Power Macintosh Multiprocessor FAQ (12/96)

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TOPIC ---

This article includes Frequently Asked Questions (FAQ) about multiprocessing on Power Macintosh computers.

Questions in this FAQ:
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DISCUSSION --

1) Question: What is Multiprocessing (MP)?

Answer: Multiprocessing computer systems are based on more than one microprocessor to provide a performance edge in demanding, computer-intensive situations.

2) Question: How is multiprocessing accomplished on Power Macintosh computers?

Answer: The Power Macintosh 9500/180MP is Apple's first multiprocessing system.

It consists of a dual PowerPC 180 MHz 604e processor card combined with the Apple/DayStar Multiprocessor API, an extension to System 7.5.x which enables multiprocessing. The hardware and API enable increased performance when used with a multiprocessing-savvy application.

From a hardware perspective, both of the processors can be active at the same time. The first processor handles the Mac OS and I/O tasks and sends the multiprocessing tasks to the second processor to implement.

The software implementation is an extension to System 7.5 that enables multiprocessing. It consists of a two-part shared library: a highly leveraged API library that applications interface to and a low level engine that the kernel code controls, interrupts, and tasks in the different processors.

3) Question: Is Apple's implementation of multiprocessing asymmetric or symmetric?

Answer: The current system software release (System 7.5.x) and multiprocessing card provide asymmetric multiprocessing. Asymmetric multiprocessing means that the main processor runs the Mac OS and I/O interrupts, and the other processor runs the multiprocessing tasks. Symmetric multiprocessing means that any processor can handle any type of tasks. Future system software releases may support symmetric multiprocessing.

4) Question: What are the supported configurations for using MP on Macintosh computers?

Answer:

Supported Computers
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Currently, the only configuration available from Apple is the Power Macintosh 9500/180 MP. However, third-party companies, such as DayStar Digital, may make a multiprocessing card that will work in one of the other PCI-based Power Macintosh computers.

Memory Requirements
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Based on the types of applications that are becoming MP-aware (such as graphics, 3D, web authoring), you will need a minimum of 32 MB and could easily expand over 100 MB to support all of your applications.

IMPORTANT TIPS
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Disable Virtual Memory

When using the multiprocessing capabilities, you cannot depend on software solutions to low-memory situations, such as virtual memory or RAM Doubler, because the multiprocessing software is not compatible with virtual memory.

Because of this, if virtual memory is turned on or RAM Doubler is installed, then your multiprocessor-compatible software applications will not be able to take advantage of the second PowerPC processor.

This is particularly important because PowerPC applications typically require more memory when run with virtual memory turned off.

Turn off hard disk sleep

Make sure that the hard disk sleep interval is set to "Never" in the Energy Saver control panel. Otherwise, software applications designed to work with your multiprocessor Power Macintosh may not work properly.

5) Question: How does the performance on computer intensive tasks compare to uniprocessor systems?

Answer: We have seen performance in the range of 1.5-2 times faster on computer intensive tasks such as 3D rendering.

6) Question: Can you run applications that are not MP-savvy on an MP system?

Answer: Yes, the computer will run the application as a single processor system offering the performance of the single processor.

7) Question: Can third-party companies license the Apple Multiprocessor API software?

Answer: The Apple Multiprocessor API is part of the Software Licensing distribution program and is available to any developer.

8) Question: How can you verify that the Multiprocessor card and software APIs are working properly?

Apple includes an application called PowerFraxx on multiprocessing-capable computers, such as the Power Macintosh 9500/180MP. PowerFraxx is a benchmarking application that generates fractals from the classic Madelbrot set. This application uses the multiprocessor card if the card and multiprocessor API software are installed properly.

To test that the card and software are installed and working properly, follow these steps:

Step 1
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Locate and run the PowerFraxx application.

PowerFraxx is pre-installed in the Apple Extras folder on the hard disk and can also be reinstalled from the CD Extras Folder on the System Software CD-ROM disc.

Step 2
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If the multi-processor card and software API are installed properly, a Multiprocessing menu option will be present.

Choose "Use 2 Processors" from this menu. This verifies that the card and software are properly installed. You do not need to follow any of the remaining steps.

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If the Multiprocessing menu option is not available, either the multiprocessing software or card are not installed properly. Continue with Step 3 to troubleshoot.

Step 3
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Verify that virtual memory or Ram Doubler are turned off because the multiprocessing software is not compatible with virtual memory.

Step 4
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Verify that the multiprocessing API software is properly installed. Within the Extensions folder, there should be a folder called "Multiprocessing", which should contain two files:

- Apple Dual Processor HAL
- Multiprocessor API Library

If these files are not installed, reinstall the multiprocessing software. The Multiprocessing Software folder is located in the Apple Extras folder on the hard disk or in the System Software folder on the System Software CD-ROM disc.

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