

Apple II Technical Notes



Developer Technical Support

#0: About Apple II Technical Notes

December 1991

Technical Note #0 (this document) accompanies each release of Apple II Technical Notes. This release includes new Notes for the Apple IIGS (#102, 103 & 104), revised Notes for the IIGS #14, 24, 57, 71, 76, 83, and 92, ProDOS #25 and GS/OS #13 as well as an index to all released Apple II Technical Notes, File Type Notes, and Sample Code. If there are any subjects which you would like to see treated in a Technical Note (or if you have any questions about existing Technical Notes), please contact us at one of the following addresses:

Apple II Technical Notes
Developer Technical Support
Apple Computer, Inc.
20525 Mariani Avenue, M/S 75-3T
Cupertino, CA 95014
AppleLink: AIIDTS
Internet: AIIDTS@AppleLink.Apple.com

We want Technical Notes to be distributed as widely as possible, so they are sent to all Partners and Associates at no charge; they are also posted on AppleLink in the Developer Services bulletin board and other electronic sources, including the Apple FTP site (IP 130.43.2.3). You can also order them through APDA. As an APDA customer, you have access to the tools and documentation necessary to develop Apple-compatible products. For more information about APDA, contact:

APDA

Apple Computer, Inc.

20525 Mariani Avenue, M/S 33-G

Cupertino, CA 95014

(800) 282-APDA or (800) 282-2732

Fax: (408) 562-3971

Telex: 171-576

AppleLink: APDA

Internet: APDA@AppleLink.Apple.com

We place no restrictions on copying Technical Notes, with the exception that you cannot resell them, so read, enjoy, and share. We hope Apple II Technical Notes will provide you with lots of valuable information while you are developing Apple II hardware and software. The following pages list all Apple II Technical Notes that have been released.

Released Apple II Technical Notes

December 1991

New ***

Revised *R*

Apple IIc

1	Mouse Differences On Iie and Iic	11/88
2	40-Column and Double High-Resolution Graphics	11/88
3	Foreign Language Keyboard Layouts	11/88
4	Dvorak Keyboard Layout	11/88
5	Memory Expansion on the Apple IIc	11/88
6	Buffering Blues	11/88
7	Existing Versions	11/88
8	Single-Sided 3.5" Media and the Apple IIc Plus	5/89
9	Detecting VBL	11/90

Apple Iie

1	Overview of the Apple Iie	11/88
2	Hardware Protocol for Doing DMA	11/88
3	Double High-Resolution Graphics	11/88
4	RDY line	11/88
5	/INH line	11/88

6	The Apple II Paddle Circuits	11/88
7	Interfaces—Serial, Parallel, and IEEE—488	11/88
8	Known Anomalies of Enhanced IIe ROMs	11/88
9	Switch Input Changes	11/88
10	The Apple IIe Card for the Macintosh LC	07/91

Apple IIGS

1	How to Install Custom BRK and /NMI Handlers	11/88
2	Transforming I/O Subroutines for Use in “Native” Mode	11/88
3	Window Information Bar Use	1/91
4	Changing Graphics Modes in Mid-Application	1/91
5	Window and Menu Titles	11/90
6	QuickDraw II Pattern Data Structure	7/89
7	Halt Mechanism in IIGS SANE	11/88
8	Elms Functions in IIGS SANE	11/88
9	IIGS Sound Expansion Connector: Analog Input/Output Impedances	11/88
10	InvalRgn Twist	11/88
11	Ensoniq DOC Swap-Mode Anomaly	11/88
12	Tool Set Interdependencies	1/90
13	ROM 1.0 Modem Firmware Bug	11/88
R	14 Standard File Screwiness	12/91
15	InstallFont and Big Fonts	7/89
16	Notes on Background Printing	11/88
17	Application Memory Management and the MMStartUp User ID	11/88
18	Do-It-Yourself SCC Access	7/90
19	Multichannel Output with the Apple IIGS Note Synthesizer	11/88
20	Catalog of APW Language Numbers	3/90
21	DMA Compatibility for Expansion RAM	11/88
22	Proper Use of Dynamic Segments	9/90
23	Toolbox Use of DOC RAM	11/88
R	24 <i>Apple IIGS Toolbox Reference Updates</i>	12/91
25	<i>Apple IIGS Firmware Reference Updates</i>	9/90
26	ROM Revision Summary	9/89
27	Graphics Image File Formats	11/88
28	Interface Card Design Guidelines	11/88
29	Monochrome High-Resolution Mode	11/88
30	<i>Apple IIGS Hardware Reference Updates</i>	9/90
31	Redirecting Output in APW C	11/88
32	/INH Line Anomaly	11/88
33	ERRORDEATH Macro	11/88
34	Low-Level QuickDraw II Routines	1/91

35	Printer Driver Specifications	9/90
36	Port Driver Specifications	9/89
37	Free-Form Synthesizer Tips	11/88
38	List Controls in Dialog Boxes	9/90
39	Mega II Video Counters	7/89
40	VBL Signal	7/89
41	Font Family Numbers	11/90
42	Custom Windows	11/88
43	Undocumented Feature of CalcMenuSize	11/88
44	GetPenState and SetPenState Record Error	11/88
45	Parameters for GetFrameColor	9/89
46	DrawPicture Data Format	11/88
47	What SetDataSize Does	11/88
48	All About AlertWindow	obsolete 11/90
49	Rebooting (Really)	1/89
50	Extended Serial Interface Error Handling	1/89
51	How to Avoid Running Out of Memory	9/90
52	Loading and Special Memory	7/89
53	Desk Accessories and Tools	9/90
54	MIDI Drivers	11/90
55	Avoiding ClrHeartBeat	7/89
56	Managing Dynamic Segments	obsolete 11/90
R 57	The Memory Manager and Interrupts	12/91
58	Keyboard Modifiers Register Anomaly	7/89
59	Do Not Create Zero-Length Text Scraps	obsolete 1/91
60	Menu Manager Memorabilia	11/90
61	Window Title Handles	7/89
62	No Non-Solid Window Background Patterns	7/89
63	Master Color Values	7/89
64	Apple IIGS Installer and Installer Scripts	9/89
65	Control-^ is Harder Than It Looks	9/89
66	ExpressLoad Philosophy	9/90
67	LaserWriter Font Mapping	11/89
68	Tips for I/O Expansion Slot Card Design	9/89
69	The Ins and Outs of Slot Arbitration	5/90
70	Fast Graphics Hints	9/89
R 71	DA Tips and Techniques	12/91
72	QuickDraw II Quirks	11/90
73	Using User Tool Sets	1/91
74	A Faster List Manager Draw Routine	11/89
75	BeginUpdate Anomaly	1/90
R 76	Miscellaneous Resource Formats	5/90

	77	Print Manager & AppleTalk Configuration Files	1/90
	78	Bank Alignment and Memory Management	3/90
	79	Integer Math Data Types	5/90
	80	QuickDraw II Clipping	3/90
	81	Extended Control Ecstasy	11/90
	82	Controlling the Control Manager	obsolete 11/90
R	83	Resource Manager Stuff	1/91
	84	TaskMaster Madness	7/90
	85	Moving the Mouse	7/90
	86	Risking Resourceful Code	9/90
	87	Patching the Tool Dispatcher	9/90
	88	The Page One Stack in a 16-Bit World	9/90
	89	MessageByName—Catchy Messages	9/90
	90	65816 Tips and Pitfalls	11/90
	91	The Wonderful World of Universal Access	9/90
R	92	Twisted Tales of TextEdit	11/90
	93	Compatible Printing	9/90
	94	Packing It In (and Out)	9/90
	95	ROM Diagnostic Errors	9/90
	96	Standard File Customization	11/90
	97	Picture Comments and Printing	11/90
	98	Aren't Windows A Pane	1/91
	99	Supplemental Scrap Types	1/91
	100	VersionVille	1/91
	101	Patching the Toolbox	7/91
***	102	Various Vectors	12/91
***	103	Inline Procedure Names Format	12/91
***	104	Font Manager Fundamentals	12/91

Apple II Miscellaneous

	1	80-Column Screen Dump	11/88
	2	Apple II Family Identification Routines 2.1	11/88
	3	Super Serial Card Firmware Bug	11/88
	4	AppleWorks Keys	5/89
	5	AppleWorks File Formats	5/89
	6	IWM Port Description	11/88
	7	Apple II Family Identification	11/88
	8	Pascal 1.1 Firmware Protocol ID Bytes	11/88
	9	AppleSoft Real Variable Storage	11/88
	10	80-Column GetChar Routine	9/89
	11	Examining the \$C800 Space from AppleSoft	5/89

12	Apple II Firmware WAIT Routine	11/88
13		not used
14	Guidelines for Telecommunication Programs	7/89
15	Compatibility Across Apple II Models	1/90
16	Apple II Parallel Interface Card Firmware	7/90
17	Buried Treasures of the Video Overlay Card	9/90

AppleTalk

1	Identifying AppleTalk	3/90
2	ProDOS 8 Compatibility on the IIe and IIGS	11/88
3	Avoiding Remote Printer Time-Outs	9/89
4	Printing Through the Firmware	9/90
5	SPCommand Calls and Error \$0702	7/89
6	Apple IIe Workstation Card Anomalies	7/89
7	MLIACTV Flag and the IIe Workstation Card	11/89
8	Using the @ Prefix	9/90
9	The PAP Status Buffer	11/90

HyperCard IIGS

1	Corrections to the <i>Script Language Guide</i>	3/91
2	Known HyperCard Bugs	3/91

GS/OS

1	Contents of System.Disk and System.Tools	1/91
2	GS/OS and the 80-Column Firmware	11/88
3	Pointers on Caching	11/88
4	A GS/OS State of Mind	7/89
5	Resource Fork Formats	7/89
6	Drivers and GS/OS Direct Page	11/90
7	Behavior of SET_DISKSW	7/89
8	Filenames With More Than CAPS and Numerals	7/89
9	Interrupt Handling Anomalies	5/90
10	How Applications Find Their Files	9/90
11	About EraseDisk and Format	11/90
12	All About Notify Procs	9/90
R 13	<i>GS/OS Reference Update</i>	12/91

ImageWriter

1	Custom Font Selection	11/88
---	-----------------------	-------

Memory Expansion Card

1	Questions and Answers	11/88
---	-----------------------	-------

Mouse

1	Interrupt Environment with the Mouse	11/88
2	Varying VBL Interrupt Rate	11/88
3	Mode Byte of the SetMouse Routine	11/88
4	Mouse Firmware Bug Affecting ServeMouse	11/88
5	Check on Mouse Firmware Card	11/90
6	MouseText Characters	1/89
7	Mouse Clamping	11/88

Pascal

4	Pascal Declarations and the Directory Structure of a Blocked Volume	11/88
10	Configuration and Use of the Apple II Pascal Run-Time Systems	11/88
12	Disk Formatter Routine	11/88
14	Apple Pascal 1.3 TREESEARCH and IDSEARCH	11/88
15	Apple II Pascal SHORTGRAPHICS Module	11/88
16	Driver to Have Two Volumes on One 3.5" Disk	11/88
17	SYSTEM.APPLE Patch V2.0	3/90

ProDOS 8

1	The GETLN Buffer and a ProDOS Clock Card	11/88
2	Porting DOS 3.3 Programs to ProDOS and BASIC.SYSTEM	11/88
3	Device Search, Identification, and Driver Conventions	11/88
4	I/O Redirection in DOS and ProDOS	11/88
5	ProDOS Block Device Formatting	11/88
6	Attaching External Commands to BASIC.SYSTEM	11/88
7	Starting and Quitting Interpreter Conventions	11/88
8	Dealing with /RAM	11/88
9	Buffer Management Using BASIC.SYSTEM	11/88
10	Installing Clock Driver Routines	11/88
11	The ProDOS 8 MACHID Byte	11/88
12	Interrupt Handling	11/88
13	Double High-Resolution Graphics Files	11/88
14	Selector and Dispatcher Conventions	11/88
15	How ProDOS 8 Treats Slot 3	11/88

16	How to Format a ProDOS Disk Device	11/88
17	Recursive ProDOS Catalog Routine	11/89
18	/RAM Memory Map	11/88
19	File Auxiliary Type Assignment	11/88
20	Mirrored Devices and SmartPort	11/88
21	Identifying ProDOS Devices	3/90
22	Don't Put Parameter Blocks on Zero Page	7/89
23	ProDOS 8 Changes and Minutia	9/90
24	BASIC.SYSTEM Revisions	9/90
R 25	Non-Standard Storage Types	12/91
26	Polite Use of Auxiliary Memory	1/90
27	Hybrid Applications	1/90
28	ProDOS Dates—2000 and Beyond	9/90
29	Clearing the Backup Needed Bit	9/90

SmartPort

1	SmartPort Introduction	11/88
2	SmartPort Calls Updated	9/89
3	SmartPort Bus Architecture	11/88
4	SmartPort Device Types	11/88
5	SCSI SmartPort Call Changes	11/90
6	Apple IIGS SmartPort Errata	11/90
7	SmartPort Subtype Codes	11/88
8	SmartPort Packets	5/89
9	Apple II SCSI Errata	7/90

UniDisk 3.5

1	UniDisk 3.5 Internals	11/88
2	UniDisk 3.5 ID Bytes	11/88
3	STATUS Call Bug	11/88
4	Accessing Macintosh Disks	11/88
5	Architectural Differences Between 3.5" Drives	11/88