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Macintosh II: NuBus Problems and ROM Upgrade (9/95)

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TOPIC -----

The original release of the Macintosh II ROM had a problem in the Slot Manager. Units shipped after February 1, 1988, contain an upgraded ROM. If your Macintosh was built after that date, or if you do not use a NuBus card that addresses over 1MB, the Slot Manager problem does not affect you.

DISCUSSION -----

The Slot Manager is a section of the Macintosh II ROM that contains a set of routines that makes it possible to identify and communicate with cards plugged into NuBus slots in the Macintosh II.

The problem is that the Slot Manager does not recognize cards that need more than 1MB of address space to function. This is because the Slot Manager runs in the 24-bit addressing mode and should be running in the 32-bit addressing mode.

The 68020 uses these two modes for interpreting memory addresses. In the 24-bit mode, the Macintosh can access only 1MB of memory for each card. If the card exceeds this limit, the Macintosh won't recognize that the card is in the slot. This is because of the way Apple recommends that developers format their cards. If the card can fit all of its code into 1MB, there is no problem.

For details on Macintosh operation in either 32-bit or 24-bit mode, see the Operating System Utilities chapter of "Inside Macintosh, Volume V" (ISBN 0-201-17719-6). For details on the use of address space by NuBus cards, see Chapter 4 of "Designing Cards and Drivers for Macintosh II and Macintosh SE" (ISBN 0-201-19256-X).

Identifying Your ROM Version -----

The problem was fixed via a patch to the Macintosh II ROMs and was rolled into production around February, 1988. All Macintosh IIs manufactured since then have the fix installed.

You can identify the upgraded ROM by "Revision B" on the chip. In addition, manufacturers of NuBus cards requiring the fix usually included a small software application that can be run to determine if you have the new ROM. Apple-authorized service providers may also have this application.

Please note that the change to the Macintosh ROM was done as an object overlay only. This means that the object code was patched, and the ROM was not rebuilt. Only minor changes were made to allow the Slot Manager to work in 32-bit mode instead of 24-bit mode, thus ensuring that it recognizes cards requiring more than 1MB of address space.

The Upgrade Program

Because of the Slot Manager problem, Apple patched the ROM and offered a free upgrade program to customers who bought NuBus cards requiring this fix.

The service program to replace the logic board has expired. Logic boards experiencing this issue can be replaced, but it will not be a free replacement.

Article Change History:

- 01 Sep 1995 - Combined information from several articles for consistency.
- 23 Dec 1994 - Noted that SuperDrive upgrade requires Rev. B logic board.

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