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EtherNet PDS: Nubus and MCP and Interrupts

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TOPIC -----

CE Software made the following statement regarding a problem with CE's QuickMail server and PDS cards. It was our understanding that NuBus cards like the older Apple (3COM) card would generate interrupts as well. MCP-based cards remove much of the work of the main processor in the area of interrupts.

Statement from CE Software

Ethernet cards for [Macintosh] SE and SE/30 machines are Processor Direct Slot (PDS) cards. PDS cards run at interrupt level. The QuickMail Server INIT also runs at interrupt level. This creates a problem when the Mail Server machine becomes busy. The hardware and software continually interrupt each other until the machine hangs or crashes. If network and QuickMail traffic is light, this configuration may run successfully. Unfortunately, machines set up in this configuration are probably not intended for light traffic situations.

This problem does not exist with the QuickMail Workstation software.

Due to the conflict of QuickMail and Processor Direct Slot (PDS) cards both running at interrupt level, we do not recommend using a PDS card in a Mail Server machine. Instead of using a PDS Ethernet card, we recommend that you use a NuBus Ethernet card. NuBus Ethernet cards are made for Macintosh II class machines and are available from a number of different manufacturers. A second option is to use the SE and SE/30 machines on LocalTalk instead of EtherTalk.

Please Note: Ethernet card for the Macintosh LC and Macintosh IIsi may also be PDS cards. Check with the manufacturer to be sure that these cards are genuine NuBus cards. Also, this interrupt level conflict problem can also occur with non-hard drive SCSI devices. This problem cannot be avoided by using SCSI Ethernet devices. (The QuickMail Server INIT works fine with SCSI hard drives.)

DISCUSSION -----

After considerable research on this subject, we can find no truth to this claim made by CE software. We see no real difference in the interrupt schemes used for NuBus versus PDS-based cards; in fact, PDS cards can be designed using the same driver as a NuBus-based card if the psudeoslot design methodology is used. The biggest differences between PDS cards and NuBus cards seems to be that you don't have to deal with the slot manager (if you don't want to), and you gain some fast access (usually same as processor speed) DMA capabilities.

Developer Tech Support (DTS) reinforced our findings; they agreed that there's no difference in the "interrupt" priority being given to NuBus based cards vs. PDS-based cards. DTS contacted CE Software to determine on what basis they were making this claim. All that they had was some empirical data that PDS-based NuBus cards were causing the QuickMail server to hang and non-PDS-based Ethernet cards didn't exhibit the problem. No work was ever done to confirm where the problem was actually coming from, and what needed to be done to fix it.

The best guess to the real source of the problem is some obscure bug in the QuickMail server that only shows up when a PDS card is used. To eliminate the confusion this information is causing, CE Software has agreed to pull the information from their manuals and discontinue making this claim.
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