
New Technical Notes

Macintosh



®

Developer Support

Category Index

Index

M.IX.CategoryIndex

This index lists each Technical Note by Category, and gives a brief description of its contents.

Devices

M.DV.AbsolutePointingDev. Absolute Pointing Device Memory Structure.

Dave Fleck, Don Ko & Richard Breen (April 1992). David Stevenson (February 1990).

This Technical Note specifies a memory data structure for use by absolute pointing devices; it was developed for the Apple Desktop Bus (ADB) but could also be used for devices using serial input. Generally, this data structure is created and updated by the pointing device's driver and read by either an application or the system cursor rendering software.

M.DV.AddDriveDrvInstall. _AddDrive, _DrvInstall, and _DrvRemove.

Pete Helme (December 1988). Jim Friedlander (March 1987).

_AddDrive, _DrvInstall, and _DrvRemove are used in the sample SCSI driver in the SCSI Development Package, which is available from APDA. This Technical Note documents the parameters for these calls. Changes since March 1, 1988: Updated the _DrvInstall text to reflect the use of register A0, which should contain a pointer to the driver when called. Also added simple glue code for _DrvInstall and _DrvRemove since none is available in the MPW interfaces.

M.DV.BootBlocks. Boot Blocks.

(March 1988). Bob Johnson (March 1987).

There are two undocumented features of the Boot Blocks. This note will describe how they currently work. Warning: The format and functionality of the Boot Blocks will change in the future; dependence on this information may cause your program to fail on future hardware or with future System software.

M.DV.BusErrorHandler. Bus Error Handlers.

Colleen K. Delgadillo (May 1992). Wayne Meretsky and Rich Collyer (February 1991).

This Technical Note discusses bus errors and how applications and drivers should deal with them. Changes since February 1991: Discussion of why declaration ROMs are necessary in NuBus™ design. This discussion is important for those who are considering using a workaround instead of declaration ROMs. Also added are some hints that you should be aware of if you are planning to write a bus error handler for the '040.

M.DV.CD-ROMNotes. Most Excellent CD Notes.

James Beninghaus (February 1991).

This Technical Note discusses issues concerning the use of the AppleCD SC drive, the Apple CD-ROM device driver, and the Foreign File Access software extension.

M.DV.OurChecksumBounced. Our Checksum Bounced.

Jim Reekes (October 1989).

This Technical Note discusses a fix to a SCSI Manager bug which concerns all developers working with SCSI and NuBus™ device drivers.

M.DV.Drivers&DAsInNeed. DAs & Drivers in Need of (a Good) Time.

Pete Helme (October 1989). Pete Helme (August 1989).

This Technical Note describes a few complications which rear their rather ugly little heads when a desk accessory or driver needs periodic time. It also presents a few solutions to work around these problems and make life easier, at least periodically. Changes since August 1989: Corrected `_BitClr` and `_BitSet` examples. Okay, I admit it. I was having too good of a time when I wrote the original Note and messed up the bit manipulations at the end. My vision was blurred; I was in no condition to see those tiny little things.

M.DV.DriveQueueElements. Drive Queue Elements.

(March 1988). Bryan Stearns (June 1985).

This note expands on Inside Macintosh's definition of the drive queue, which is given in the File Manager chapter.

M.DV.FearNoSCSI. Fear No SCSI.

Colleen Delgadillo (September 1992).

This Technical Note discusses the answers to questions that are often asked about SCSI and that are not discussed in *Inside Macintosh* Volumes IV and V.

M.DV.FindingDrivers. Finding Drivers in the Unit Table.
(March 1988). Rick Blair (February 1986).

This note will explain how code can be written to determine the reference number of a previously installed driver when only the name is known. Changes since 2/86: Since the driver can be purged and the DCE still be allocated, the code now tests for dCtlDriver being NIL as well.

M.DV.HardDiskHacking. Hard Disk Hacking.
(March 1988). Bo3b Johnson (September 1987).

For those of a technical bent with some extra time, you can build your own hard disk system from a cheap SCSI drive and a driver that you write. This is not a project for those short on time, so beware.

**M.DV.HighLevelControl. High-Level Control and Status Calls:
When a Good Call Goes Bad.**
Gordon Sheridan (January 1992). Tim Enwall (February 1990).

This Technical Note discusses situations under which high-level Status calls do not work correctly and PBStatus calls should be made instead. Changes since February 1990: Information has been added describing similar problems with high-level Control calls.

M.DV.MonitorDepth. Gimmie Depth Or Gimmie Death (So You Want to be a Monitors Impersonator?).

Guillermo Ortiz (June 1990). Guillermo Ortiz (April 1990).

This Technical Note describes two new system calls that allow an application to change the depth and flags for a given device and also check whether a device supports a particular depth and flags setting. Apple provides these calls to give developers a better way to help users make changes when they consider it appropriate. Abusive use of these calls is a sure way to guarantee that the Thought Police come after you to confiscate your Macintoshes, your stock of Mountain Dew®, and your Technical Notes binder. This Note assumes familiarity with Inside Macintosh, Volume V, Graphics Devices. Changes since April 1990: Corrected trap addresses and dispatch numbers in the SetDepth and GetDepth definitions.

M.DV.PBClose. _PBClose the Barn Door.

Dave Radcliffe (June 1990).

This Technical Note discusses the need for Macintosh device drivers to implement _PBClose.

M.DV.SerialPollProc. Serial PollProc.

Rich “I See Colors” Collyer & Dave Wong (June 1992).

This Technical Note discusses how to make a PollProc for your MIDI (Musical Instrument Digital Interface) driver on the Macintosh PowerBook 140 and 170.

M.DV.SCSIBUGS. SCSI Bugs.

Bryan Stearns and Steve Flowers (November 1986). Bob Johnson (July 1987).

There are a number of problems in the SCSI Manager; this note lists the ones we know about, along with an explanation of what we're doing about them. Changes made for the 2/88 release are made to more accurately reflect the state of the SCSI Manager. System 4.1 and 4.2 are very similar; one bug was fixed in System 4.2.

M.DV.SCSIBUGSTermination. SCSI Termination.

Dave Radcliffe (May 1992). Rich "I See Colors" Collyer (April 1990).

This Technical Note discusses SCSI termination on the Macintosh, including the new rules of termination which are necessary with the advent of the high-speed Macintosh IIx. Changes since June 1990: Added a discussion of Macintosh Quadra SCSI termination.

M.DV.OpeningSerialDriver. Opening the Serial Driver.

Sriram Subramanian (December 1989). Sriram Subramanian (August 1989).

This Technical Note describes the recommended, safe, and compatible way to open the Macintosh serial driver, and it explains why you should no longer check for port availability. Changes since October 1989: Corrected syntax errors in the sample code.

M.DV.SerialGPi. The Serial General-Purpose Input (GPi).

Craig Prouse (February 1991).

This Technical Note discusses the latest supported methods for reading, validating, and configuring the GPi serial input across all members of the Macintosh family.

M.DV.SonyDriver. What Your Sony Drives For You.

Rich “I See Colors” Collyer & Cameron Birse (June 1990). Rich “I See Colors” Collyer & Cameron Birse (April 1990).

This Technical Note discusses the Sony driver control and status calls that are available on the Macintosh. Changes since April 1990: Corrected Figure 2, since the Return Physical Drive Icon (csCode = 21) returns an error message instead of an icon on the Macintosh Plus.

Files

M.FL.ActiveFS. Determining Which File System Is Active.

Robert Lenoil & Brian Bechtel (August 1990). Jim Friedlander (December 1985).

This Technical Note discusses how to determine which file system a particular volume is running. Changes since June 1990: Removed text about IDs \$0001-\$0016 being AppleShare volumes; other file systems use this range too.

M.FL.ResolvingAliasFiles. Resolving Alias Files Quietly.

Greg Robbins (May 1992).

ResolveAliasFile always presents the user identity dialog when mounting remote volumes. This Technical Note offers an alternative function, ResolveAliasFileMountOption, which uses the previously undocumented FollowFinderAlias trap to resolve alias files only if their target is on an already mounted volume. Also included is an IsAliasFile routine for identifying alias files.

M.FL.BlessedFolder. How to Bless a Folder to Be the System Folder.

Colleen K. Delgadillo (May 1992). Jim Friedlander (March 1988).
Jim Friedlander (January 1986).

This Technical Note describes how to determine which folder on an HFS volume is the blessed folder, that is, the folder that contains both the System file and the Finder. Changes since January 1986: The information about how to find the "Blessed Folder" has been deleted from this technical note. The FindFolder function can now be used to find the "Blessed Folder" and is documented in Inside Macintosh Volume VI, pages 9-42 to 9-44. This note now includes information about how to bless a folder to the new system folder.

M.FL.Caching. Caching.

(March 1988). Rick Blair (June 1986).

This technical note describes disk and File System caching on the Macintosh, with particular emphasis on the high-level File System cache. Of the three caches used for file I/O, this is the one which could have the most impact on your program. Note: This big File System cache is not available on 64K ROM machines.

M.FL.HFSCCompatibilityGuide. HFS Compatibility Guidelines.

Scott Knaster and Jim Friedlander (March 1988). Jim Friedlander (October 1985).

This technical note tells you how to make sure that your applications run under the Hierarchical File System (HFS).

M.FL.CreatingFilesInDrop. Creating Files Inside an AppleShare Drop Folder.

Fred A. Huxham (November 1987). (March 1988). Rich Andrews (August 1987).

This technical note outlines the steps an application must take to create files inside AppleShare drop folders.

M.FL.CreateResFilePMSP. CreateResFile and the Poor Man's Search Path.

(March 1988). Jim Friedlander (January 1987).

CreateResFile checks to see if a resource file with a given name exists, and if it does, returns a dupFNErr (−48) error. Unfortunately, to do this check, CreateResFile uses a call that follows the Poor Man's Search Path (PMSP).

M.DV.HardDiskMedic. Hard Disk Medic & Booting Camp.
(March 1988). Bob Johnson (July 1987).

The death of a hard disk with megabytes worth of data can be exceedingly traumatic. This technical note will describe techniques for recovering a hard disk and the data that is on it. The discussion will also include some tips on how to avoid problems.

M.FL.ErrorInFCBPBRec. Error in FCBPBRec.
(March 1988). Jim Friedlander (August 1986).

The declaration of a FCBPBRec is wrong in Inside Macintosh Volume IV and early versions of MPW. This has been fixed in MPW 1.0 and newer.

M.FL.FileSharing. File Sharing and Shared Folders.
Jim Luther (August 1991).

This Note describes modifications to the existing File Manager routines, PBGetCatInfo, PBHGetDirAccess, PBHSetDirAccess, PBHSetFLock and PBHRstFLock, when used on volumes prepared by Macintosh System 7 File Sharing.

M.FL.GettingAFullPathName. Getting a Full Pathname.

Keith Rollin (October 1989). Keith Rollin (June 1989).

This Technical Note describes how to generate a full pathname, given either a Working Directory ID or a real vRefNum and a DirID. By using the techniques shown in this Note, you can find the full pathname from information such as that returned by Standard File. Changes since June 89: Added a note on how to check for A/UX. Fixed bug in C version: BlockMove() parameters were reversed in pStrcpy(); added range checking to pStrCat(); changed references from “longint” to “long”. Fixed bug in Pascal and C versions: Changed fsRtDir to fsRtdirID and made references to gHaveAUX consistent.

M.FL.ProblemWithGetVInfo. Problem with GetVInfo.

(March 1988). Jim Friedlander (September 1987).

The high-level call GetVInfo (and its low-level counterpart PBGetVInfo) may return inaccurate results for freeBytes when running HFS.

M.FL.HFSElucidations. HFS Elucidations.

(March 1988). Bryan "Bob" Johnson (January 1987).

This technical note will describe a few problems that can occur while using HFS. It will also describe ways to avoid these problems.

M.FL.HFSRuminations. HFS Ruminations.
(March 1988). Jim Friedlander (June 1986).

This technical note contains some thoughts concerning HFS.

M.FL.ClearingIOCompletion. Clearing ioCompletion.

(March 1988). Jim Friedlander (May 1987).

M.FL.ioFDirIndexSetting. Setting ioFDirIndex in PBGetCatInfo Calls.

Jim Friedlander (March 1988). Jim Friedlander (February 1986).

This technical note describes how to set ioFDirIndex for PBGetCatInfo.

M.FL.ioNamePtr. Setting ioNamePtr in File Manager Calls.

(March 1988). Jim Friedlander (November 1987).

M.FL.ioPosOffset. Don't Look at ioPosOffset.

Darin Adler (April 1988).

M.FL.ISO9660CD-ROM. High Sierra & ISO 9660 CD ROM Formats.

Brian Bechtel (August 1988).

What's Wrong with my High Sierra Disc?

M.FL.LockUnlockTheRange. Lock, Unlock the Range.

Jim Luther (February 1991). Dave Burnard (April 1988).

This Technical Note discusses the `_PBLockRange` and `_PBUnlockRange` routines; how they act on local and shared volumes and why you should not set the `ioPosMode` field to `fsFromLEOF` in the parameter block for those routines when accessing a file on an AppleShare volume. Changes since April 1988: Added information on how `_PBLockRange` and `_PBUnlockRange` really work.

M.FL.MixingHFSandC. Mixing HFS and C File I/O.

Jeanette Robertson (August 1989).

This Technical Note discusses the problem of mixing calls to the Macintosh file system with calls to MPW C library file I/O routines.

M.FL.DataInResourceFork. Don't Use the Resource Fork for Data.

(March 1988). Bryan Stearns (March 1986).

M.FL.NullInFilename. Nulls in Filenames.

(March 1988). Rick Blair (March 1987).

M.FL.PBCatMove. Moving Your Cat.

John Harvey (February 1991). John Harvey (February 1989).

This Technical Note clarifies the documentation in Inside Macintosh for `_PBCatMove` and provides a demonstration on how to use it. Changes since February 1989: Added a discussion of using NIL for the destination name pointer, which is the simplest way to use `_CatMove`, and revised the sample code to use the high-level File Manager calls. Thanks to Tim Dierks of Apple Developer Technical Support U.K. for pointing out the problems with the previous version of this Note.

M.FL.PBHSetVoll. Why PBHSetVol is Dangerous.

(March 1988). Chris Derossi (July 1987).

This note explains PBHSetVol, and why its use is not recommended.

M.FL.PBSharePBUnshare. PBShare, PBUnshare, and PBGetUGEntry.

Jim Luther (January 1992). Jim Luther (October 1991).

This Technical Note documents three new File Manager routines available on shared local volumes. The Pascal glue code, C glue code, and the assembler equates and macros for the calls are included in this note. Changes since October 1991: Corrected ioObjType input values for PBGetUGEntry.

M.FL.SearchingVolumes. Searching Volumes—Solutions and Problems.

Jim Luther (January 1992). Jim Friedlander and Rick Blair (December 1985 – October 1988).

This Technical Note discusses the PBCatSearch function and tells why it should be used. It also provides simple algorithms for searching both MFS and HFS volumes and discusses the problems with indexed search routines. Changes since October 1988: Includes information on PBCatSearch and notes the problems with indexed search routines. Source code examples have been added and revised. Thanks to John Norstad at Northwestern University for pointing out some of the shortcomings of the indexed search routines. Thanks to the System 7 engineering team for adding PBCatSearch.

M.FL.StandardFileCustomization. Customizing Standard File. (March 1988). Jim Friedlander (October 1985).

This note contains an example program that demonstrates how SFPGetFile can be customized using the dialog hook and file filter functions.

M.FL.SFTips. Standard File Tips.

(March 1988). Jim Friedlander (June 1986).

M.FL.Sparing. Hey Buddy, Can You Spare A Block?

Philip D. L. Koch, Jim Reekes, & Kenny Tung (February 1991).

This Technical Note discusses a new feature of the System Software 7.0 Disk Initialization Package—bad block sparing.

M.FL.Tags. Tags.

(March 1988). Bryan Sterns (November 1986).

Apple has decided to eliminate support for file-system tags on its future products; this technical note explains this decision.

M.FL.VCBandDriveNum. The Real Story: VCBs and Drive Numbers.

(March 1988). Rick Blair (January 1987).

M.FL.Volumes. Available Volumes.

(March 1988). Bryan Sterns (October 1985). Bryan Sterns (April 1985).

Standard File lets the user select one file from any available volume; it is sometimes necessary for an application to find which volumes are present. This technical note gives the proper method of accomplishing this.

M.TB.HFSTidbits. HFS Tidbits.

Dave Burnard (August 1988).

This Technical Note describes two poorly documented features of the File Manager.

M.TN.WDMultifinder. Working Directories and MultiFinder.

Darin Adler (April 1988).

This technical note describes the way that working directories are handled under MultiFinder.

Hardware

M.HW.Macintosh21Color. Macintosh 21" Color Display Technical Specifications.

Guillermo Ortiz (October 1992).

This Technical Note presents the technical specifications for the Macintosh 21" Color Display with the objective of allowing display board and accelerator board manufacturers to ensure compatibility with this monitor.

M.HW.ADB. Space Aliens Ate My Mouse (ADB–The Untold Story).

Rich Kubota (October 1991). Cameron Birse (August 1988).

This Technical Note explains how the Apple Desktop Bus (ADB) works on the Macintosh. This Note covers the boot process, driver installation, ADB Manager run-time behavior, use of ADB Manager calls, and answers commonly asked questions. Changes since February 1990: Added description of the boot process to include detail on how the ADBS resource gets called by the System, added detail to 2 of the answers in the Q&A section, and added sample completion routines for the ADBOp function.

M.HW.ADBReInit. Don't Call ADBReInit on the SE with System 4.1.

(March 1988). Mark Baumwell (July 1987).

M.HW.Boardkits. Suppliers for Macintosh II Board Developers.

(March 1988). Mark Baumwell (July 1987).

This note lists suppliers of parts that may be helpful for Macintosh II board developers. If your company supplies these parts, but is not listed here, please send a message to us (at the address on Technical Note #0) and we'll include you in the next revision of this technical note.

M.HW.BreakCTSEvent. Break/CTS Device Driver Event Structure.

(March 1988). Mark Baumwell (December 1986).

This technical note documents the event record information that gets passed when the serial driver posts an event for a break/CTS status change.

M.HW.ByteSmearing. Smear Tactics.

Dave Radcliffe & Carl Hewitt (August 1990).

This Technical Note discusses a feature of the current Macintosh hardware which will not be supported in the future. Macintosh hardware developers and driver writers should be aware of this limitation as it affects current and future products.

M.HW.CacheAsCacheCan. Cache As Cache Can.

Rich Kubota, Craig Prouse (April 1992). Andrew Shebanow (October 1989).

This Technical Note documents cache behavior, manipulation of processor caches, and manipulation of external caches on Macintosh models that incorporate these features. It also describes how system software uses a memory management unit (when available) to implement special caching options. Changes since October 1991: Described use of AppleTalk Transition Queue event, ATTransSpeedChange, when altering the 68040 cache state on the fly. This call must be issued so that LocalTalk can reevaluate its timers. Otherwise LocalTalk becomes disabled.

M.HW.CMOSonLCPDS. CMOS On Macintosh LC PDS.

Paul Baker & Rich Collyer (February 1991).

This Technical Note provides PDS card developers with some important information about making PDS cards for the Macintosh LC.

M.HW.ColorMonitors. Macintosh Color Monitor Connections.
Jim Luther & Wayne Correia (February 1991). Mark Baumwell (July 1987).

This Technical Note describes how to connect the Macintosh II Video Card, Macintosh IIfx built-in video, and Macintosh LC video to third-party monitors. Changes since February 1990: Added pinout description for the Macintosh LC external video connector and a Macintosh LC to VGA monitor adapter cable. Standardized signal names throughout Note.

M.HW.MacIIfx. Macintosh IIfx: The Inside Story.

Rich “I See Colors” Collyer (April 1990).

This Technical Note addresses various areas of potential incompatibilities with the Macintosh IIfx and current software applications and provides information about some of Apple’s compatibility software updates.

M.HW.MacPlusPinouts. Macintosh Plus Pinouts.

(March 1988). Mark Baumwell (March 1986). Mark Baumwell (January 1986).

This note gives pinout descriptions for some of the Macintosh Plus ports and Macintosh Plus cables that are different than the Macintosh 128K and 512K.

M.HW.MathCoProc. Cooperating with the Coprocessor.

Jim Reekes (October 1990). Jim Reekes (June 1989).

The use of the 68881 or 68882 coprocessor is usually handled by the SANE package or by a development system’s libraries. Some developers may wish to use the coprocessor during special circumstances, such as at interrupt level or installing their own hardware floating point exception handlers. In these two situations, there are special requirements that must be met. These requirements will require floating–point assembly code and are discussed in this Technical Note. Changes since June 1989: Noted that the new Sound Manager no longer uses floating-point numbers at interrupt time.

M.HW.MemConfigs. Macintosh Memory Configurations.

Jack Robson (April 1992). Mark Baumwell, Craig Prouse, and Dennis Hescox Cameron Birse (November 1987).

This Technical Note describes the different possible memory configurations of all models of the Macintosh family that use Single In-line Memory Modules (SIMMs) as well as the non-SIMM memory upgrade options of the Macintosh Portable and Macintosh Classic. (Special thanks to Brian Howard for the Macintosh Plus and original SE drawings, and for the inspiration for the other drawings.) This Note also describes the obstacles to using four megabit (Mbit) DRAM SIMMs in Apple Macintosh products to date. Changes since November 1991: Corrected error on the RAM configuration chart (page 2); additional information added to Quadra 900 section (page 15).

M.HW.NuBusPhysicalDesign. NuBus Physical Designs—Beware.

Rich Collyer (December 1989). Rich Collyer (June 1989).

This Technical Note discusses the possible problems you might run into while designing a NuBus™ card. It covers some of the specifications which, if not followed, will have problems with current Macintosh machines, and possibly future machines. Changes since June 1989: Added warnings about the no component area and full-size NuBus cards.

M.HW.NuBusInterruptLatency. NuBus Interrupt Latency (I Was a Teenage DMA Junkie).

Cameron Birse (October 1989). Cameron Birse, Mark Baumwell, & Rich Collyer (December 1988).

This Technical Note discusses NuBus™ interrupt latency, and why, contrary to popular belief, the Macintosh is not a real-time machine. Changes since December 1988: Changed sample code to defer cursor rendering to a deferred task rather than a “pseudo-VBL” task.

M.HW.NuBusPower. NuBus Power Allocation.

Rich “I See Colors” Collyer (October 1989).

This Technical Note discusses a very real power limit for NuBus™ expansion cards and warns developers to heed this limit lest they want users trashing their machines by overextending the Macintosh power supply.

M.HW.Pinouts. Pinouts.

(March 1988). (July 1985). Mark Baumwell (April 1985).

This note gives pinouts for Macintosh ports, cables, and other products.

M.HW.MacPlusROMVers. Macintosh Plus ROM Versions.
(March 1988). Cameron Birse (July 1987).

M.HW.MacPortablePDS. Macintosh Portable PDS Development.
Dennis Hescox (February 1990). Dennis Hescox (October 1989).

The Technical Note describes the unique aspects of the Macintosh Portable Processor Direct Slot (PDS), including the severe limitations in its use. Changes since October 1989: Corrected PDS pin and signal descriptions in Tables 2 and 3.

M.HW.MacPortableROMExp. Macintosh Portable ROM Expansion.
Dennis Hescox (October 1989).

This Technical Note explains the practice of and theory behind compatible use of the expansion ROM in the Macintosh Portable.

M.HW.PowerbookMiscellanea. PowerBook Miscellanea (Cold Serial in the Morning).
Dennis Hescox and Blake Roberts (October 1992).

This Technical Note describes some nonintuitive ramifications of working with a battery-powered computer.

M.HW.LittlePowerbookSleep. Little PowerBook in Slumberland.
Dennis Hescox and Blake Roberts (October 1992).

The purpose of this Note is to describe the ramifications of resting, sleeping, and power-saving modes in the PowerBook family of Macintosh computers, how they may affect your application, and the appropriate ways to defeat them, when appropriate. It also describes some nonintuitive ramifications of working with a battery-powered computer.

M.HW.psltResource. What Is a 'pslt' resource?

Rich "I See Colors" Collyer and Dave Fung (January 1992).

One of the new resources that can be very helpful to some NuBus™ developers is the 'pslt' resource. The only problem is that the resource is not documented. This Technical Note takes care of the documentation problem.

M.HW.FPUOperationsOnQuadras. FPU Operations on Macintosh Quadra Computers.

This technical note discusses floating-point unit (FPU) instruction support on Macintosh Quadra platforms with special emphasis given to compatibility and performance concerns.

M.HW.MacSE30Info. Pertinent Information About the Macintosh SE/30.

Chris Knepper (June 1989). Chris Knepper (April 1989).

This Technical Note discusses the Macintosh SE/30, items of interest to developers, and sources for further information. Changes since April 1989: Corrected an error in the addresses of the video display buffers.

M.HW.Sense Lines. Sense Lines.

Rich Collyer & Blake Roberts (September 1992).

Ever wonder how to set up an Apple video card or an on-board video to support various size monitors? Well, this Technical Note will tell you everything you need to know about what monitors are supported and how.

M.HW.SlotInterruptPrior. Slot Interrupt Prio-Technics.

Mark Baumwell (October 1989).

This Technical Note describes the way interrupt priorities are scheduled, which corrects the description of slot interrupt queue priorities in the Device Manager chapter of Inside Macintosh, Volume V-426.

M.HW.SpeedyMathCoProc. Speedy the Math Coprocessor.
Rich Collyer (June 1989).

This Technical Note presents an overview of the 68881 and 68882 math coprocessors, and it covers general information about the chips as well as how using the chips directly can help speed your math-intensive code.

**M.HW.NuBusBlockTransfer. NuBus Block Transfer Mode
sResource Entries.**
Guillermo Ortiz (February 1991).

This Technical Note describes the sResource entries needed in a declaration ROM to inform NuBus™ masters when a board is capable of receiving or sending block transfers.

Imaging

M.IM.32BitQuickDraw. 32-Bit QuickDraw: Version 1.2 Features.
Guillermo Ortiz (April 1990).

This Technical Note describes the changes and enhancements to 32-Bit QuickDraw from version 1.0 (as shipped on the original Color Disk) to version 1.2, which ships with System Software 6.0.5 and later. This Note assumes familiarity with Inside Macintosh, Volume V, Color QuickDraw, and 32-Bit QuickDraw release notes.

M.IM.PrintDialogsAddingItems. How To Add Items to the Print Dialogs.

(March 1988). Ginger Jernigan and Lew Rollins (November 1986).

This technical note discusses how to add your own items to the Printing Manager's dialogs.

M.IM.EveryPictureComment. Every Picture [Comment] Tells Its Story, Don't It?

(March 1988). Rick Blair (November 1987).

Application-specific picture comment conflict and registration is addressed, along with Developer Technical Support's method for solving it.

M.IM.BitMapToRegion. So Many Bitmaps, So Little Time.

Rich Collyer (December 1989). Rick Blair (April 1988).

This Technical Note discusses the routine BitMapToRegion, which converts a bitmap to a region, and is available in the 32-Bit QuickDraw INIT and from Apple Software Licensing. Changes since October 1989: Added trap definitions for developers using the 32-Bit QuickDraw version of this routine without the correct MPW include file.

M.IM.ColorizingWithCopyBits. Adding Color With CopyBits.
(March 1988). Chris Derossi (November 1987).

Inside Macintosh Volume V states that the foreground and background colors are applied to an image during a CopyBits or CopyMask call. Accidental use of this feature can create bizarre coloring effects. This note explains what happens, how to avoid problems, and how to use it.

M.IM.ColorCursorCursing. A Leading Cause of Color Cursor Cursing.

Alan Mimms (October 1989). Alan Mimms (June 1989).

Working with color cursors you create from scratch can cause headaches. This Technical Note may help a bit. Changes since June 1989: Added a warning about purgeable 'clut' resources.

M.IM.ColorPrinting. Color Printing.

(March 1988). Scott "ZZ" Zimmerman (January 1988). Ginger Jernigan (February 1986).

This discusses color printing in a Macintosh application.

M.IM.DeviceIndependentPrinting. Device-Independent Printing.
(March 1988). Ginger Jernigan (May 1987).

**M.IM.DictionaryDownloading. The Lo Down on Dictionary
Downloading.**
Zz Zimmerman (April 1991).

This technical note discusses a method for downloading PostScript dictionaries automatically using the LaserWriter driver. It will also provide the format and use of the PREC(103) resource. It will also describe some problems with the now obsolete PREC(201) resource. If you are using PostScript dictionaries, or either of these resources, you should definitely read this note.

**M.IM.DocumentNames. Document Names and the Printing
Manager.**
(March 1988). Bryan Stearns (July 1987).

Our compatibility testing for LaserShare (Apple's LaserWriter spooler) has turned up a number of applications that do not provide the Printing Manager with a document name; although this feature is not required, it is nice for users that share printers.

M.IM.DrawingIcons. Drawing Icons.
Jim Friedlander (October 1985).

Using resources of type ICON allows drawing of icons in srcOr mode. Using resources of type ICN# allows for more variety when drawing icons.

M.IM.FeederFodder. Feeder Fodder.

Zz Zimmerman (April 1991).

This Technical Note discusses the new Feeder button available in the 6.1, and 7.0 versions of the LaserWriter driver. This Feeder button mechanism allows developers to insert code into the LaserWriter driver to support a sheet feeder connected to a LaserWriter. This Note provides a description of the button, as well as information required to implement one.

M.IM.FontFamilies. Font Family Numbers.

Bill Mitchell (March 1991). John Harvey (August 1989).

This Technical Note discusses the range of numbers available for identifying font families, how they are allocated among script systems, and what numbers should be used for fonts that were designed to be used as a tool in an application. Changes since August 1990: Apple Computer no longer registers font family ID numbers; this note has been altered to reflect the change in policy. Also, the relationship of outline fonts to font families is discussed briefly.

M.IM.FontIcons. Where Have My Font Icons Gone?

Pete “Luke” Alexander (April 1991). Pete “Luke” Alexander (December 1988).

This Technical Note discusses why you should not link directly from your font files to the font icons provided by LaserWriter driver 5.2 and later. Changes since December 1988: Added some useful tips and described the method required to bundle an icon to your font file.

M.IM.FontNames. Font Names.

Bryan Stearns (August 1988). Darin Adler (April 1988).

This note recommends the use of font names rather than font numbers.

M.IM.GCQuickDrawCopybits. Deaccelerated _CopyBits & 8•24 GC QuickDraw.

Guillermo A. Ortiz (February 1991).

This Technical Note discusses conditions that may cause _CopyBits to slow down when QuickDraw acceleration is on via the Apple 8•24 GC Display Card.

M.IM.IconDrawingTheSystem7. Drawing Icons the System 7 Way.

Don Moccia (October 1992) Jim Mensch (May 1992). Jim Mensch and David Collins (October 1991).

This Technical Note describes how to utilize the built-in System 7 icon drawing utility. Use this information to better conform to the System 7.0 visual human interface.

M.IM.ImageWriter. Using Low-Level Printing Calls With AppleTalk ImageWriters.

(March 1988). Scott "ZZ" Zimmerman (February 1988). Ginger Jernigan (May 1987).

M.IM.ImageWriterIIPaper. ImageWriter II Paper Motion. (March 1988). Ginger Jernigan (April 1986).

The purpose of this technical note is to answer the many questions asked about why the paper moves the way it does on the ImageWriter II.

M.IM.IsASpooler. Am I Talking To A Spooler?

(March 1988). Ginger Jernigan (July 1987).

M.IM.DisplayingLargePict. Displaying Large PICT Files.

(March 1988). Rick Blair (July 1987).

Now that we have scanners and other massive-picture producing types of applications, there is a need to address the problem of how to display a PICT format object that is bigger than a current PICT resource is allowed to be. Note that this technique applies equally well to version 1 and version 2 (word-opcode) pictures as produced by the Macintosh II.

M.IM.UsingLaserPrepRoutines. Using Laser Prep Routines.

(March 1988). Ginger Jernigan (July 1987).

**M.IM.LaserWriterOpt. Optimizing For The LaserWriter—
Techniques.**

Pete “Luke” Alexander (October 1990). Ginger Jernigan (February 1986).

This Technical Note discusses techniques for optimizing code for printing on the LaserWriter. Changes since March 1988: Updated the “Printable Paper Area” and “Memory Considerations” sections as well as the printer IDs, moved the error messages from the end of the Note to Technical Note #161, A Printing Loop That Cares..., and removed the “Spool-A-Page/Print-A-Page” section because Technical Note #125, Effect of Spool-A-Page/Print-A-Page on Shared Printers, already thoroughly covers this topic.

M.IM.LaserWriterROMBugs. Bugs in LaserWriter ROMs.

(March 1988). Ginger Jernigan (July 1987). Ginger Jernigan (May 1987).

These are LaserWriter bugs that your users may encounter when printing from any Macintosh application. These are for your information; you cannot code around them. The bugs described here occur in the 1.0 and 2.0 LaserWriter ROMs.

M.IM.OffscreenBitMap. Drawing Into an Off-Screen Bitmap.

Jon Zap & Forrest Tanaka (June 1990). Jim Friedlander & Ginger Jernigan (July 1985).

This Technical Note provides an example of creating an off-screen bitmap, drawing to it, and then copying from it to the screen. Changes since April 1990: Clarified the section on window updates with off-screen bitmaps to explicitly limit these updates to your own windows.

M.IM.OldStyleColors. Old Style Colors.

Rich “I See Colors” Collyer (August 1990). Rich “I See Colors” Collyer & Byron Han (October 1989).

This Technical Note covers limitations of the original Macintosh color model (eight-color) which Inside Macintosh, Volume I-173, QuickDraw does not document. Changes since October 1989: Added definitions of the old-style constants.

M.IM.PackBits. Things You Wanted to Know About _PackBits* *But Were Afraid to Ask.

Guillermo Ortiz, Jon Zap, and Forrest Tanaka (January 1992).
Cameron Birse (November 1987).

This Technical Note describes the format of data packed by the Toolbox utility _PackBits and documents a change to the srcBytes limit and possible worst case. Although you can simply unpack this data using _UnPackBits, Apple provides this information for the terminally curious and for those manipulating MacPaint® documents or PICT files by hand. Warning: This format information is subject to change. Changes since November 1990: A warning has been added about the handling of a flag-counter byte value of -128.

M.IM.PaletteManagerChanges. Palette Manager Changes in System 6.0.2.

Guillermo Ortiz (October 1988).

This Technical Note describes the changes and enhancements to the Palette Manager in System Software 6.0.2 and future versions.

M.IM.PictAndPrinting. Pictures and the Printing Manager.
Zz Zimmerman (April 1991).

This technical note described some problems and features of using Quickdraw pictures with the Printing Manager. In general, if your application prints Quickdraw pictures, you should read this note.

M.IM.PicturesAndClipRegions. Pictures and Clip Regions.
(March 1988). Jennifer Jernigan (January 1986).

This note describes a problem that affects creation of QuickDraw pictures.

M.IM.QuickDrawsInternalPictDef. QuickDraw's Internal Picture Definition.
(March 1988). Rick Blair (November 1986). Ginger Jernigan (April 1985).

This technical note describes the internal format of the QuickDraw picture data structure. This revision corrects some errors in the opcode descriptions and provides some examples.

M.IM.pIdleProc. Me And My pIdle Proc (or how to let users know what's going on during print time...).
Pete "Luke" Alexander (April 1991).

This Technical Note discusses how to defensively program a pIdle procedure to work with the majority of print drivers in existence today, and how to install it at print time.

M.IM.PosIndPS. Position-Independent PostScript.
(March 1988). Scott "ZZ" Zimmerman.

This technical note describes a method for inserting position-independent PostScript into QuickDraw pictures.

M.IM.PRGeneral. PrGeneral.
(March 1988). Ginger Jenigan (May 1987).

The Printing Manager architecture has been expanded to include a new procedure called PrGeneral. The features described here are advanced, special-purpose features, intended to solve specific problems for those applications that need them. The calls to determine printer resolution introduce a good deal of complexity into the application's code, and should be used only when necessary.

M.IM.PrGeneralBug. PrGeneral Bug.
(March 1988). Scott "ZZ" Zimmerman (November 1987).

This technical note documents a bug in the implementation of the PrGeneral procedure in the LaserWriter driver version 4.0. The bug has to do with the format of the information returned by the GetRslData opcode. This technical note will also describe a workaround for the problem.

M.IM.PrincipiaOffScreen. Principia Off-Screen Graphics Environments.

Forrest Tanaka (March 1992). Forrest Tanaka (October 1991). Jim Friedlander, Rick Blair, and Rich Collyer.

Using Color QuickDraw to draw off screen is a common requirement of applications and other kinds of programs that run on the Macintosh. This Note discusses what Color QuickDraw needs in a graphics environment and how to create one for off-screen drawing. A brief discussion of GWorlds, which are off-screen graphics environments that are set up by the system, is given to help you decide whether to use them or the do-it-yourself techniques described in this Note for setting up an off-screen graphics environment. The author's intent is to provide concepts and routines for creating an off-screen graphics environment, and also to explain why existing routines for off-screen drawing act as they do. Many, many thanks go to Guillermo Ortiz, Konstantin Othmer, Bruce Leak, and Jon Zap for all their expertise on this subject, Rich Collyer, Rick Blair, and Jim Friedlander for paving the way, and especially to all people who inspired this update by asking great off-screen drawing questions. Changes since October 1991: A very embarrassing bug was found in CreateOffScreen and UpdateOffScreen. If you try to create a 16- or 32-bit off-screen graphics environment, you'll just get a paramErr. It won't do that now.

M.IM.PrintLoop. A Printing Loop That Cares....

Pete “Luke” Alexander (October 1990). Ginger Jernigan (September 1987).

This Technical Note discusses opening and closing the Printing Manager with calls to `_PrOpen` and `_PrClose` as well as how to handle errors at print time. Changes since October 1989: Added the section on error checking, incorporating the error code descriptions formerly found in Technical Note #72, Optimizing For The LaserWriter—Techniques and an updated version of the information formerly found in Technical Note #118, How To Check and Handle Printing Errors.

M.IM.FunWithPrJobMerge. Fun With PrJobMerge.

Matt Deatherage (May 1992). Scott “Zz” Zimmerman and Matt Deatherage (March 1992).

This Technical Note discusses some interesting behavior you’ll encounter while using `PrJobMerge` with the 7.0 and 7.1 versions of the LaserWriter driver. Changes since March 1992: Corrected the Vulcan-like “THPring” typo to correctly read “THPrint,” and changed a comment in the code to mean what I originally meant.

M.IM.SetLineWidth. SetLineWidth Revealed.

(March 1988). Scott "ZZ" Zimmerman (November 1987).

This technical note describes the internal implementation, and correct method of using, the `SetLineWidth` Picture Comment.

M.IM.PlottingSmallIcons. Plotting Small Icons.

James Beninghaus (October 1989). James Beninghaus & Dennis Hescox (August 1989).

This Technical Note discusses the 'SICN' resource format and how to plot one in a GrafPort. Changes since August 1989: Corrected errors in the Pascal code and spruced up the rest.

M.IM.SpoolerQueries. The Effect of Spool-a-page/Print-a-page on Shared Printers.

(March 1988). Ginger Jenigan (May 1987).

This technical note discusses drawbacks of using the spool-a-page/ print-a-page method of printing.

M.IM.TimeSpaceCopyBits. Of Time and Space and _CopyBits.
Forrest Tanaka (June 1990).

This Technical Note describes the various factors that can influence the speed of _CopyBits so that developers can set up conditions to achieve the best performance for the particular situation.

Interapplication Communication

M.IA.SendToSelf. Getting in Touch With Yourself Via the Apple Event Manager.

Greg Robbins, Ed Lai, and Kent Sandvik (April 1990).

If an application suspends handling of an Apple event which it sent to itself, the Apple Event Manager will return `errAETimeout` as the result of the `AESend` call. The event was still sent correctly, however, and the answer (if any) should appear later in the reply descriptor. However, a problem in system software versions 7.0 and 7.0.1 prevents applications from getting the reply data.

Since MacApp 3.0 suspends handling of the events it receives, the information in this note is relevant to applications developed with that framework.

Memory

M.ME.A5InGrowZoneProcs. Register A5 Within GrowZone Functions.

(March 1988). Chris Derossi (July 1987).

M.ME.HandleVSPointer. Handles and Pointers—Identity Crisis.

(March 1988). Jim Friedlander (September 1987).

A handle is a handle and a pointer is a pointer. Applications should avoid embedding non-relocatable objects (that the system assumes will never move) in handles.

M.ME.MaxApplZone&MoveHHiASM. Using MaxApplZone and MoveHHi from Assembly Language.

(March 1988). Bryan "Bob" Johnson (January 1987).

When calling MaxApplZone and MoveHHi from assembly language, be sure to get the correct code.

M.ME.MultiFinderandSetGrowZone. MultiFinder and _SetGrowZone.

Andrew Shebanow (June 1989).

MultiFinder patches the _SetGrowZone trap, and this patch can cause your program to crash if you attempt to save and restore the grow zone procedure.

M.ME.MoreMasters. MoreMasters Revisited.

(March 1988). Jim Friedlander (October 1985).

MoreMasters should be called from CODE segment 1. The number of master pointers that a program needs can be determined empirically. MoreMasters can be tricked into creating the exact number of master pointers desired.

M.ME.MoveHHiSetResPurge. MoveHHi and SetResPurge.

(March 1988). Jim Friedlander (March 1987).

M.ME.PurgeProc. Using a PurgeProc.

Mensch (August 1991).

This Technical Note discusses the use of the purgeProc field of an application's heap zone.

M.ME.StripAddress. _StripAddress: The Untold Story.

Paul Snively & Andrew Shebanow (August 1990). Andrew Shebanow (October 1988).

Inside Macintosh, Volume V, The OS Utilities, incorrectly documents the _StripAddress trap; this Technical Note correctly documents the trap and gives guidelines for its use. Changes since April 1990: Added a discussion of why the _StripAddress trap should be used under certain circumstances when patching traps.

M.ME.SwapingMMUMode. Use Care When Swapping MMU Mode.

Andrew Shebanow (February 1990). Cameron Birse (April 1989).

This Technical Note describes how to avoid crashing when swapping into 32-bit mode on a Macintosh II. Thanks to Jim Berry and Dan Weston for pointing this out. Changes since April 1989: Added a reference to Technical Note #213, `_StripAddress`: The Untold Story.

M.ME.SysError33. System Error 33, “zcbFree has gone negative”.

(March 1988). Bryan Stearns (July 1987).

System 3.2 introduced a new system error, ID=33, generated by the Memory Manager when it notices that a heap had been corrupted in a certain way. This error is listed in the file “SysErr.a” as “negZcbFreeErr”.

M.ME.VMMemoryMapping. Coping With VM and Memory Mappings.

Craig Prouse (April 1991). Craig Prouse (February 1991).

The purpose of this Note is twofold. First, it describes in detail how to use the GetPhysical routine. This routine is critical to the support of alternate bus masters on certain machines without Virtual Memory (VM) and all machines with VM. Included is an ancillary discussion of several closely-related VM routines. Second, it reiterates a number of issues important to VM compatibility and elucidates some of the deeper VM issues of which specialized developers should be aware. Compatibility issues are especially important for developers of SCSI drivers, NuBus™ master hardware, and code which runs at interrupt time. Changes since February 1991: This update incorporates new issues which have come up during System 7.0 beta testing, and it also attempts to clarify some issues which have proven to be particularly troublesome or widely misunderstood.

Networking

M.NW.AppleShareForegroundApp. AppleShare Foreground Applications.

(March 1988). Fred A. Huxham (November 1987).

This technical note outlines the requirements and restrictions of an AppleShare foreground application. This information pertains to AppleShare versions 1.1 and newer.

M.NW.AppleShareForegroundApps. AppleShare-able Applications and the Resource Manager.
(March 1988). Bryan Stearns (March 1987).

Normally, applications on an AppleShare server volume cannot be executed by more than one user at a time. This technical note explains why, and tells how you can enable your application to be shared.

M.NW.AppleShareLimits. AppleShare 1.1 and 2.0 Limits.
Mark Bennet (October 1988).

This Technical Note describes some machine-dependent limits of current versions of AppleShare and AppleShare servers.

M.NW.AppleShareAndOldFinder. AppleShare and Old Finders.
(March 1988). Bryan Stearns (March 1987).

M.NW.AppleTalkInterfaceUpdate. AppleTalk Interface Update.
(March 1988). Bryan Stearns (July 1987).

Technical Note #121 announced that we would be moving to a simplified AppleTalk Manager interface. That interface is available now, as part of MPW 2.0 and newer. Documentation for this new interface is contained in the AppleTalk Manager chapter of Inside Macintosh Volume V. This technical note contains some of the preliminary documentation for this interface and some useful points about information about it, and AppleTalk in general.

M.NW.AppleTalkInterfaceUpdate2. What's New With AppleTalk Phase 2.

Rich Kubota (April 1992). Rich Kubota & Scott Kuechle (February 1992).

This Technical Note discusses the new features of AppleTalk available for System 7.0 and AppleTalk version 57. The new features include support for the Flagship Naming Service and the AppleTalk Multiple Node Architecture. We present the Multiple Node Architecture and discuss the new calls available to applications. We also discuss the impact of the new architecture on AppleTalk Device files (ADEVs), and the changes necessary to make them multinode compatible. Finally, we discuss the Flagship Naming Service, along with the new AppleTalk Transitions. The new transitions notify a process of changes to the Flagship name, network cable range, router status, and processor speed. Changes since February 1992: Provided additional detail on the implementation to the AAddNode, ADelNode, and AGetNodeRef calls including parameter offsets. Added sample code to check for existence of LAP Manager. Added Pascal source to determine whether the LAP Manager exists. Added warning to check the result from the LAPAddATQ function since the System 7 Tuner extension may not load AppleTalk resources. Corrected typographical errors. Added information on the discussion on the Speed Change AppleTalk Transition event. Added discussion regarding the 'atkv' gestalt selector. Sidebars highlight changes or additions to this document.

M.NW.AppleTalkInterfaceUpdate2Mac. AppleTalk Phase 2 on the Macintosh.

Sriram Subramanian (December 1989). Pete Helme & Sriram Subramanian (August 1989).

This Technical Note discusses the new features and calls available with AppleTalk Phase 2. Changes since August 1989: Incorporated the ClosePrep and CancelClosePrep transitions and the new control calls to the .MPP driver.

M.NW.AppleTalkInterfaceUpdateTimer. AppleTalk Timers Explained.

Sriram Subramanian & Pete Helme (April 1990).

This Technical Note explains how to effectively use timers and retry mechanisms of the various AppleTalk protocols to achieve maximum performance on an internet.

M.NW.afpMiscUserCommand. Arbitrating the Use of afpMiscUserCommand and afpMiscUserWrite.

Jim Luther (September 1992).

This Technical Note discusses a scheme for arbitrating the use of the afpMiscUserCommand and afpMiscUserWrite AppleTalk Filing Protocol (AFP) commands.

M.NW.ASPvsAFP. ASP and AFP Description Discrepancies.

Mark Bennet (August 1988).

The descriptions of the AppleTalk Session Protocol and AppleTalk Filing Protocol functions within the body of the AppleTalk Manager chapter are incorrect and conflict with those in the Summary of the AppleTalk Manager. This technical note resolves the discrepancy.

M.NW.BorrowedAFP. Polite Use of Borrowed AFP Sessions.

Jim Luther (September 1992).

This Technical Note shows how to borrow the session reference number of an AFP volume mounted by the Macintosh File System. It also shows how to retrieve other information from the file system for a mounted AFP volume.

M.NW.DAMExtensions. Data Access Extensions.

Chuq Von Rospach and Dan Strnad (May 1992).

This Technical Note discusses coding data access extensions that provide an interface between the Data Access Manager and remote data sources. Each of the functions that a data access extension must implement is described.

M.NW.HLAppleTalk. Using the High-Level AppleTalk Routines.

(March 1988). Fred A. Huxham (May 1987).

What you need to do in order to use high-level AppleTalk routines depends upon the interfaces you are using. Some differences are outlined below.

M.NW.Internets. Will Your AppleTalk Application Support Internets?

Sriram Subramanian & Pete Helme (April 1990). Bryan Stearns (April 1986).

This Technical Note discusses how AppleTalk applications should work across internets, groups of interconnected AppleTalk networks. It explains the differences between life on a single AppleTalk network and life on an internet. Changes since March 1988: Removed the section on AppleTalk retry timers, as it is no longer accurate; see Technical Note #270, AppleTalk Timers Explained, for more information on retry timers.

M.NW.KillNBP. KillNBP Clarification.

Mark Bennett (August 1988).

This technical note clears up some confusion regarding the Name Binding Protocol KillNBP function.

M.NW.NoNetEvents. Avoid Use of Network Events.

(March 1988). Bryan Stearns (July 1987).

Future System software enhancements will not support network events. This note gives hints on weaning your application from the use of network events.

M.NW.OpenAppleTalk. Opening AppleTalk.

Mark Bennett (February 1989).

This Technical Note describes the most effective, safe, and compatible way to open the AppleTalk drivers, .MPP and .ATP.

M.NW.RegisterName. Using RegisterName.

Mark Bennett (February 1989).

The verify flag indicator byte (verifyFlag) of the AppleTalk RegisterName function should always be set TRUE in published code.

M.NW.ServersOnAppleTalk. Data Servers on AppleTalk.

(March 1988). Bryan Stearns (April 1985).

Many applications could benefit from the ability to share common data between several Macintoshes, without requiring a file server. This technical note discusses one technique for managing this AppleTalk communication.

M.NW.SourceRouting. Routes From the Source.

Tim Enwall and Rich Kubota (January 1992).

This Technical Note discusses source routing and its possible implementation in token ring link layers.

M.NW.Spooler. The Effect of Spool-a-page/Print-a-page on Shared Printers.

(March 1988). Ginger Jenigan (May 1987).

This technical note discusses drawbacks of using the spool-a-page/ print-a-page method of printing.

Operating System

M.OS.CommandShiftKeys. Command-Shift-Number Keys.

Ginger Jernigan (March 1988). Harvey Alcabes (March 1985).

M.OS.DeskHookINIT. Giving the (Desk)Hook to INITs.

Pete Helme (October 1989). Pete Helme (August 1989).

This Technical Note discusses INIT evils, the foremost of which deals with clearing DeskHook and DragHook at INIT time. Changes since August 1989: Added warning about clearing DragHook.

M.OS.OmegaSANE. OmegaSANE.

Dave Radcliffe and Colin McMaster (May 1992).

System 7.0.1 introduced a new version of SANE (the Standard Apple Numerics Environment) known as OmegaSANE. This Note discusses the features of OmegaSANE and the associated compatibility risks. This note covers: Topics • OmegaSANE features, including: • Correctly rounded binary ' decimal conversions; • Faster transcendental functions; • Backpatching of Pack 4 SANE traps for faster package entry; • Compatibility risks due to backpatching.

M.OS.SegmentLoader. Segment Loader Limitations.

Andrew Shebanow (December 1988).

This Technical Note discusses the jump table limitations of the Segment Loader and suggests some ways to work around these limitations to minimize the problem. These limitations are most evident to developers using MacApp and other object-oriented environments.

Overview

M.OV.TheJoyOfBeing32BitClean. The Joy Of Being 32-Bit Clean.
Andrew Shebanow (June 1989). Andrew Shebanow (October 1988).

What to do (and what not to do) to make your programs run under A/UX and future versions of the Macintosh System Software. Changes since October 1988: Added information on writing 32-bit clean CDEFs, and updated A/UX information to reflect the capabilities of A/UX 1.1.

M.OV.SettingAndRestoringA5. Setting and Restoring A5.
Jim Reekes (June 1989). Andrew Shebanow (August 1988).

The routines SetupA5 and RestoreA5 do not work properly when used with some optimizing Pascal and C compilers. Two new routines, SetCurrentA5 and SetA5, are available in MPW 3.0, and they should work with any compiler. Changes since December 1988: Removed the sample code and expanded the explanation of these two routines. The sample code in Technical Note #180 reflects these new A5 routines.

M.OV.SettingAndRestoringA5WithinTrapPatches. Don't Depend on Register A5 Within Trap Patches.
(March 1988). Bryan Stearns (June 1986).

Future software may allow desk accessories to have their own globals by changing register A5 when the accessory is entered and exited. This can cause problems for applications that patch traps without following certain rules.

M.OV.CheckForSpecificFunction. Checking for Specific Functionality.

(March 1988). Jim Friedlander (September 1987).

This technical note explains how to check at run time to see if specific functionality, such as the “new” TextEdit, is present.

M.OV.ChooserEnhancements. Chooser Enhancements.

Chris Knepper (August 1988).

Beginning with version 3.2, the Chooser has been enhanced to provide support for additional controls.

M.OV.CompatibilityGuidelines. Compatibility Guidelines.

Louella Pizzuti (February 1987). Cary Clark and Scott Knaster (January 1986).

M.OV.CompatibilityGuidelinesWhy. Compatibility: Why & How.

(March 1988). Bob Johnson (February 1987).

While creating or revising any program for the Macintosh, you should be aware of the most common reasons why programs fail on various versions of the Macintosh. This note will detail some common failure modes, why they occur, and how to avoid them.

M.OV.DebuggingTips. Debugging Tips.

(March 1988). Jim Friedlander (April 1986).

This presents a few tips which may make your debugging easier.

M.OV.DesktopFile. The Desktop file's Outer Limits.

Cameron Birse (August 1988).

M.OV.ExtraCDEVRes. Who Put That Resource in My CDEV?

C. K. Haun (February 1992).

This Technical Note discusses the new 'fwst' resource added to some Control Panels under System 7.0 and later.

M.OV.GestaltSysenvirons. _Gestalt & _SysEnvirons—a Never-Ending Story.

Dave Radcliffe (May 1992). Jim Friedlander (May 1987).

This Technical Note discusses the latest changes and enhancements in the _Gestalt and _SysEnvirons calls. Changes since October 1991: Clarified information on Gestalt information for Macintosh PowerBook computers and added information on the Macintosh LC II and the gestaltHardwareAttr selector.

M.OV.FinderNotes. Finder Notes: “Get Info” Default & Icon Masks.

(March 1988). Bryan Stearns (July 1987).

The Finder has undergone a couple of changes you should keep in mind when creating the “bundle” information for your application.

M.OV.LargeScreenDisplayCompat. Compatibility with Large-Screen Displays.

(March 1988). Bryan Stearns (November 1986).

A number of third-party developers have announced large-screen display peripherals for Macintosh. One of them, Radius Inc., has issued a set of guidelines for developers who wish to remain compatible with their Radius FPD; unfortunately, one of their recommendations can cause system crashes. This note suggests a more correct approach.

M.OV.ManagerialAbuse. Don't Abuse the Managers.

Bo3b Johnson (August 1988).

When using the various pieces of the Macintosh operating system there is a temptation to try to stretch the built-in Managers too far. Developers should be aware of the intended purpose of the various Managers and beware of using them for things that they were not designed to handle. If extended beyond their design goals, they will become slow and unwieldy.

M.OV.MultifinderRevisited. MultiFinder Revisited: The 6.0 System Release.

Andrew Shebanow, Jim Reekes, & Dave Radcliffe (April 1990). Dave Burnard (August 1988).

This Technical Note describes several new features found in MultiFinder 6.0 and answers a few more commonly-asked questions. Changes since December 1989: Added a warning to the section on childDiedEvents about distribution of MultiFinder 6.1bx.

M.OV.PurgeNComactDebug. Debugging With PurgeMem and CompactMem.

(March 1988). Jim Friedlander (October 1985).

M.OV.StationaryPads. Application Configuration with Stationery Pads.

(March 1988). Bryan Stearns (March 1987).

With the introduction of AppleShare (Apple's file server) there are restrictions on self-modification of application resource files and the placement of configuration files. This note describes one way to get around the necessity for configuration files.

M.OV.VersionTerritory. Version Territory.

Rich Collyer (October 1990). Darin Adler (April 1988).

This Technical Note describes the 'vers' resource supported by Finder 6.1 and later. Changes since April 1989: Changed MPW C code to reflect the changes in MPW C 3.1.

Platforms & Tools

M.PT.InitGrafWithMPWAsm. Assembly Language Use of _InitGraf with MPW.

Dennis Hescox (February 1989).

The Macintosh Programmer's Workshop (MPW) requires assembly-language programmers to allocate their own QuickDraw global variables rather than use the default record as indicated in Inside Macintosh.

M.PT.AUXComaptability. A/UX 2.0 Compatibility Guidelines.

Kent Sandvik & B. Winston Hendrickson (February 1991). B.

Winston Hendrickson & Dave Radcliffe (June 1990). Dave Radcliffe (April 1989).

This Technical Note describes details of the A/UX 2.0 implementation of which developers should be aware, so that their Macintosh applications also work properly under A/UX. Changes since April 1989: This Note formerly described A/UX 1.1 Toolbox Bugs, but has been completely rewritten to cover A/UX 2.0 compatibility. Changes since June 1990: Changes due to A/UX 2.0.1, also added some new important issues.

M.PT.AUXSysCalls. A/UX System Calls From Macintosh Software.

Anathan Srinivasan & Kent Sandvik (January 1991). Rob M. Smith, B. W. Hendrickson & Dave Radcliffe (August 1990).

This Technical Note discusses how to make A/UX system calls from applications developed in the Macintosh environment. This is useful to anyone porting an existing Macintosh driver or application to work on A/UX as well. Changes since August 1990: Added information about how to make use of `fork()` system calls under MultiFinder, as well as how various A/UX system calls behave under the MultiFinder emulation mode.

M.PT.CFuncArgs. MPW C Functions Using Strings or Points as Arguments.

(March 1988). Fred A. Huxham (November 1987).

MPW 2.0 includes new C interfaces to ROM routines which no longer do string and point conversions. These new interfaces are described here.

M.PT.MPWCFUNCTIONS. MPW C Functions: To declare or not to declare, that is the question.

(March 1988). Fred A. Huxham (November 1987).

Here's the low-down on when C functions need not be declared in include files.

M.PT.MacintoshAllegroCommon. Macintosh Allegro Common Lisp Features.

Paul Snively (February 1990). Guillermo Ortiz (April 1989).

This Technical Note describes some known problems and provides solutions to these problems for the Macintosh Allegro Common Lisp™ package which is available from Apple Computer, Inc. You should note, however, that although Apple acquired Coral Software and is selling Macintosh Allegro Common Lisp, Apple is not currently distributing any other products which had been developed or previously sold by Coral Software. Changes since April 1989: Noted 1.3.1 documentation errors, corrected erroneous floating-point patch for version 1.2.2, updated 1.2.2 information which is not relevant to 1.3.1, corrected APDA part number, added examples of high-level printing functions in 1.3.1, an array-dialog-item example, and information explaining how to get the Victoria-Day release of Portable Common LOOPS (PCL) to compile correctly under 1.3.1.

M.PT.CplusplusPitfalls. MPW C++ Pitfalls.

Kent Sandvik (May 1992). Kent Sandvik, Kim Coleman, and Preston Gardner (January 1992).

This Technical Note covers most of the common and serious subtle problems that a MPW C++ user might encounter. For more information consult the current C++ literature. This Note will be updated periodically to reflect changes in the language and the compiler. Always read the release notes included with the MPW C++ to find out the latest status for known bugs and restrictions. Changes since January 1992: The original inline C++ Tech Note is now part of an overall MPW C++ problem Tech Note.

M.PT.GettingThroughCUSToms. Getting through CUSToms.

(March 1988). Rick Blair (July 1987).

This technical note provides a way for developers to allow sophisticated users to add code to an off-the-shelf application. Using this scheme, the user can easily install the code module; the application has to know how to call it and, optionally, be able to respond to a set of predefined calls from the custom package.

M.PT.EditFileFormat. Edit File Format.

(March 1988). Bryan Johnson (August 1986). Harvey Alcabes (April 1985).

This technical note describes the format of the files created by Edit. It has been verified for versions 1.x and 2.0.

M.PT.LifeWithFontDAMover. Life With Font/DA Mover—Desk Accessories.

(March 1988). Ginger Jenigan (April 1985).

This technical note describes how to make sure that your desk accessory will work after being moved by Font/Desk Accessory Mover.

M.PT.MultipleInheritance. Multiple Inheritance and HandleObjects.

Larry Rosenstein (August 1990).

This Technical Note answers a common question about MPW C++: “Why doesn’t HandleObject support multiple inheritance?” It does this by giving a brief overview of how multiple inheritance is implemented in MPW C++.

M.PT.Hypercard. HyperCard And You: Economy Edition.

jeremy j. bornstein, death dwarf of minraud (February 1991). Chris Knepper (November 1987).

This Technical Note describes some HyperCard anomalies with which developers should be familiar when developing stackware, and it documents differences between HyperCard versions where appropriate. Changes since November 1987: Consolidated Technical Notes 168, HyperCard 'snd ' Resources; 169, HyperCard 1.0.1 and 1.1 Anomalies; and 170, HyperCard File Format while adding and updating material with regard to HyperCard 2.0 and condensing or obsoleting information on bugs which have been addressed.

M.PT.InsideObjPascal. Inside Object Pascal.

Keith Rollin (June 1989).

This Technical Note briefly explains why Object Pascal and MacApp should only be used to write applications and MPW tools.

M.PT.Installer. Apple's Multidisk Installer.

Rich Kubota (January 1992). scott douglass (March 1986).

This Technical Note documents Apple's Multidisk Installer, and it is in addition to separate Installer documentation which provides the details of writing scripts. Changes since September 1991: Revised information on the use of Installer version 3.1 to version 3.2. Revised information on the use of ScriptCheck version 3.2.1 with Installer version 3.2. Added Common Questions and Answers relating to the use of the Installer.

M.PT.MacAPPBugs. “Bugs In MacApp? Yes, But I Love It!”

Keith Rollin (October 1990). Keith Rollin, N. Lindenberg, the MacApp Engineers, and You (August 1990).

This Technical Note describes the latest information about bugs or unexpected “features” in MacApp. Where possible, solutions and fixes are noted. DTS intends this Note to be a complete list of all known bugs in MacApp and will update it as old bugs are fixed or new ones appear. If you have encountered a bug or unexpected feature which is not described here, be sure to let DTS know. Specific code examples and suggested fixes are useful. This version of the Note reflects the state of MacApp 2.0.1. The latest version of this Note can always be found on AppleLink in the Developer Services Bulletin Board. Changes since August 1990: Updated for MacApp 2.0.1. Revised line count of MacApp 2.0. Added: TEditText #2; TEvtHandler #1; TGridView #3; TTEView #5, 7, 9; TView #6; Assorted TView.Focus #8; Globals #16; MABuild #13; Debug #10. Updated: TApplication #3; TPopup #5; TScroller #1; TStdPrintHandler #2, 3; TTEView #3; TView #3; TWindow #3; Assorted TView.Focus #3; Globals #7, 8; MABuild #2, 11; Debug #4, 5; SADE Compatibility #1; THINK Pascal #2. Removed: TApplication #5; TCommand #1; TCtrlMgr #1; TDeskScrapView #1; TGridView #2; TIcon #1; TPopup #1, 2, 3; TStdPrintHandler #4; TTEView #1, 2, 6, 8; TView #5; TWindow #1, 2; Assorted TView.Focus #7; Globals #1-5, 9, 13-15; Debug #8, 9; THINK Pascal #1; Other #2.

M.PT.MacAppView. A Ten-Minute MacApp 'View' Adventure Game.

Kent Sandvik (September 1992).

This Technical Note describes the new MacApp 3.0 'View' resource.

M.PT.MacInTalk. MacInTalk—The Final Chapter.

Jim Reekes (February 1990).

This Technical Note discusses the MacInTalk software product.

M.PT.MacPaintDoc. MacPaint Document Format.

Jim Reekes (June 1989). Bill Atkinson (1983).

This Technical Note describes the internal format of a MacPaint® document, which is a standard used by many other programs. This description is the same as that found in the “Macintosh Miscellaneous” section of early Inside Macintosh versions. Changes since October 1988: Fixed bugs in the example code.

M.PT.MPW202Bugs. MPW 2.0.2 Bugs.

Andy Shebanow (October 1988). Dave Burnard (August 1988).

This Technical Note describes latest information about bugs or unexpected “features” in the MPW C, Pascal, and Assembler products and the Toolbox and OS Interface Libraries. We intend this Note to be a complete list of all known bugs in these products, which will be updated as old bugs are fixed, or new ones appear. If you have encountered a bug or unexpected feature which is not described here, be sure to let us know. Specific code examples are useful. The bugs described in the October 1 revision of this Note will be fixed in the 3.0 release of MPW scheduled for Fall 1988. Changes since August 1, 1988: Corrected the description of “bug” #3 under MPW C as it is not a bug according to the definition of the C language and corrected an error in bug #2 of the Interface Libraries concerning the glue for `_SlotVInstall` and `_SlotVRemove`.

M.PT.AccessingGlobalsFromASM. MPW: Accessing Globals From Assembly Language.

(March 1988). Jim Friedlander (January 1987).

This technical note demonstrates how to access MPW Pascal and MPW C globals from the MPW Assembler.

M.PT.MPWLoad. MPW: {\$LOAD}; _DataInit;%_MethTables.
(March 1988). Jim Friedlander (January 1987). Jim Friedlander
(November 1986).

This technical note discusses the Pascal {\$LOAD} directive as well as how to unload the _DataInit and %_MethTables segments.

M.PT.MPWmc68881. #146: Notes on MPW's -mc68881 Option.
Dave Radcliffe (May 1992). Bryan Stearns (July 1987).

This Technical Note discusses MPW's -mc68881 option, which represents Extended values in 96 bits (instead of 80, as with software SANE), and compatibility issues when using non-SANE system calls that expect 80-bit Extended values. Changes since June 1990: Extended the warning about explicitly checking for the presence of an FPU if an application uses floating-point instructions to include the possibility of FPU-less MC68040 products and also raised the issue of extended values embedded in data structures.

M.PT.UsingMPWForNonMacintosh. Using MPW for Non-Macintosh 68000 Systems.

Keith Rollin (June 1989).

This Technical Note discusses using MPW 3.0 for creating software intended to run on 68000-based systems that do not implement the Macintosh run-time architecture. These systems include NuBus™ cards, peripheral devices, and proprietary 68000 systems.

M.PT.ObjPascal. MPW Object Pascal Without MacApp.

(March 1988). Rick Blair (January 1987).

M.PT.PascalRoutinesPassed. Pascal Routines Passed by Pointer.

(March 1988). Scott Knaster (July 1985).

M.PT.MyLifeAsAPascalObject. My Life as a PascalObject.

Kent Sandvik & Mark Bjerke (April 1991).

This Technical Note discusses the PascalObject base class, used, for instance, with MacApp programming. The Technical Note describes how to write PascalObject derived classes that work with both Object Pascal and C++ code linking. It also describes the current restrictions and bugs with writing C++ code using PascalObject as the base class. This Technical Note is based on MacApp 2.0(.1), MPW 3.2 and MPW C++ 3.1.

M.PT.PascalToCProcParams. Pascal to C: PROCEDURE Parameters.

Keith Rollin (August 1990). Keith Rollin (February 1990).

This Technical Note talks about nested procedures and PROCEDURE parameters in Pascal and what to do when converting them into C or C++. Changes since February 1990: Fixed some type coercion problems.

M.PT.PerformanceTuning. Performance Tuning with Development Tools.

Kent Sandvik (May 1992).

This Technical Note is a collection of useful ideas and suggestions to help you decrease the time required to compile and link under MPW. Some of the issues are even relevant to any development tools running under the Macintosh environment. The Tech Note will also clarify what performance tunings work, and which are marginal or may not work at all.

M.PT.ckidResourceFormat. 'ckid' Resource Format.

Keith Rollin (April 1990).

This Technical Note describes the 'ckid' resource format used by MPW's Projector. If you are writing an editor or development system, you may wish to allow or disallow file modification based on the information in the resource.

M.PT.ROMDebugger. The ROM Debugger.

(March 1988). Louella Pizzuti (June 1986).

M.PT.IOPBasedSerialDiffs. IOP-Based Serial Differences Under A/UX.

Rick Auricchio (August 1990).

This Technical Note discusses use of the Macintosh IIx IOP-based serial driver under A/UX, especially under certain error conditions which cause it to perform differently than documented in termio(7). (The SCC driver, used on non-IOP machines, conforms to termio(7) in all cases.) References to “the driver” herein refer to the IOP-based serial driver, seriop.c.

M.PT.Signals. Signals.

(March 1988). Rick Blair (August 1986).

Signals are a form of intra-program interrupt which can greatly aid clean, inexpensive error trapping in stack frame intensive languages. A program may invoke the Signal procedure and immediately return to the last invocation of CatchSignal, including the complete stack frame state at that point.

M.PT.StandAloneCode. Stand-Alone Code, ad nauseam.

Craig Prouse (August 1990). Keith Rollin & Keithen Hayenga (October 1989).

This Technical Note discusses many of the issues related to stand-alone code modules. This Note is by no means a completely original work, as the author borrows freely from the work of Keith Rollin, Mark Baumwell, and Jim Friedlander. Changes since October 1989: Completely rewritten to broaden the discussion of stand-alone code modules and include a greater scope of examples. Incorporates Technical Notes #110, MPW: Writing Stand-Alone Code and #145, Debugger FKEY.

M.PT.TheCompleatGuideToTeachText. The Compleat Guide to TeachText.

Bryan Stearns, DTS Emeritus (April 1990).

This Technical Note explains how to use TeachText to create release notes, complete with pictures, which every Macintosh owner can read. This Note assumes familiarity with ResEdit.

Processes

M.PS.DialogsInDAs. Using Modeless Dialogs from Desk Accessories.

(March 1988). Russ Daniels (April 1985).

M.PS.SubLaunching. Sub(Launching) from a High-Level Language.

Rich Collyer & Mark Johnson (April 1989). Rick Blair & Jim Friedlander (May 1987).

Note: Developer Technical Support takes the view that launching and sublaunching are features which are best avoided for compatibility (and other) reasons, but we want to make sure that when it is absolutely necessary to implement it, it is done in the safest possible way. This Technical Note discusses the “safest” method of calling `_Launch` from a high-level language that supports inline assembly language with the option of launching or sublaunching another application. Changes since August 1988: Incorporated Technical Note #52 on calling `_Launch` from a high-level language, changed the example to offer a choice between launching or sublaunching, added a discussion of the `_Launch` trap under MultiFinder, and updated the MPW C code to include inline assembly language.

Text

M.TE.AppearanceOfText. The Appearance of Text.

(March 1988). Ginger Jernigan (November 1986).

This technical note describes why text doesn't always look the way you expect depending on the environment you are in.

M.TE.EOLAmbiguity. TextEdit EOL Ambiguity.

(March 1988). Rick Blair (May 1987).

TESetSelect may be used to position the insertion point at the end of a line. There is an ambiguity, though; should the insertion point appear at the end of the preceding line or the start of the following one? It is possible to determine what will happen, as you are about to see.

M.TE.FondOfFONDS. Fond of FONDS.

Joseph Maurer (May 1992).

This Technical Note takes the place of Tech Note #26, “Character vs. String Operations in QuickDraw” by Bryan Stearns (March 1988), which pointed out the possible differences between the results of a StringWidth call and successive calls to CharWidth. This Note updates and brings into a broader context the issues related to text measuring. It also provides additional documentation on font family resources ('FOND's), and addresses various other frequently asked questions related to the Font Manager. For reasons of consistency and easier reference, much of the contents of Technical Notes #191, “Font Names,” #198, “Font/DA Mover, Styled Fonts, and 'NFNT's,” and #245, “Font Family Numbers,” have been updated and worked into this Note as well.

M.TE.FontHeight. Font Height Tables.

(March 1988). Gene Pope (April 1986).

This technical note describes how the Font Manager (except in 64K ROMs) calculates height tables for fonts and how you can force recalculation.

M.TE.FontsAndTheScripts. Fonts and the Script Manager.

John Harvey & Peter Edberg (June 1989).

This Technical Note describes how the Script Manager uses the font family ID to determine a script code.

M.TE.InternationalCancel. International Canceling.

John Harvey (February 1990).

This Technical Note describes potential problems canceling operations with the Command-period key sequence and international keyboards.

M.TE.IUChanges. Changes in International Utilities and Resources.

(March 1988). Priscilla Oppenheimer (July 1987).

The International Utilities package and the international resources have been changed with System file 4.1 to take advantage of the Script Manager.

M.TE.NewStringComp. Modifying the Standard String Comparison.

(March 1988). Mark Davis and Priscilla Oppenheimer (November 1987).

This technical note describes how to modify the standard string comparison by constructing an itl2 resource. Developers may want to modify the standard string comparison if Apple's comparison doesn't meet their needs or if Apple has not written a string comparison routine for the language that concerns them.

M.TE.ScriptManagersPixel2Char. Script Manager's Pixel2Char Routine.

Mark B. Johnson & Dave McGary (August 1989). Sue Bartalo (June 1989).

This Technical Note discusses the Pixel2Char routine provided by the Script Manager. Changes since June 1989: Clarified information, corrected minor errors, and replaced the illustration.

M.TE.ScriptManagerPrintAction. Accessing the Script Manager Print Action Routine.

(March 1988). Mark Davis (November 1987).

This technical note describes how Print Drivers can access the Script Manager Print Action routine to print unconventional text, such as Japanese or Arabic.

M.TE.RecordSizeLimit. TextEdit Record Size Limitations Revisited.

Mary Walsh (June 1989).

This Technical Note describes another limit on the length of a TextEdit record that was previously undocumented.

M.TE.SafeCDEV. International CancelingSafe cdevs.

John Harvey (August 1989).

This Technical Note describes a potential problem with Control Panel devices (cdevs) that contain EditText fields and presents a way to avoid it.

M.TE.ScriptManager2DateTime. Script Manager 2.0 Date & Time Problems.

John Harvey (February 1990).

This Technical Note describes known bugs and features in and solutions to the date and time routines introduced in Script Manager 2.0.

M.TE.ScriptManagerVariables. Script Manager Variables.

John Harvey & Peter Edberg (June 1989).

This Technical Note describes, in detail, the local and global script variables.

M.TE.TEScrollBug. TEScroll Bug.

(March 1988). Bryan Stearns (April 1986).

M.TE.TextEditAdvice. TextEdit: Advice & Descent.

(March 1988). Rick Blair (June 1986).

This technical note will point out some bugs (and possible workarounds), and other items of interest for the TextEdit programmer.

M.TE.TextEditBugs. TextEdit Bugs in System 4.2.

(March 1988). Chris Derossi (June 1987).

This note formerly described the known bugs with the version of Styled TextEdit that was provided with System 4.1. Many of these bugs were fixed in System 4.2. This updated Technical Note describes the remaining known problems.

M.TE.StyledTextEditChanges. Styled TextEdit Changes in System 6.0.

Chris Derossi (December 1988). Chris Derossi (August 1988).

Some changes were made to TextEdit in System 6.0 to provide more functionality and to make life easier for the programmer using TextEdit. This Note documents those changes and enhancements. Changes since August 1988: Corrected an error in TEDispatchRec in the figure on page 8.

M.TE.TextEditConvert. TextEdit Conversion Utility.

(March 1988). Harvey Alcabes (April 1985).

Text sometimes must be converted between a Pascal string and “pure” text in a handle. This note illustrates a way to do this using MPW Pascal.

M.TE.TextEditTech. TextEdit Technicalities.

Mary Burke (April 1990). Mary Burke (February 1990).

This Technical Note discusses some areas in TextEdit that have not previously been clearly documented. Changes since February 1990: Added a note about the changes in TextEdit for System Software 6.0.5, documented the low-memory global TESysJust, clarified information about text direction and _TESetJust, discussed problems with the SetWordBreak routine along with a solution to work around it, and described the differences in dialog text item behavior.

M.TE.TextInNarrowGP. Drawing Characters into a Narrow GrafPort.

(March 1988). Ginger Jernigan (January 1986).

M.TE.WordBreakTables. How to Construct Word-Break Tables.

(March 1988). Mark Davis (November 1987).

This technical note describes how to construct auxiliary break tables for use with the FindWord routine in the Script Manager.

Toolbox

M.TB.Bundles. Bundles.

(March 1988). Ginger Jernigan (November 1988).

This note describes what a bundle is and how to create one.

M.TB.CDEFParams. 'CDEF' Parameters and Bugs.

David Shayer (October 1989). Mark Bennett (August 1988).

This Technical Note describes known bugs in the Control Manager which affect control definition functions ('CDEF' resources). Changes since August 1988: Updated to reflect known bugs in the posCntrl and thumbCntrl messages and the Control Manager _TrackControl call.

M.TB.ChangedResource. ChangedResource: Too much of a good thing.

Dave Burnard (April 1988).

M.TB.ClicklessSound. How To Produce Continuous Sound Without Clicking.

Jim Reekes (June 1989). Ginger Jernigan (April 1985).

This Technical Note formerly described how to use the Sound Driver to produce continuous sound without clicking. Changes since March 1988: The continuous sound technique is no longer recommended.

M.TB.ColorWindowsIn7. Color, Windows and 7.0.

Guillermo A. Ortiz (October 1992). Guillermo A. Ortiz (January 1991).

System 7.0 introduces a new look for the Macintosh Desktop. In order to implement those changes 'wctb' and 'cctb' resources have changed in both form and use; it is now up to developers to take the lead and help the new standard work. The task can be divided in two main areas: in most cases all developers have to do is to stick to the system resources in order to provide a homogeneous feel to the user; developers in this group need only make sure the old 'wctb's are disposed of and that all dialogs and windows are based on CGrafPorts. The other case is more restricted and involves developers that need to use their own colors; these applications have to define the resources using the new templates and do a careful selection of the colors in order to not break the color scheme implemented by the system. Changes since January 1991: Removed note about 7.0 beta. Added mention to GetGray and added reference to where to find the sample 'WDEF'

M.TB.DeskTopFile. Resources Contained in the Desktop File.

Ginger Jernigan (March 1988). Ginger Jernigan (May 1985).

This Technical Note describes the resources found in the Desktop file. You should not base anything critical on the format of the Desktop file. System 7 already uses another scheme as did AppleShare 2.0 under System 6.0.x.

M.TB.UserItemsInDialogs. User Items in Dialogs.

Jim Reekes (October 1988). Bryan Stearns (May 1985).

The Dialog Manager does not go into detail about how to manage user items in dialogs; this Technical Note describes the process. Changes since March 1, 1988: Added MPW C 3.0 code, added a `_SetPort` call to the Pascal example, and noted the necessity and meaning of enabled items.

M.TB.FindDItem. FindDItem.

(March 1988). Rick Blair (March 1987).

M.TB.FinderFlags. Finder Flags.

Jim Friedlander (March 1988). Jim Friedlander (June 1986).

This revision corrects the meanings of bits 6 and 7, which were interchanged in the older version of this technical note. ResEdit uses these bits incorrectly in versions older than 1.2.

M.TB.FindersDrives. Finders and Foreign Drives.

(March 1988). Ginger Jenigan (May 1984).

This technical note describes the differences in the way the 1.1g, 4.1, 5.0 and newer Finders communicate with foreign (non-Sony) disk drives.

M.TB.ErrorsReturnedGetNewDialog. Error Returns from GetNewDialog.

(March 1988). Russ Daniels (April 1985).

M.TB.GetNextEvent. GetNextEvent; Blinking Apple Menu.

(March 1988). Rick Blair (August 1986).

Wherein arcane mysteries are unraveled so you can make the Alarm Clock (or a similar desk accessory) blink the Apple menu at the appointed second. Also, why GetNextEvent is a good thing.

M.TB.ToolboxKarma. Toolbox Karma.

Ed Tecot (February 1989).

This Technical Note discusses Macintosh Toolbox compatibility and what you can do to help the Macintosh continue evolving in the future.

M.TB.KeyMapping. Key Mapping.

Jim Luther, Peter Edberg, & Imran Sayeed (February 1991). Cameron Birse (September 1987).

This Technical Note describes the Macintosh family key code mapping scheme when running System file 4.1 and later. This Note also provides a “safe” method for remapping keyboards. Changes since October 1990: Added a section on how 'KMAP' resources are matched to specific ADB keyboard types and a section on the original Macintosh and Macintosh Plus keyboards.

M.TB.LDEFMadness. 'LDEF' Madness.

Byron “scapegoat” Han & Alex Kazim (June 1990).

This Technical Note uncovers a problem with writing Pascal list definition procedures and two (yes, count 'em, two) different methods to work around it.

M.TB.MaxResInFile. Maximum Number of Resources in a File.
(March 1988). Cameron Birse (July 1987).

This note describes the limitation of the number of resources in a single resource file.

M.TB.ParametersForMDEFMessage3. Parameters for MDEF Message #3.

(March 1988). Chris Derossi (November 1987).

M.TB.MenuFlashing. Custom Menu Flashing Bug.

Dennis Hescox (February 1989).

Selected menu items in a custom 'MDEF' resource do not flash correctly due to a bug in the Menu Manager. This Technical Note describes the problem and explains how to make your 'MDEF' flash correctly.

M.TB.MovableModalDialog. Help for Movable Modal Dialogs.
“im” James Beninghaus (August 1991).

This Technical Note describes the process by which an application can remap the Help Manager 'hmnu' resource while a movable modal dialog box is on the screen. The Help Manager handles the case for modal dialog boxes but punts in the case of movable modal dialog boxes. The following information will help you get the correct interface performance.

**M.TB.MultifinderFrequentlyAsked. Frequently Asked
MultiFinder Questions.**

(March 1988). Jim Friedlander (September 1987).

This technical note provides answers to some of the more frequently asked questions about MultiFinder. The development name for MultiFinder was Juggler, so the term “juggle” is used in this technical note to denote a context switch.

**M.TB.MultifinderFrequentlyAsked1Bug. Problem with
WaitNextEvent in MultiFinder 1.0.**

(March 1988). Jim Friedlander (November 1987).

This Technical Note discusses a bug in WaitNextEvent in MultiFinder 1.0. This bug only occurs when WaitNextEvent is called from the background. This bug will be fixed in the next release of MultiFinder. Change since 11/87: the bug will be fixed in Systems with versions greater than \$04FF.

M.TB.MultifinderFrequentlyAskedMisc. MultiFinder Miscellanea.

Dave Radcliffe & Keith Rollin (August 1989). Jim Friedlander (November 1987).

This Technical Note discusses MultiFinder issues of which programmers should be aware. Changes since June 1988: Updated and generalized sample code to reflect new MPW 3.0 calls in both C and Pascal for saving and restoring A5 for interrupt code that accesses application globals. Removed text that can be found in Programmer's Guide to MultiFinder, and added a note about `_PostEvent`.

M.TB.NewCDEVMsg. "New" cdev Messages.

Mark Bennett (October 1988).

This Technical Note describes some previously undocumented messages that the Control Panel can send to a Control Panel device (cdev).

M.TB.NewResourceMgrCalls. New Resource Manager Calls.

Andrew Shebanow (October 1988).

This Technical Note describes two new Resource Manager calls that make opening and creating resource files much easier.

M.TB.NotificationManager. Notification Manager.

Rich Collyer (December 1989). Darin Adler (April 1988).

This Technical Note describes the Notification Manager, the part of the operating system that lets an application, desk accessory, or driver alert the user. Changes since October 1989: Clarified the section on error handling for calls to `_NMInstall`.

M.TB.OpenRFPPerm. OpenRFPPerm: What your mother never told you.

Dave Burnard (April 1988).

This note corrects an error in the description of the Resource Manager routine `OpenRFPPerm` found in Inside Macintosh Volume IV.

M.TB.OwnedResources. Shortcut for Owned Resources.

(March 1988). Bryan Stearns (May 1986).

M.TB.PendingUpdatePerils. Pending Update Perils.

C. K. Haun (October 1991). C. K. Haun (August 1991).

This Technical Note discusses potential problems when pending update events for windows behind modal dialogs are not serviced. This note also documents some new System 7 Dialog Manager calls. Changes since August 1991: Added note clarifying how to use the new calls, documented use of `StdFilterProc` in `Interface.o`, and corrected code errors.

M.TB.RervedResTypes. Reserved Resource Types.

(March 1988). Scott Knaster (May 1985).

M.TB.ResHeaderAppBytes. Don't Use Resource Header Application Bytes.

(March 1988). Bryan Stearns (January 1986).

M.TB.ResourceManagerTips. Resource Manager Tips.

(March 1988). Jim Friedlander (June 1986).

This note discusses some problems with the Resource Manager and how to work around them.

M.TB.SeparateResFiles. Separate Resource Files.

(March 1988). Bryan Stearns (October 1985).

M.TB.SetResLoad. Calling SetResLoad.

(March 1988). Jim Friedlander (October 1985).

M.TB.SICNinMenu. 'SICN' Tired of Large Icons in Menus?

Dennis Hescox (October 1989). Dennis Hescox (August 1989).

This Technical Note describes a new facility of the Menu Manager which allows you to add reduced icons and small icons to your menus. Changes since August 1989: Corrected references to SetItemCmd from SetItmCmd.

M.TB.StripWithOpenResFile. Strip With _OpenResFile and _OpenRFPerm.

Byron Han (April 1989).

This Technical Note discusses a bug in _OpenResFile and _OpenRFPerm which can cause system crashes and what you can do to avoid this problem.

M.TB.WDEFwDraw. Custom WDEF and wDraw.

Vincent Lo (February 1991).

This Technical Note explains why custom window definition functions may not respond to a wDraw message from the system (if you follow the documentation in Inside Macintosh).

M.TB.WMgrPort. WMgrPortability.

Rick Blair (April 1988).

Where WMgrPort (the Window Manager's port), MultiFinder, and drawing outside of one's windows will be reconciled.

M.TB.ZoomWindow. _ZoomWindow.

Craig Prouse (April 1990). Jim Friedlander (June 1986).

This Technical Note contains some hints about using `_ZoomWindow`. Changes since February 1990: Fixed a bug in `DoWZoom` which caused crashes if the content of a window did not intersect with any device's `gdRect`. Also made `DoWZoom` more robust by making `savePort` a local variable and checking for off-screen and inactive `GDevice` records. (One variable name has changed.) Additional minor changes: Corrected original sample code to use `_EraseRect` before zooming and added references to Human Interface Note #7, *Who's Zooming Whom?* for more subtle and application-specific considerations.