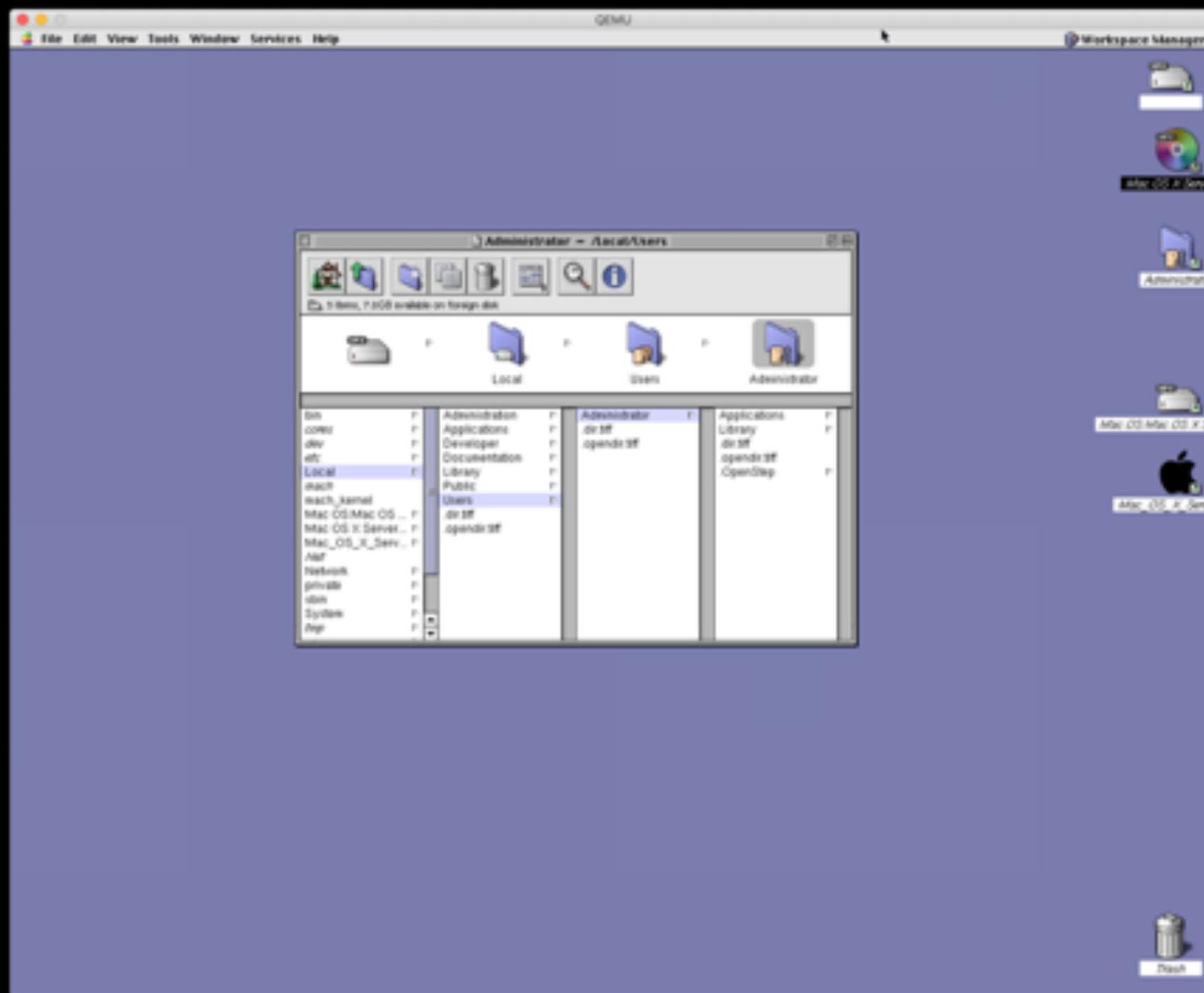
Trash

**1998: Apple Buys
SoundJam, which would
become iTunes in 2001**

NET

From NeXT Came

- Objective-C
- Mach (through Avie Tevanian of Carnegie Mellon)
- Property Lists
- AppWrappers (.app)
- Workspace Manager (which begat the Finder)
- The Dock
- NetInfo



Workspace Manager

Bertrand Serlet

Senior VP of Software Engineering

George W Bush

Vladimir Putin

Sex and the City

Wikipedia

Enron

Alicia Keys

The iPod

Napster shut down

Harry Potter and the Philosopher's Stone

September 11th

2001

IRA Disarms

Mars Odyssey

Weezer

Windows XP

Missy Elliott

Titanic

Bratz

King of the Hill

Malcom in the Middle

The Lord of the Rings

Shrek

Mac OS X

- 10.0: Cheetah
- Darwin (kinda' like Unix) with Terminal
- Mail, Address Book, iTunes
- AppleScript survived, AppleTalk didn't
- Aqua UI, Carbon and Cocoa APIs
- HTTP, SSH, and FTP server/client
- Native PDF Support

Device Management

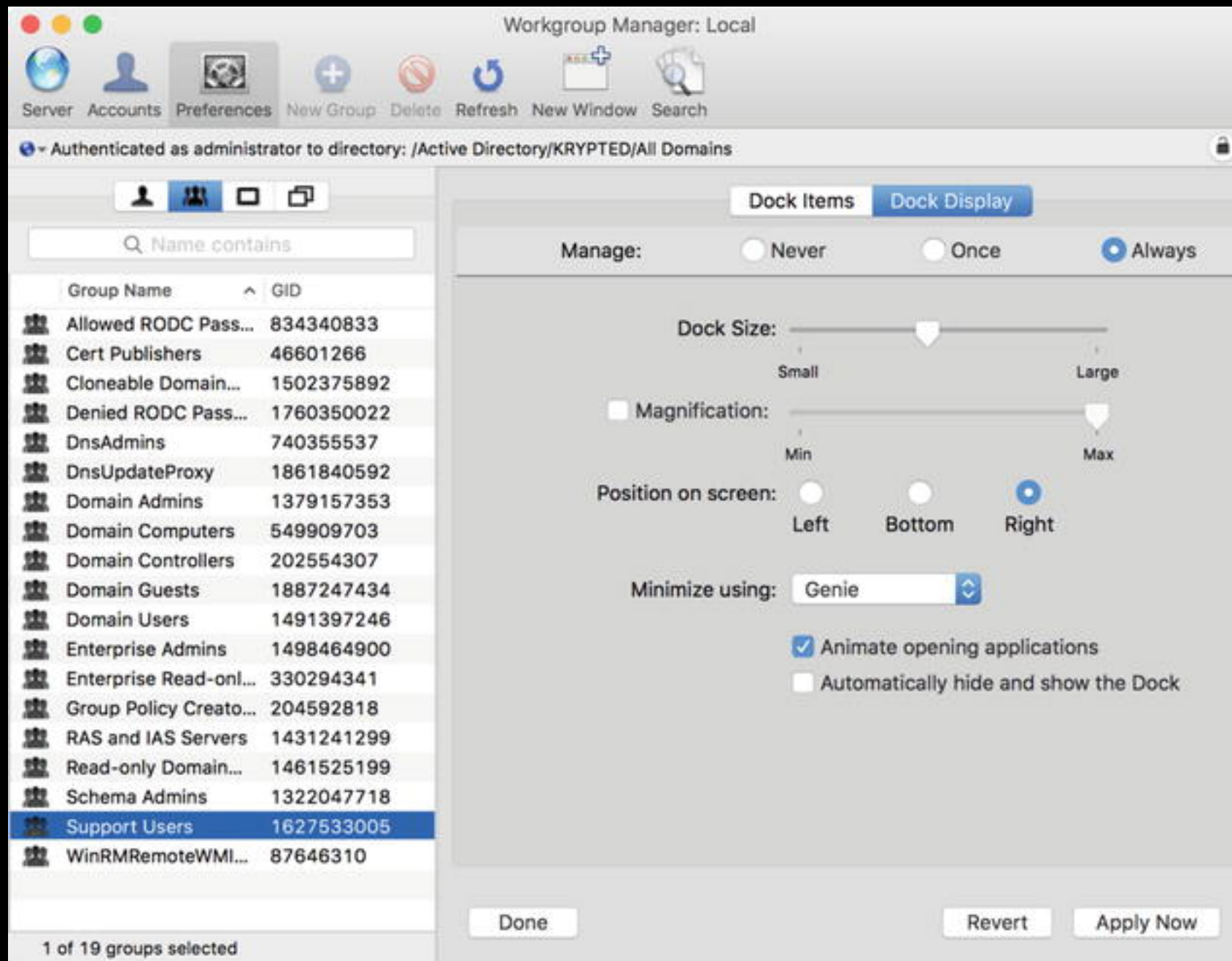
- NetInfo Scripting
- defaults command for plist manipulation
- asr for device imaging
- NetBoot to a network server
- Software Packages to deploy software

2002 (10.2 Jaguar)

- Apple Remote Desktop
- MPEG-4
- CUPS
- Rendezvous
- Samba
- Journaled HFS+
- Open Directory

2004 (10.3 Panther)

- Workgroup Manager
- Preview
- Active Directory
- FileVault 1
- Fast User Switching
- Font Book
- PasswordServer



2005 (Tiger 10.4)

- Ready for Prime Time
- NetInfo Deprecated for Open Directory 2
- The Advent of Intel
- Spotlight
- Otto the Automator
- launchd
- Core Image, Core Data, Core Audio, Core Video

ServicesSearch PolicyDirectory Editor

ViewingUsersin node /Local/DefaultkAuthenticated

Search

Application Server
Asset Cache Service
Astris Services
ATS Server
AutoTimeZoneDaemon
Calendar
Certificate Enrollment Service
Charles Edge
ClamAV Daemon
com.apple.calendarserver
Core Audio Daemon
Core Media IO Daemon
CVMS Root
CVS Server
Cyrus Administrator
Developer Documentation
Device Management Server
Display Policy Daemon
DistNote
Dovecot Administrator
Dovecot Authentication
DP Audio
Ethernet AVB Device Daemon
FTP Daemon
Geo Services Daemon
Guest User
IconServices
Install Assistant
Installer

Name	Value
AppleMetaNodeLocation	/Local/Default
GeneratedUID	FFFFFFFF-DDDD-CCCC-BBBB-AAAA00000048
NFSHomeDirectory	/var/empty
Password	*
PrimaryGroupID	72
RealName	CVS Server
RecordName	_cvs
RecordType	dsRecTypeStandard:Users
UniqueID	72
UserShell	/usr/bin/false

+ -

kTextBtnTitlekDataBtnTitle

+ - kSearchResultsSummaryFormat

kRevertButtonSave

2007

The “Post-PC” era

iPhone

Mac OS X 10.5: Leopard

- Application Signing
- Sandbox
- LSQuarantine
- Application Layer Firewall
- Library Randomization
- Time Machine
- Certified as UNIX-Compliant



Settings for Sales Users

10 Payloads Configured – Created 04/05/12 at 9:32 PM



SCEP

Not Configured



Web Clips

Not Configured



Security & Privacy

1 Payload Configured

iOS



Restrictions

Not Configured



Subscribed Calendars

Not Configured



APN

Not Configured

Mac OS X



Restrictions

1 Payload Configured



iChat

Not Configured



Login Items

1 Payload Configured

Preference Domain

The name of a preference domain (com.company.application)

com.apple.SoftwareUpdate

Property List Values

Key value pairs for settings in the specified domain

Key	Type	Value
CatalogURL	String	http://server.krypted.com:8088/in...

Upload File...

Add Item

Delete Item

Preference Domain

The name of a preference domain (com.company.application)

com.microsoft.autoupdate2

Property List Values

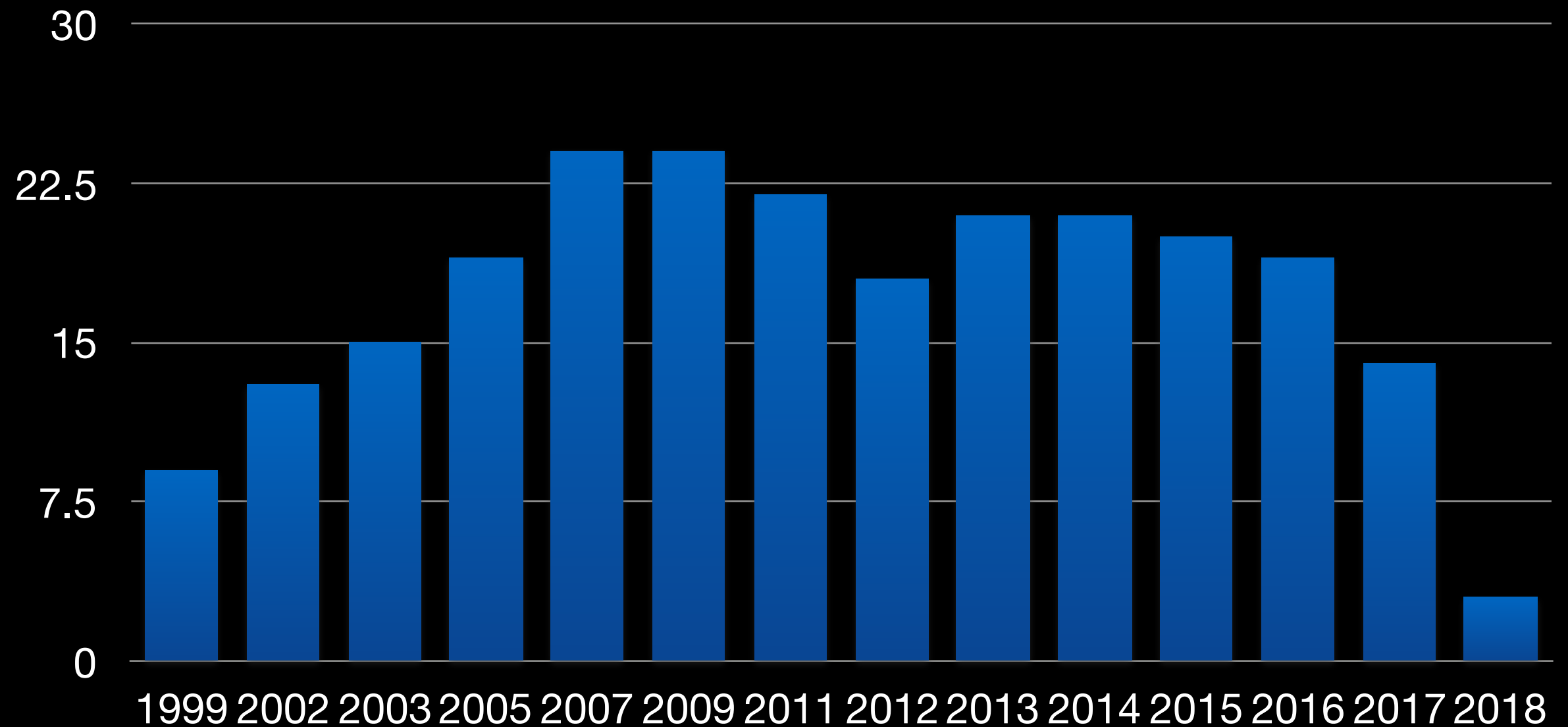
2010

The “Post-PC” era

Mac OS X 10.6: Snow Leopard

- Gatekeeper
- The Mac App Store
- Built-in Exchange Support
- AppleTalk dropped
- No ZFS (APFS would come)
- Server: Mobile Access Server & Podcast Producer 2

The Rise and Fall of Server



2011: OS X 10.7 Lion

- “Back to the Mac”
- Apps looked iPad-esque
- FileVault goes Full Disk Encryption
- Recovery Partition
- APNs and MDM
- AirDrop, Full Screen Apps, Profile Manager

Bertrand Serlet Retires



Apple Configurator



Prepare



Supervise



Assign



General Mandatory



Passcode

Not configured



Restrictions

Not configured



Wi-Fi

1 Payload Configured



VPN

Not configured



Email

Not configured



Exchange ActiveSync

Not configured



LDAP

Not configured



CalDAV

Not configured



CardDAV

Not configured

General

Name

Display name of the profile (shown on the device)

Trust Profile for Pretendco

Organization

Name of the organization for the profile

[optional]

Description

Brief explanation of the contents or purpose of the profile

Configures your device to trust the Profile Manager server.

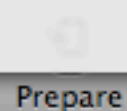
Security

Controls when the profile can be removed

Always

Cancel

Save



Prepare

Xserve Discontinued

[Mac](#)[iPad](#)[iPhone](#)[Watch](#)[TV](#)[Music](#)[Support](#)[Jobs at Apple](#)[About Apple](#)[Teams](#)[Apple Retail](#)[Students](#)[Profile](#)[Sign In](#)[Search](#)

Sr. Security Manager

Seattle, Washington, United States

Corporate Functions

[Submit Resume](#)[◀ Back to search results](#)

Summary

Posted: **Aug 6, 2019**

Weekly Hours: **40**

Role Number: **200088530**

Imagine what you could do here. At Apple, new ideas have a way of becoming phenomenal products, services, and customer experiences very quickly. Bring passion and dedication to your job and there's no telling what you could accomplish.

We're a diverse collection of thinkers and doers, continually reimagining our products, systems, and practices to help people do what they love in new ways. This is a deeply reciprocal place, where everything we build is the result of people in different roles and teams working together to make each other's ideas stronger. That same real passion for innovation that goes into our products also applies to our practices, strengthening our dedication to leave the world better than we found it.

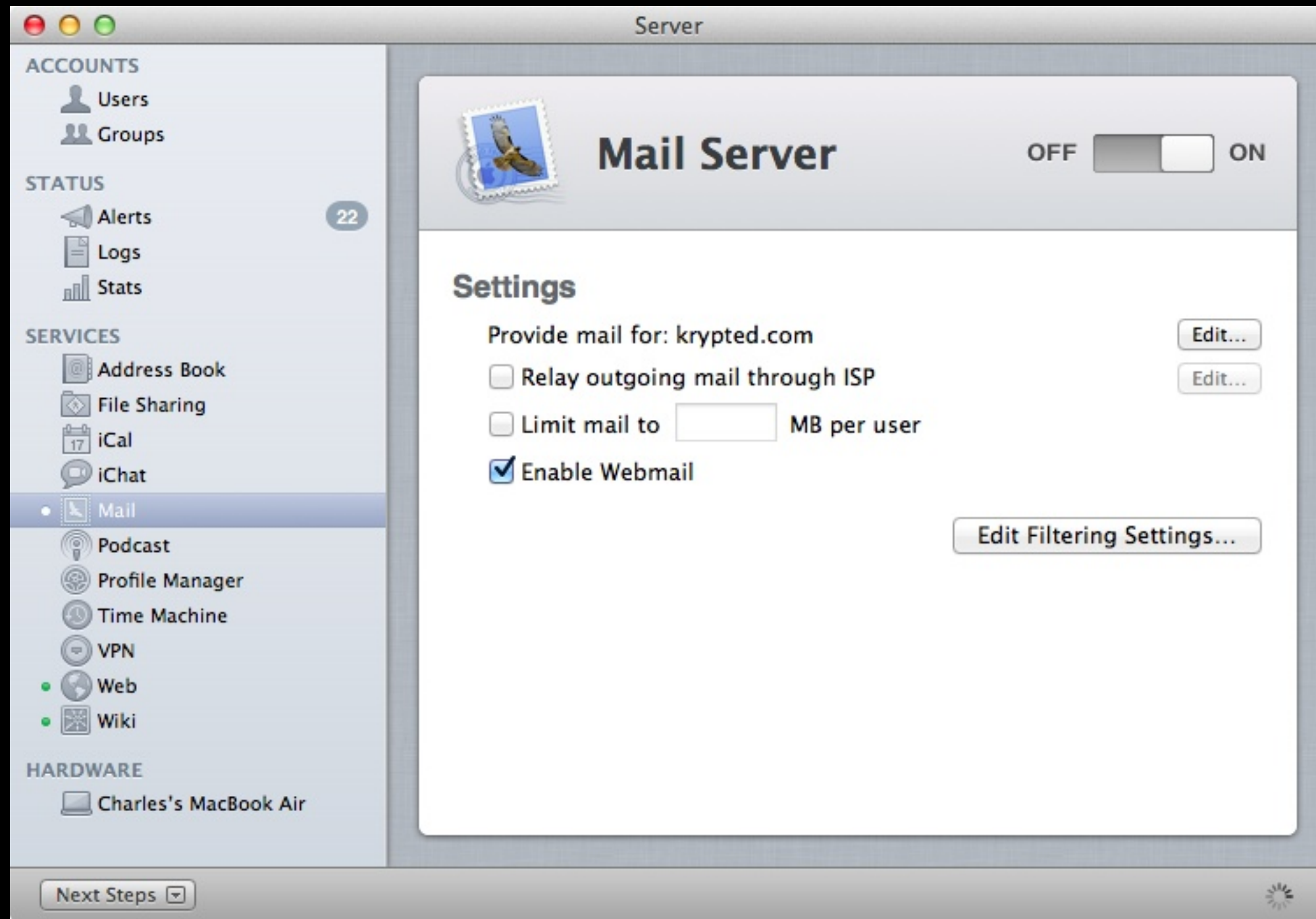
Dropped in Lion

- WPA Enterprise (802.1x) moved to a profile
- Flash and Java Runtimes
- QuickTime Streaming Server
- iSync removed
- Save As
- Mac OS X Server now an add-on for \$49.99

2012: OS X Mountain Lion

10.8

- Notification Center
- More iOS Apps: Notes, Messages
- Software Update moved to App Store
- Web Sharing and Xgrid Removed
- Server now \$19.99: Removed Server Admin, Server Preferences, Server Assistant, Server Monitor, System Image Utility, Workgroup Manager, Xgrid Admin



Unified Server Interface



Guides ^

[OS X Server 5 Guide \(El Capitan and Yosemite\)](#)

[OS X Server 4 Guide \(Mavericks\)](#)

[OS X Server 3 Guide \(Yosemite\)](#)

[OS X Server 2 Guide \(Mountain Lion\)](#)

[Apple Configurator 2 Guide](#)

[Apple Configurator 1 Guide](#)

[List Of Mac OS X Error](#)

Mountain Lion Server

I've been doing a number of postings on how to use various features of the latest version of OS X Server. Given that WordPress is pretty much a reverse chronological listing of articles I've written, I thought I'd put together a listing of the pages that I've done for OS X Server 10.8 (Mountain Lion Server) in order to offer a more pedagogically aligned way of reading these posts. As such, here is the Table of Contents for these posts: **Introduction**

- [What Changed](#)
- [10 Impactful Changes](#)
- [Upgrading from Lion](#)
- [Upgrading from Snow Leopard](#)

Managing the Server

- [Configuring Alerts](#)
- [Using Web Modules](#)
- [Enable Push Notifications](#)
- [Configuring Time and Time Services](#)

My First Server Guide

2013 OS X Mavericks 10.9

- TouchID
- iCloud Keychain
- Maps and iBooks
- Random password generation in Safari
- Defaults to smb:// instead of afp://

2014: OS X 10.10 Yosemite

- User Approved MDM (UAMDM)
- Hypervisor framework
- Kexts must be signed
- Flat iOS-esque graphics
- Continuity and Handoff
- iCloud Photo Library

2015 OS X 10.11 El Capitan

- Free upgrades, like iOS
- System Integrity Protection first appears
- First limitations to the root user
- Entitlements
- LibreSSL

2016 macOS 10.12 Sierra

- SIP limits write access to some directories
- Gatekeeper limits apps and forces signing
- Siri on the Mac
- iCloud Drive
- Apple Pay comes to Safari

2017 macOS 10.13 High Sierra

- TN2459: User-Approved Kernel Extension Loading
- SIP: More directories unwritable
- APFS
- 32-bit app warnings
- Remember the blank root user haxie?

2018 macOS 10.14 Mojave

- Automatic conversion to APFS
- Explicit prompts to access camera and mic
- News, Stocks, Voice Memos and Home ported
- Removed Calendar Server, Contacts Server, the Mail Server, DNS, DHCP, VPN Server, and Websites from server

2019 10.15 Catalina

- New Enrollment types
- NetworkExtension in macOS (threat detection, content filter, sockets)
- SSO framework and Enterprise Connect
- More Managed Apple IDs
- Activation Lock

MDM Over the Years

iOS Version	macOS Version	Year	New Capabilities
4	N/A	2010	Volume Purchase Program (VPP), Mobile Device Management (MDM)
5	10.7	2011	Over the Air OS Updates, Siri management, disable iCloud backup
6	10.8	2012	APIs for 3 rd party developers, Managed Open In, Device Supervision, MDM for the
7	10.9	2013	TouchID management, Activation Lock bypass, Managed App Config
8	10.10	2014	Device Enrollment Program, Apple Configuration enrollments
9	10.11	2015	Device-based VPP, B2B App Store, supervision reminders, enable and disable apps, home
10	10.12	2016	Restart device, shut down device, Lost Mode, APFS
11	10.13	2017	Classroom 2.0 management, Managed FaceID management, AirPrint. Add
12	10.14	2018	Apple Business Manager, OAuth for managed Exchange accounts, managed tvOS app
13	10.15	2019	Content Caching configuration, Bluetooth management, autonomous

Main Points

- Access to the Kernel seemed cool - until it didn't
- The management philosophy hasn't changed since 1984 - but privacy concerns have
- The pace isn't that fast for a mobile OS
- The iOS-ification of the Mac is good but the Hacker Ethic is strong with some
- What's next: MDM, Micro services, apps

Thank you