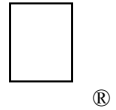# New Technical Notes

Macintosh

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Developer Support

HW 34 - System Update 2.0.1
Hardware

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This Technical Note documents the Macintosh System Update 2.0.1. System Update 2.0.1 is a collection of bug fixes and enhancements to Macintosh System 7.1 and System 7 Pro. There have been two previous versions of this update, called "Macintosh Hardware System Update Version 1.0", and "Macintosh Hardware System Update Version 2.0".

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Hardware System Update 2.0.1 Extension

The Hardware System Update 2.0.1 extension is a collection of bug fixes and enhancements to Macintosh System Software Version 7.1.x. It is a superset of the Hardware System Update 1.0, and an update to the Hardware System Update 2.0 extension. It consists of the following enhancements:

- Tick Count Patches.
- Apple File Exchange Patch for Color Classic.
- SCSI Slow-read Patch for IIvi, IIvx and LC III systems.
- PowerOff Patch to delay shutdown

- BlockMove fix for large block sizes
- Extents file problem fix
- ReleaseTheFont fix
- DrawCrsr fix
- GetIndResource patch to fix index out of bounds with system enabler problem.
- Centris/Quadra VGA-sensed monitor sync on green fix
- ADBReInit patch.
- Centris/Quadra Blue Video Fix
- Centris/Quadra Scrolling on a 16" Monitor Problem

Note: The System Update reserves the 'bugy' and 'bugz' gestalt selectors to indicate which fixes are installed on a given machine. These are for Apple internal use only, and developers should not rely on these. There is no guarantee that they will be supported in future versions of Macintosh system software.

Tick Count Patches
Models Affected: Classic II, Quadra 900, Quadra 950, IIsi, LC, LC II, IIvi, IIvx
Customer Impact: Users without this fix may experience system crashes and the tick count may not be accurate.

Apple File Exchange Patch for Color Classic Sound Input
Models Affected: Macintosh Color Classic
Customer Impact: Sound Input capability disappears on Color Classic systems after Apple File Exchange quits.
Details: This patch fixes a condition where Apple File Exchange mistakenly assumes a resource in the System Enabler belongs to it. This patch is only applied when Apple File Exchange is running.

SCSI Slow-read Patch for IIvi, IIvx and LC III
Models Affected: IIvi, IIvx, LC III
Customer Impact: Certain new SCSI hardware support can cause rare random failure of slow SCSI reads. This fix is mainly to support older devices, as few new devices require the SlowRead function.
Details: The patch is to the SlowRead routine in the SCSI manager. The original problem was a race condition between when the REQ bit is set, but before the phase checker completes, an interrupt would require service. An interrupt check is now made immediately after the REQ bit is set. The patch will install on any IIvx, IIvi or LC III system running System 7.1, or System 7 Pro.

PowerOff shutdown delay
Models Affected: IIsi, IIci, Quadra 700, Quadra 950, IIvi and IIvx

Customer Impact: Fixed a bug relating to some hardware configurations. The floppy drive would fail to fully eject a floppy disk at power-off.

Details: The patch delays for 1.5 extra seconds. The combination of fast shutdown power supplies and certain floppy drives require more time for the mechanism to complete its revolution before power is interrupted. The patch installs on IIsi, IIci, Quadra 700, Quadra 950, IIvi and IIvx systems running System 7.1 or System 7 Pro.

BlockMove

Models Affected: IIci, IIfx, Quadras, Centris, certain PowerBooks.

Customer Impact: Under certain circumstances the block header information was getting written over during calls to BlockMove. This happens when the byte count (D0) is between 8MB and 16MB, and the destination address (A1) is less than 8MB lower than the source address (A0), and the source/destination overlap. This fix prevents the application heap being trashed by this condition.

Dirty Bit HD problem

Models Affected: All

Customer Impact: Users who suffer from this problem will be led to believe that their drive has failed. If the afflicted drive is a boot volume then the system will not boot, resulting in the flashing question mark. If the volume is not the boot volume the user will be presented with the "This disk is damaged, do you want to initialize it?" dialog. This may lead the user to initialize the drive with the resulting loss of data.

Details: The problem is related to the size of the extents files and whether or not the dirty bit is set. Because of the size of the drive shipped with the machine, this bug was originally thought to be associated with the Macintosh PowerBook Duo.

ReleaseTheFont fix

Models Affected: All

Customer Impact: Under System 7.1 fonts were not being purged when they should be. This results in the customer losing the use of the RAM that the fonts (which should have been purged) occupy. This fix corrects a logical test which was testing a word instead of a byte.

DrawCrsr Fix

Models Affected: Centris 610 & 650, Quadra 800, LC III

Customer Impact: This problem appears as an update problem. The cursor will not track the mouse properly. This is fixed by installing a new DrawCrsr routine which updates the cursor position properly.

GetIndResource patch

Models Affected: All

Customer Impact: Inside Mac specifies that calls to GetIndResource with an index less than or equal to zero will return nil with ResErr set to noErr or resNotFound. The patch makes GetIndResource behave as documented. This is the same issue that the Connectix Enabler Patch addresses. (This patch is updated from the version in Hardware System Update 2.0.)

Centris/Quadra VGA-sensed monitor sync on green fix

Models Affected: Quadra and Centris Systems

Customer Impact: When a user connects a VGA-sensed monitor (such as Apple's Basic Color Monitor or Performa Monitor) to Quadra or Centris on board video the picture will be unacceptably green. There will be no way for the user to correct for this.

Details: The fix is to prevent sync on green from being used with VGA-sensed monitors on affected systems.

ADBReInit Fix.

Models Affected: PowerBook 140, 145, 170 and Quadra 700, 900 and 950.

Customer Impact: Prevents a crashing bug which occurs when ADBReInit is called.

Centris/Quadra Blue Video Fix

Models Affected: Quadra and Centris Systems

Customer Impact: If a customer connects a Centris to a 12" RGB monitor in 8 bit mode the display will appear to be blue and washed out.

Details: The fix is a patch to the routines which adds a 1 µsec delay to the code which writes to the hardware for indexed devices.

Centris/Quadra Scrolling on a 16" Monitor Problem

Models Affected: Quadra and Centris Systems

Customer Impact: A new addition to system software in Centris machines makes use of a 68040-specific instruction called 'MOVE16' to speed up graphics operations like vertical scrolling. This instruction moves 16 bytes of data in a single bus transaction called a 'burst'. This burst operation is longer than a 'normal' single memory cycle which can only transfer 4 bytes (but is much shorter than the 4 single cycles necessary to transfer the same amount of data - that's why it speeds things up).

The video hardware must continually read image data from video memory to ensure a stable, flicker-free display. This data must be read at regular intervals so that no interruption occurs in the flow of image information to the screen. Under the right conditions (which occur at 8 bits/pixel on the 16" monitor) there can sometimes be a fairly short time window in which this data must be read from the video memory. It is

possible for the MOVE16 instruction on the Centris 610 to block this time window, causing an interruption in the stream of image data being sent to the screen.

During a vertical scrolling operation there are many burst cycles occurring.   Some of these occur in the time window needed to read data from the video memory to refresh the display. If a burst occurs just at

the beginning of that window, it blocks the refresh operation from occurring during that window and horizontal flashes are seen on the screen. Older system software did not use the MOVE16 instruction, so none of the long burst cycles were performed in video memory, and no interruption of the image data stream occurred.

The problem only occurs on the C610 since it runs at 20 MHz, a slower clock speed than other 68040 machines. The slower clock speed translates into a longer burst memory cycle. (Testing indicates that the problem appears to go away at a little over 21 MHz.) The problem does not occur on higher clock speed machines (i.e., the C650 and Quadra 800), or if the MOVE16 instruction is not used for graphics operations.

HD SC Setup 7.2.2

Models Affected: All
Customer Impact: Using the current HD SC Setup (v7.1) users of large (1 GB+) drives will be unable to format their drives. As these larger drives are becoming more commonplace it is desirable to have the software to support them readily available.
Details: HD SC Setup 7.2.2 includes a driver which has been patched to handle the MountVol problem that many Duo x/120 systems have been experiencing, and fixes some problems handling certain bad block conditions.

Disk First Aid 7.2

Models Affected: All
Details: Disk First Aid 7.2 fixes a number of problems present in earlier versions. Disk First Aid now sets the Volume OK bit when a volume passes all tests. The new software also changes the default device that is checked by DFA to be other than the volume containing the Disk First Aid software. The user interface is improved, and a number of other bugs are solved. Messages generated are move descriptive.

The PowerBook Display Control Panel 1.0.4

Models Affected: All PowerBooks.
Customer Impact: Bug fixes.
Details: Latest version with bug fixes. This version has better support for 12" external monitors. Required for Express Modem 1.1.2.

The PowerBook Control Panel 7.1.3

Models Affected: All PowerBooks.
Customer Impact: Bug fixes.
Details: Latest version with bug fixes. Required for Express Modem 1.1.2.

System Enabler 131 v1.0.3 for PowerBooks

Models Affected: PB 160, 165, 165c, 180, 185c
Customer Impact: Problems with 12" are fixed. Greater support for the video out port is
                           provided.

Express Modem 1.1.2

Models Affected: All PowerBooks.
Customer Impact: Bug fixes.
Details: This version has much better support for software which does not use the
                           Apple Communications Toolbox. It also provides a number of bug fixes
                           over previously released versions.

Express Modem Tool 1.1.2

Models Affected: All PowerBooks.
Customer Impact: Bug fixes.
Details: This is the communications toolbox tool for use with Express Modem
                           1.1.2.

Memory Control Panel 7.1.1

Models Affected: Quadra 700,900,950, All PBs, IIvi, IIvx, LC III
Customer Impact: If a customer sets a RAM Disk to 100% while running System 7.1 with
                           Memory Control Panel version 7.1, the system may not properly reboot
                           because of insufficient memory for the system heap. This fix reduces the
                           possibility of this occurring.

720 Floppy Disk Formatter Extension (for 720k MFM HFS volumes)

Models Affected: All
Customer Impact: Allows customers to format low density floppies as 720k MFM for HFS
                           use.

Details: The 720 Floppy Disk Formatter Extension allows 720k MFM as an
                  option for HFS disks. This extension is only needed to format 720k HFS
                  disks. Any superdrive equipped machine will be able to mount a 720k
                  MFM HFS disk without the extension. The File System Manager is
                  integrated with the DiskInit Extension. This is included for certain third
                  party drives and to allow disk interchange with certain other operating
                  systems which support this format. This is optionally installed.

System Enabler 401 v1.0.5

Models Affected: Color Classic.
Customer Impact: This new system enabler fixes problems with erratic mouse movement
                  when using the Apple IIe card in the Macintosh Color Classic. The
                  mouse will be unusable as its movements will appear random.
Details: The updated system enabler has a fix to the mouse acceleration tables.
                  The fix is implemented in System Enabler 401 v1.0.5.

Apple Adjustable Keyboard resources

Models Affected: All
Customer Impact: Allows users to plug an Apple Adjustable Keyboard into their system
                  without installing additional keyboard software.
Details: The Apple Adjustable Keyboard resources are backwards compatible.

Sound Manager 3.0

Models Affected: All except MacPlus, SE and Classic
Customer Impact: Fixes old sound manager bugs and enhances sound performance.
Details: Provides bug fixes and better performance. See the technical note
                  entitled "Sound Manager 3.0" by Jim Reekes, Kip Olsen, and Ray
                  Chiang. This is optionally installed.

Sound Control Panel 8.0.1

Models Affected: All
Details: This control panel is necessary for Apple Adjustable Keyboard and Sound
                  Manager 3.0. It has the software necessary to respond to the mute and
                  record buttons on the Apple Adjustable Keyboard.

Grayshare serial driver patches

Models Affected: All
Customer Impact: Users will experience better printer and serial performance.
Details: These patches are for Apple internal use only, and allow the GrayShare
                  and the StyleWriter II to operate more reliably.