Power Mac G4 FAQ

Q. What are the benefits of the new Power Mac G4 systems?

A. The new Power Mac G4 systems are the fastest personal computers ever created. The heart of the Power Mac G4 is the new PowerPC G4 with Velocity Engine. This processor incorporates vector processing technology pioneered in supercomputers. In fact, the PowerPC G4 is the first commercial desktop processor to achieve gigaflop performance (one billion floating-point operations per second), a threshold originally applied in the supercomputing world. To take full advantage of the Pentium III–crushing performance* of the PowerPC G4 with Velocity Engine, Apple also designed a new logic board architecture to maximize overall system throughput. The new Power Mac G4 architecture includes a higher-bandwidth memory bus, support for AGP graphics, Ultra ATA/66 support for fast hard disk access, dual-channel USB support, optimized FireWire performance, and new capabilities such as wireless networking support. (The PowerPC G4 is also available in an affordable configuration that includes a base logic board architecture.) The result is a system that dramatically outperforms Windows-based systems in the tasks creative professionals have to accomplish day in and day out.

*In processor and Photoshop tests.

Q. What makes the Velocity Engine so powerful?

A. The Velocity Engine is a brand-new addition to the PowerPC architecture that provides a 128-bit vector processing unit on the PowerPC G4 chip itself. This vector unit uses parallel processing technology that was pioneered on multimillion-dollar supercomputers. The Velocity Engine has 162 new dedicated instructions integrated into silicon that can be used to greatly accelerate intensive multimedia and math calculations. It does this by working on a whole set of data simultaneously, rather than one data point at a time. The Velocity Engine also operates completely independent of both the integer unit and the floating-point unit, enabling all three units to process data at the same time.

Q. How does the PowerPC G4 compare with the 600-MHz Pentium III?

A. All megahertz are not created equal. The PowerPC G4 with Velocity Engine can process more vector and multimedia data per clock cycle than any other desktop processor—up to an amazing 20 operations per cycle! Using 128-bit-wide internal data paths, the PowerPC G4 crunches massive amounts of data on each clock cycle. Add in the capability to prefetch four simultaneous 32-bit data streams and thirty-two 128-bit-wide registers for data storage (that's eight times the capacity of the Pentium III), and you have a processor that's truly optimized for intensive data calculations. In fact, the PowerPC G4 with Velocity Engine is the first commercial desktop processor to break through the gigaflop threshold.

Q. Does my existing software work on the PowerPC G4 with Velocity Engine?

A. The applications you work with today on the Power Mac G3 are compatible with the new Power Mac G4.

Q. How much third-party software developer support has Apple garnered for the new Velocity Engine?

A. At time of announcement, nearly 60 developers are delivering or planning support for the new PowerPC G4 with Velocity Engine, including Adobe, Macromedia, Media100, and others. Apple is maintaining a list of announced and updated applications that have been accelerated for the Velocity Engine on our web site at www.apple.com/powermac. At our developer web site, www.apple.com/developer, software developers can find tutorials, generous sample code, and a full software development kit to get started on Velocity Engine support.

Q. Does Apple have plans for multiprocessor Power Mac G4 systems?

A. Although the new PowerPC G4 enables multiprocessor designs, with the Power Mac G4 Apple continues to focus on single-processor designs in order to deliver outstanding performance at the most affordable prices for creative professionals. Even in a single-processor design, the PowerPC G4 with Velocity Engine doubles the performance of many applications popular with creative professionals.

Q. What's the state of the Apple-IBM-Motorola alliance?

A. Both Motorola and IBM continue to supply Apple with advanced PowerPC technology for its desktop and portable product lines. The copper-based PowerPC G4 with Velocity Engine used in the Power Mac G4 is supplied by Motorola.

Q. Why are there two different logic boards in the Power Mac G4 line?

A. In order to deliver a very affordable Power Mac G4 configuration, we decided to use a base logic board architecture that features the PowerPC G4 with Velocity Engine. Now anyone who wants the power and performance of the PowerPC G4 processor can purchase it at an excellent price. Apple also created a more advanced logic board architecture designed to augment the power of the PowerPC G4 with Velocity Engine. The new logic board design includes new features and enhancements such as support for up to 1.5 gigabytes of SDRAM, higher memory bandwidth, optional AirPort wireless networking, and AGP 2X graphics.

Q. Can the base architecture be upgraded to the new logic board architecture?

A. No. They are two separate logic board implementations with distinct feature sets. Customers who are interested in innovations such as AirPort wireless networking or 1.5GB memory support should consider configurations featuring the new logic board architecture from the outset.

Q. How do I take advantage of the new memory capacity of 1.5GB on the Power Mac G4?

A. Creative professionals love having lots of memory, especially for applications like Photoshop where it can be much faster to work entirely from RAM. The new Power Mac G4 has four DIMM slots supporting DIMMs of up to 512MB each to reach the maximum 1.5GB. Any single application can allocate up to 999MB of system RAM, and multiple applications open at the same time can use up to the full 1.5GB limit.

Q. What is the performance benefit of the Power Mac G4 graphics architecture?

A. All Power Mac G4 configurations include the high-performance ATI RAGE 128 graphics card and 16MB of SDRAM graphics memory. The RAGE 128 provides users with accelerated 2D performance that supports up to 1,920- by 1,200-pixel resolution. The 16MB of on-board memory provides support for 32-bit Z-buffering, alpha blending, fog, and multitexturing. The advanced logic board design in high-end configurations now includes support for the industry-standard Accelerated Graphics Port (AGP) slot. In MacBench tests of 2D graphics and screen operations, the Power Mac G4 with AGP sports a 65% improvement over previous implementations. Over time, this architecture will also yield improvements in both 3D speed and quality as software developers begin to take advantage of the potent combination of OpenGL software and AGP hardware. For example, AGP enables 3D application software to use fast access to main memory to swap larger, more detailed textures. Finally, by adopting AGP, Apple gains greater leverage of the rapidly evolving graphics industry infrastructure, paving the way to greater graphics price/performance advantages for applications ranging from high-end publishing and design to advanced consumer gaming.

Q. How does the Power Mac G4 support the digital graphics interface of the new Apple Cinema Display?

A. Customers will use the online Apple Store build-to-order program to order the Apple Cinema Display in conjunction with a Power Mac G4 that's specially equipped with a digital graphics connector. The Apple Cinema Display is expected to be available in October 1999 in limited quantities. Together, the Apple Cinema Display and the Pentium III–crushing Power Mac G4 provide the ultimate design solution for creative professionals.

Q. How have FireWire and PCI changed in the new Power Mac G4 systems?

A. While the nominal performance of these subsystems is the same as in previous designs, Apple continues to improve their effective performance. In the case of PCI, bandwidth has been increased by up to 50% over previous designs. FireWire benefits from a new Open Host Controller Interface (OpenHCI) chip that includes larger data buffers, significantly improving the overall efficiency of the FireWire bus.

Q. How is dual-channel USB an improvement over earlier implementations?

A. The advanced logic board in the Power Mac G4 implements two USB ports, each with its own 12-Mbps channel, instead of two ports on a single shared 12-Mbps channel. This essentially doubles the bandwidth available for USB peripherals and increases their performance. For example, you can listen to digital audio from speakers connected to one USB port while printing a large document on a USB printer connected to the second port, without any of the latency or interruption that might occur on a shared bus because of heavy data traffic.

Q. How do I connect SCSI devices to the new Power Mac G4?

A. Apple and several other companies offer low-cost SCSI PCI cards that will do the job. At the same time, there has never been a broader range of peripherals available for USB and FireWire: Virtually everything that was popular on SCSI is now available in USB and FireWire versions, including printers, scanners, hard drives, removable drives, CD-RW, DVD-ROM, joysticks, video cameras, still cameras, MIDI devices, and more. These new peripherals are even easier to use over USB and FireWire, because they are fully hot pluggable, don't need IDs or termination, and even have longer, more flexible cables that allow you to put your peripherals where you want them.

Q. Can I connect ADB devices to the Power Mac G4?

A. No. As part of Apple's ongoing platform simplification, we've removed the ADB port from the Power Mac. There are more than 150 USB devices available to meet customers' needs.

Q. How does the Ultra ATA/66 hard drive interface improve on earlier implementations?

A. Ultra ATA/66 is the latest interface for low-cost internal ATA hard drives, doubling the available bandwidth of the ATA/33 bus used in the Power Mac G3. In MacBench 5.0 disk tests, the Ultra ATA/66 hard drives used in the Power Mac G4 are up to 46% faster than their predecessors.

Q. If Ultra ATA/66 is so fast, do I still need SCSI hard drives?

A. Most users probably don't need SCSI. The Ultra ATA/66 drives in the Power Mac G4 are fast enough for everyday tasks and even intensive multimedia uses like Photoshop and FireWire-based DV capture and editing. In fact, internal Apple testing indicates that the Ultra ATA/66 drives perform sustained read and write functions faster than SCSI drives with similar specifications. Some high-end professionals, however, may prefer to use a RAID configuration, which combines multiple drives into one larger, faster volume. This is typically done using an Ultra2 LVD SCSI PCI card and drives, which are available as BTO options from the Apple Store.

Q. What about FireWire for mass storage?

A. FireWire-based mass storage is one of the hottest new peripheral applications. There are now dozens of hard drive options that can plug directly into FireWire ports without the worry of setting device IDs, the confusion of whether to use a terminator, or even the hassle of shutting down and restarting the computer. FireWire supports hot plugging, and it even provides bus power so that many drives don't need to be plugged into an AC outlet—they draw their power from the Mac over FireWire itself. FireWire drives can read and write data at speeds anywhere from 9 MBps to 16 MBps, and now with new FireWire RAID software, these drives can also be combined seamlessly into larger and faster volumes over FireWire.

Q. Can I use the DVD-RAM drive to create a DVD-Video disc for a home player?

A. Although you can use the DVD-RAM drive and third-party authoring software to create a DVD-Video disc layout complete with MPEG-2 video and AC-3 audio, most home DVD-Video players don't understand how to read DVD-RAM discs. However, a disc of this type can be used and tested on other Power Mac systems with third-generation DVD-ROM drives, which Apple began shipping in the Power Macintosh G3 in January 1999. You can also use the DVD-RAM drive to save video in dozens of other QuickTime formats, including DV, Sorenson, and even MPEG-1.

Q. Can I watch a DVD-Video movie on the DVD-ROM or DVD-RAM drive?

A. Yes. The Power Mac G4 includes the hardware and software necessary to play DVD-Video titles using either drive.

Q. Can I use the Power Mac G4 to watch a DVD-Video on my home TV?

A. The Power Mac G4 does not include the hardware support necessary to send the DVD-Video signal or the AC-3 audio to your home AV equipment. Other companies may provide this solution via FireWire in the future.

Q. How do I use the new Power Mac G4 in an AirPort wireless network?

A. The Power Mac G4 is ready for wireless networking. It includes an AirPort card slot on the main logic board and a built-in antenna, so you simply slide the card in, attach the antenna cable, and install the software. At that point, you can communicate with any other AirPort-enabled iBook or Power Mac G4, or directly with an Airport Base Station. This allows you to move your Power Mac G4 to the most convenient place, regardless of Ethernet and phone jack availability. In addition, you can use the Power Mac G4 as a software-based wireless base station for other Mac systems. In this situation, an unlimited number of computers can connect to the Internet through the Ethernet or modem connection on your Power Mac G4. Workgroups and classrooms will find this to be a convenient way to add Internet access without having to invest in additional networking hardware or install extra Ethernet cabling.

Q. How does the AirPort Software Base Station work?

A. The AirPort Software Base Station is actually an AirPort-enabled computer such as a Power Mac G4 that runs special AirPort software in the background. The Power Mac G4 can be used for its usual work while acting as a software base station. You use the AirPort Setup Assistant to set up the computer to function as an AirPort Software Base Station.

Q. Should I shut down my Power Mac G4 or put it in sleep mode when not in use?

A. The new Power Mac G4 sleeps at such low power that you should rarely need to shut down your Mac again. With its new PowerBook-style sleep management, the Power Mac G4 is able to turn off most of the subsystems in the computer to achieve an extremely low-power sleep mode of around 6 watts. If you were to shut down the computer entirely, but leave it plugged into the wall, it would still consume about 3 watts—so why shut down except to change internal system components? Just by tapping the space bar, you'll be back at your desktop, just the way you left it, much more quickly than booting from scratch. The behavior of the power button on the new Power Mac has been modified to take advantage of this convenience. Pressing the button automatically takes the system into and out of sleep, while the Shutdown function is still available from the Special menu.

Q. Can I use Final Cut Pro software on the new Power Mac G4?

A. Yes. An upcoming release of Final Cut Pro will support the new Power Mac G4, including accelerated effects that take advantage of the new Velocity Engine. See www.apple.com/finalcutpro for details.

Q. When will the new Power Mac G4 be available?

A. The Power Mac G4 begins shipping in September. Some configurations, including servers and 500-MHz desktop configurations, are expected to be available by November.

For More Information

For more information about the Power Mac G4, visit www.apple.com/products.

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