

Troubleshooting & Maintaining the Macintosh

Brought to you by
CompuMaster

Slides © William C. Allen 9/1/96

Slide 1/20



Section I: Troubleshooting Procedures

In the Student Folder on the desktop of the computer in front of you is a folder called Slide Text. In this folder there are SimpleText documents that contain the text from the slides I will use today and tomorrow. Double clicking on one of the files will display the text and SimpleText allows you to add your notes to the files. If you select underline from the Styles Menu your notes will stand out from the slide text. Please be sure to save your work often!

Slide 2/20

Some Things to Check



Slide 3/20

Symptoms :

- A Sad Mac
- Strange sounds at start up
- A ? icon at startup
- How about a system bomb?
- An "Unexpectedly Quit" message
- How about a floppy disk eject?
- Applications not launch from icon?
- Or a document not find its application?
- Type 10 or 11 or F-Line errors

Slide 4/20

What else can go wrong?

- Ever erase a presentation an hour before you had to give it?
- Ever accidentally erase a hard disk?
- Ever lose a hard disk icon?
- Or a printer from the Chooser?
- Never had a problem?

Slide 5/20

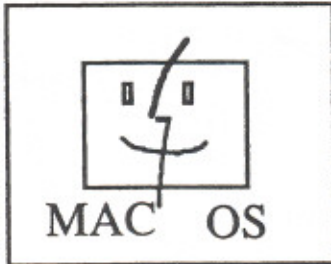
What can cause these problems?

- Power loss/fluctuations
- Shared circuits
- Shutting off your Mac improperly
- Problem software (conflicts)
- Hard Drive failure
 - Your hard drive has a finite life expectancy

Slide 6/20

Macintosh Operating System

Section II



Slide 1/2

We will discuss:

- Layers of Mac 's Operating System
- System File & Finder duties
- Replacing & updating System Software
- Desktop files
- Macintosh Virus Solutions

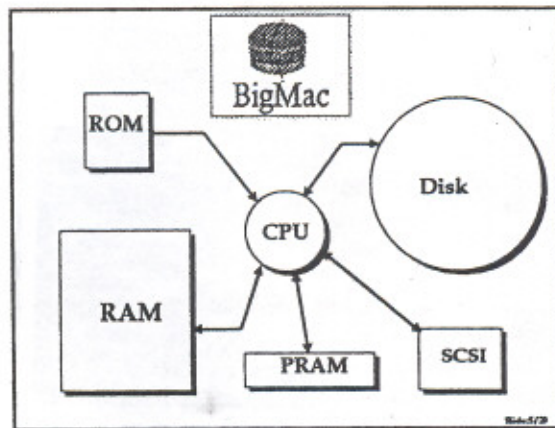
Slide 2/2

An Operating System defined

• A master program that contains instructions for controlling basic tasks that operate the computer

- Memory management
- Input/Output processing
- Application program execution
- File management
- A user interface

Slide 3/2

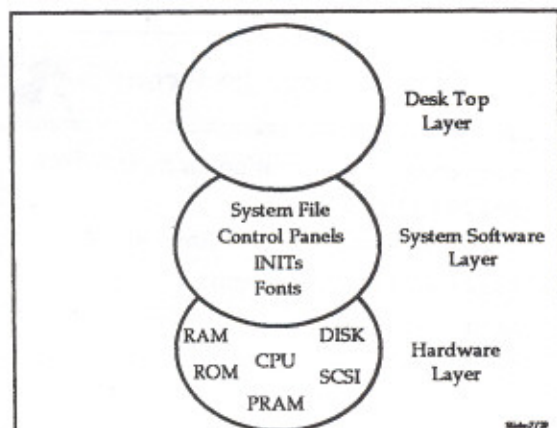


Slide 4/2

Mac's Operating System


- ROM-based Managers
- Disk-based System file
- "Start-up manager" & the system file work together in getting things started.
- From there, the ROM & disk-based OS work together in providing services & resources.

Slide 5/2



Slide 6/2

Conflicts and Incompatibilities



Section III

Slide 1/10

INITs

- The little Icons that appear along the bottom of your screen after the "Welcome To The Macintosh"
- **INIT conflicts cause more problems on the Mac than all others combined!**
- To test for an INIT conflict: Restart with the shift key down

Slide 2/10

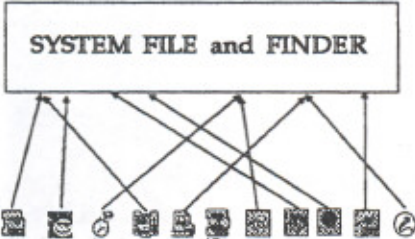
What kind of problems?

- Start up problems
- Screen freezes
- System bombs
- Applications quit
- Strange error messages
- Strange fonts
- Can't print
- Just plain weird stuff

Slide 3/10

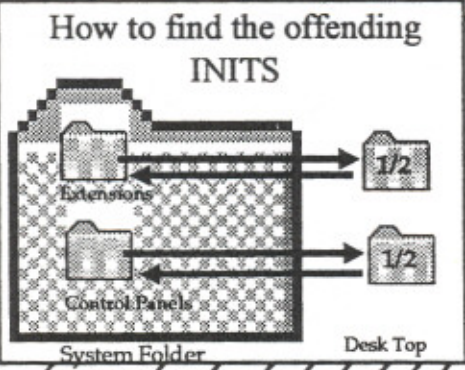
Conflicts

SYSTEM FILE and FINDER



Slide 4/10


How to find the offending INITs



Slide 5/10

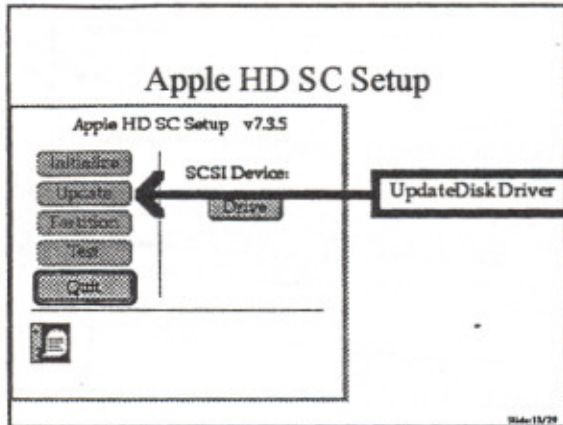
OS 8 necessary Extensions

- OS 8 will not boot unless two extensions remain in the Extensions folder.
- They are the Text Encoding Converter
- And the Appearance Extension



Appearance Extension Text Encoding Converter

Slide 6/10



Why would you do a "Clean Install" of the System Software?

- Constant System Bombs
- ? Icon at start up
- Sad Mac at startup
- "Unexpectedly Quit" errors
- System running slow
- Many screen freezes

Slide 14/29

Clean Install Of System Software

- 1. Run Disk First Aid.
- 2. Run TechTool Pro.
- 3. Update Disk Driver.
- 4. Re-start with Extensions off.
- 5. Install System Software - CD ROM.

Slide 15/29

Clean Install of System Software

- At the first install screen
- Hold down the keys:
 - Shift
 - Apple
 - K

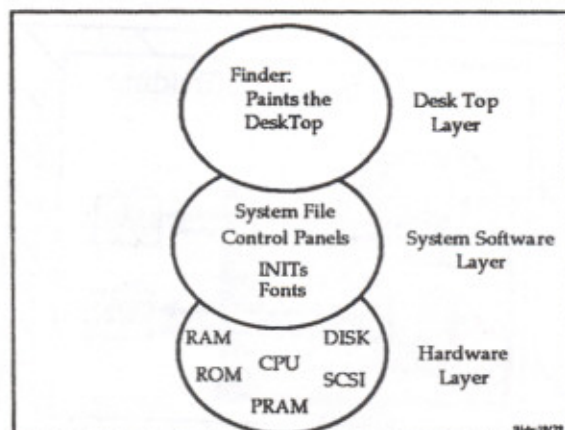
7.5 min

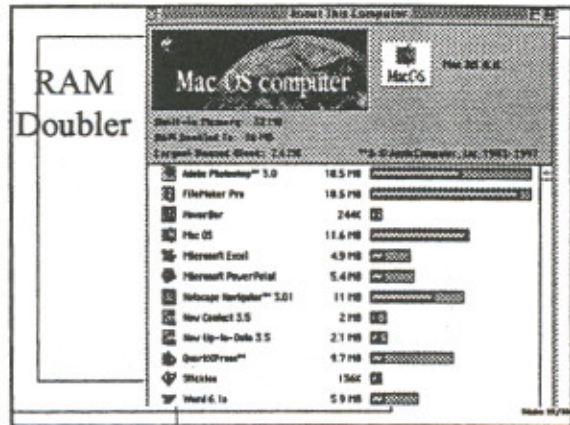
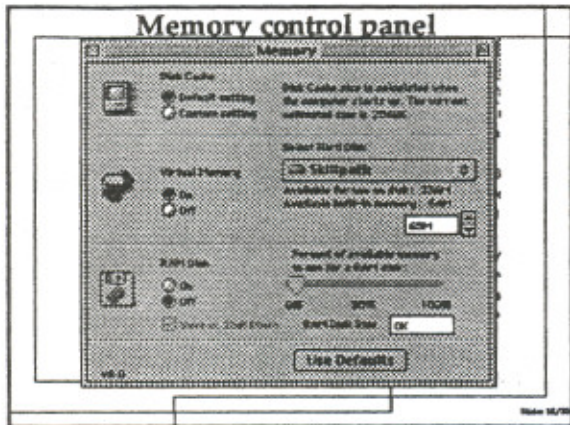
Slide 16/29

Clean Install (Continued)

- Will rename the System folder "Previous System folder"
- And installs a brand new System folder
- Blesses the New System folder
- Rebuild DeskTop & Zap the Pram


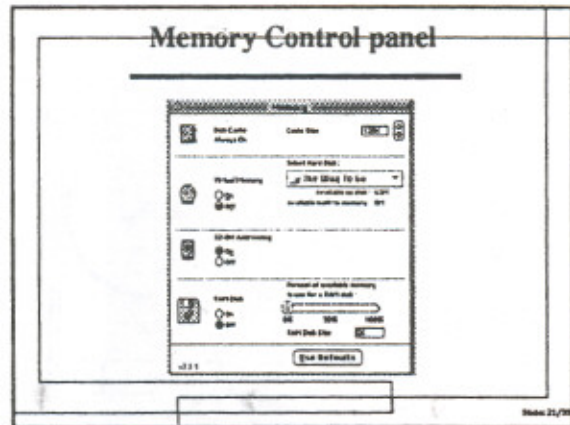
Slide 17/29






5. Adjust the CACHE

- Acts as a buffer between the CPU, RAM, & Hard Disk
- Control panel / General (memory)
- Stores frequent operations
- Stores data
- Fast data transfer


6. Flush the Clipboard

- Copy one character twice





7. RAM disks

- The opposite of Virtual
- Uses RAM as disk space
- PowerBooks & commercial software
- Put System folder in RAM Disk



Memory





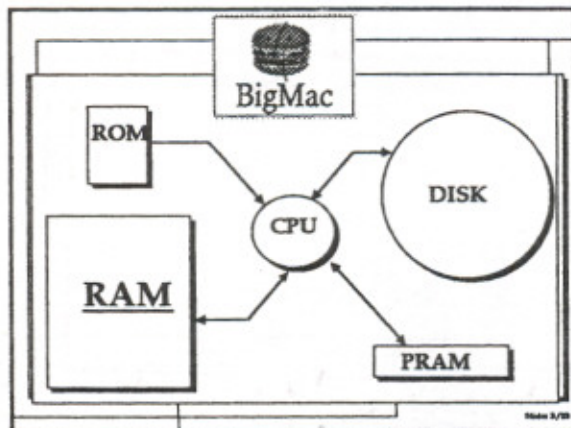
Section IV

Slides © William C. Allen 3/1/96 Slide 1/28

Objectives

- How your Mac handles RAM
- How you can tell if you are having memory problems
- 9 things to do to handle memory problems
- How to Zap your PRAM

Slide 2/28




The Mac and its memory

- RAM - Random Access Memory
 - Work Space
 - RAM assignments made at Startup/Launch
 - RAM is directly addressable
 - Single in-line memory modules (SIMMs)
 - Dual in-line memory modules (DIMMS)

Slide 4/28

Macintosh Memory Organization



Slide 6/28

System 7 & 8 and the System Heap

- Extensions, RAM/Disk cache, File sharing, Drivers, sounds all vie for space in the System Heap
- The System Heap is dynamic
- The larger the System Heap the less space for your applications
- INIT or Font manager will help
 - Suitcase, Master Juggler, Now Utilities

Slide 7/28

MAC HARDWARE



Section IX

Slides © William C. Allen 8/1/96

A look inside the box

- Dissemble *and* reassemble your Mac
- Identify major hardware components
- Perform basic upgrades & preventive maintenance tasks
- Isolate and replace failed components
- Plus - Printing Troubleshooting

Possible Hardware Problems

- Shaky screen
- Sad Mac
- No display
- ? Icon
- No Bong
- Distress chord
- Smoke



CPU



- The Central Processing Unit is the brains of the computer.
- It's like a telephone operator in that it routes data from one component in the computer to another.

ROM



- Read Only Memory chips contain the proprietary part of the Mac's Operating System.
- These chips are not removable on most Macs, but are upgraded automatically by the System file (ROM patched).
- If your Mac's ROM is bad, you will not hear the startup sound (POST) and it will not bootup.

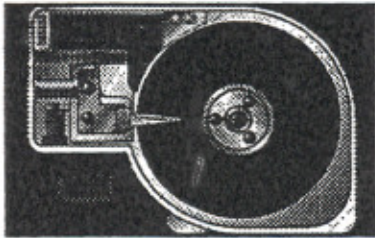
RAM



- Random Access Memory is a set of chips on the System board where all of our applications and files get things done when they are running.
- RAM on the Mac is installed on SIMMs (Single In-line Memory Modules) or DIMMs (Double in-line memory Modules).
- Most newer Macs have a certain amount of RAM soldered on to the System board and have several RAM slots into which you plug additional SIMMs or DIMMs in order to get more memory.

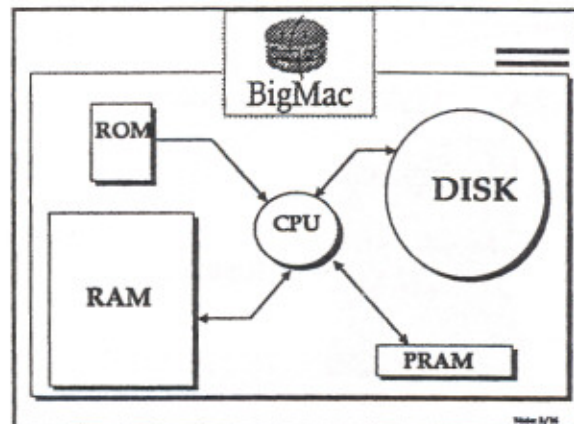
Macintosh Disks

Section V



Slides © William C. Allen 8/1/86

Slide 1/16



Slide 1/16

Dispelling some old husbands tales

- Refrigerator magnets can erase data with direct contact.
- Heat will not cause data loss.
- Static electricity will not cause data loss.
- X-rays will not cause data loss.
- Beware of metal detectors!

Slide 4/16

The Boot process

- CPU loads start-up manager (489)
- P.O.S.T. is run
- ROM looks for Boot Disk
 - Internal Floppy
 - External Floppy
 - CD ROM (if "C" key is depressed)
 - PRAM (Start up Disk Control Panel)
 - Internal IDE Drive
 - SCSI BUS 0 ID 6,5,4,3,2,1,0
 - Internal Floppy & ? ICON
- Mac smiles, ROM loads system file
- System file loads the INITs
- Finder draws Desk Top

Now It Works

Slide 4/16

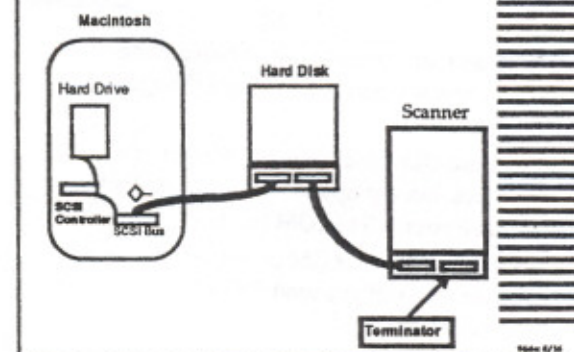
SMALL COMPUTER SYSTEM INTERFACE

- 8 bit parallel bus
- 650,000 bytes per second transfer rate
- Allows device daisy chaining (up to 7)
- All devices must have unique address
 - Macintosh = 7
 - Internal hard drive = 0
 - Internal CD ROM Drive = 3
- Both ends must be terminated

Now It Works

Slide 7/16

Attaching SCSI Devices

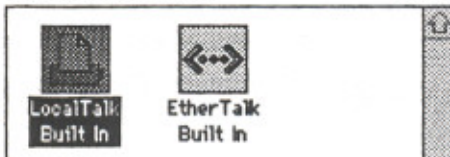


Slide 4/16

Select Network Wiring

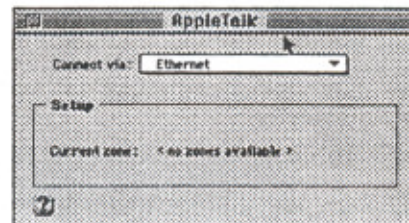
- With Classic Networking
 - » Select Network Control Panel

AppleTalk Connection: 3.0.3



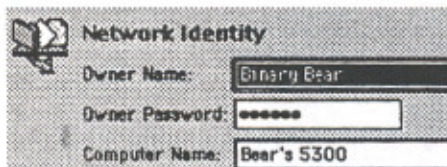
Select Network Wiring

- With Open Transport
 - » Select AppleTalk Control Panel



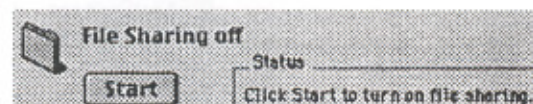
Setting Computer Identity

- System 7 - Sharing Setup Control Panel
- OS 8 - File Sharing Control Panel
 - » Claim ownership
 - » Set a password
 - » Name the computer



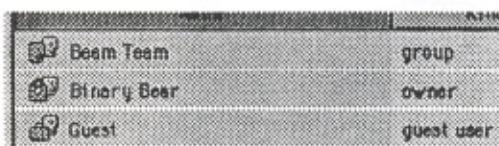
Enable File Sharing

- From the File Sharing or Sharing Setup Control Panel
 - » Click Start



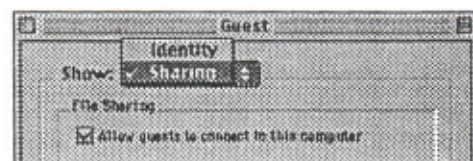
Grant Sharing Privileges

- Open Users and Groups Control Panel
 - » Allow Guest Access
 - » Add new Users
 - » Add new Groups



Allowing Guest Access

- Open the Guest User
- Select Sharing from the popup menu
- Allow guests to connect to this computer



Networks

**Glossary

- A computer network is two or more devices
- LANs local area network
- MANs Metropolitan area network
- WANs Wide area network
- Nodes Individual devices with unique IDs
- Protocol AppleTalk, Ethernet, TCP/IP
- Zones larger networks connected by bridges, routers, or gateways

**Glossary

- AppleTalk can have up to 255 nodes, realistically networks over 32 are slow
- AppleTalk for LANs is called LocalTalk
- LocalTalk can transmit data at 230 kilobits a sec
- Ethernet can transmit at 10 megabits a second 43 times as fast
- Ethernet is the cards and cabling
- EtherTalk software & communications protocols

**Glossary

- 1BASE5 1MB/s over unshielded twisted pair
- 10BASE2 Ethernet over thin coaxial, black
- 10BASE5 Ethernet over thick coaxial, yellow
- 10/100 BASE-T Ethernet over unshielded twisted pair
- FOP Fiber Optic Cable
- Category 3,5

Three Types of Networks

- LocalTalk (Phonenet)
- EtherTalk (Ethernet)
- TokenTalk (Token Ring)

- Peer-to-Peer Network (daisy chain)
- Dedicated File Server (usually star configuration)
 - One computer designated as the shared storage machine
 - AppleShare File Server enhances this configuration

LocalTalk Daisy Chain

