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Power Macintosh and NuBus Q&A (3/94)

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TOPIC -----

Below is a Q&A series around NuBus performance on Power Macintosh.

DISCUSSION -----

Q) Is NuBus slow on the Power Macintosh family?

A) No. NuBus performance on the Power Macintosh computers is faster than any NuBus-capable Macintosh we've ever shipped except for the Quadra 840AV. And compared to the Quadra 840AV, the NuBus performance of the Power Macintosh 8100 should be about the same for most situations. When combined with new native applications, the overall performance of Power Macintosh machines is far better than any previous Macintosh.

Q) Do existing NuBus cards run on the Power Macintosh?

A) Yes. That's why we chose to stay with the NuBus expansion bus. We have found that overall NuBus compatibility is excellent. High performance cards, in areas like video and graphics, may require new software drivers in order to achieve the level of performance of the fastest Quadra Computers today.

Q) Why do customers need to get new drivers?

A) Some existing drivers depend on software APIs custom to the 68040 family. The new drivers have be rewritten around the PowerPC 601 chip instead of the 68040.

Q) How will customers get the new software drivers?

A) These new drivers will be made available by the third-party card vendors.

Q) Under what conditions is NuBus faster on the Quadra 840AV than on the Power Macintosh 8100?

A) The Quadra 840AV has the potential for block transfer reads and writes from the CPU to a slave card, whereas the Power Macintosh 8100 can only block transfer when the card is a NuBus master. This difference is due to a special custom 68040 instruction called MOVE16, which is not implemented in the PowerPC instruction set.

Q) Why isn't the MOVE16 instruction included in the PowerPC instruction set?

- A) The PowerPC processor is a Reduced Instruction Set (RISC) processor, which means that it has very simple instructions that can be executed quickly. It does not have complex instructions like MOVE16. This is what gives the PowerPC processor its great speed.
- Q) Does this mean that the Quadra 840AV could be a better solution than the Power Macintosh 8100 for some customers?
- A) No. The Power Macintosh 8100 combined with native Power Macintosh applications will offer performance far superior to the Quadra 840AV. We believe that the performance of native Power Macintosh applications will be 2 to 4 times faster than the same applications running on an Quadra 840AV.
- Q) So NuBus performance is not an advantage of the new machines?
- A) The Power Macintosh family was designed to vastly improve CPU processing performance while maintaining compatibility with today's Macintosh applications, peripherals and expansion cards. The I/O subsystems on the Power Macintosh machines, including NuBus, SCSI, networking, and so on, offer very high compatibility with today's computers and performance similar to that of the fastest Quadra Computers. The NuBus performance of the Power Macintosh machines is clearly sufficient for applications in publishing, multimedia and digital video.

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