



# Power Mac G4 FAQ

## Overview

### **Q. What are the key features of the Power Mac G4?**

**A.** The new Power Mac G4 system delivers outstanding performance, powerful DVD and CD authoring solutions, numerous expansion options, and Mac OS X, Apple's next-generation operating system.

- *Performance.* The Power Mac G4 offers the fastest-ever PowerPC G4 processors with Velocity Engine, achieving processing speeds of up to 867 MHz in single processor systems and 800 MHz in the dual processor model.
- *DVD and CD authoring solutions.* Now available in more configurations, the revolutionary SuperDrive (DVD-R/CD-RW) allows you to create DVDs and CDs all on one drive.<sup>1</sup> Models with the SuperDrive include iDVD software for a complete DVD authoring and recording solution. CD-RW capabilities in all Power Mac systems, along with the included iTunes and Disc Burner software, make it easy to create custom music and data CDs.<sup>2</sup>
- *Highly expandable.* With five slots—one superfast AGP 4X graphics slot plus four high-performance PCI slots—and three expansion bays, the Power Mac G4 allows you to add hard drives and video, audio, and SCSI cards to accomplish a wide range of professional tasks. And with the new NVIDIA GeForce2 MX graphics card with TwinView support, you can now use two displays simultaneously without adding another graphics card or using a PCI slot.<sup>3</sup>
- *Mac OS X.* The world's most advanced operating system is preinstalled in every Power Mac G4. Apple's new operating system delivers the power and stability of UNIX with the simplicity and ease of use of Macintosh. Advanced features such as protected memory, preemptive multi-tasking, symmetric multiprocessing, and modern, standards-based networking increase the performance, stability, and responsiveness of your computer. Mac OS X also combines innovative 2D, 3D, and multimedia graphics technologies to deliver state-of-the-art graphics to the Power Mac G4.

## Performance

### **Q. What are the performance features of the new Power Mac G4?**

**A.** The Power Mac G4 delivers supercomputer speeds of up to 11.8 gigaflops and includes the following performance features:

- Single processors running at 733 and 867 MHz and dual processors running at 800 MHz
- 256K on-chip L2 cache in all systems; 2MB of L3 cache in 867-MHz and dual 800-MHz systems
- System bus running at 133 MHz, supporting over 1GB-per-second data throughput
- PCI throughput of up to 215MB per second
- Gigabit Ethernet standard on all systems



## FAQ

### Power Mac G4

**Q. Which is right for me—a dual processor or single processor Power Mac system?**

**A.** If you use Mac OS X and/or dual processor–optimized applications such as Adobe Photoshop and Final Cut Pro, you’ll experience faster performance with a dual processor Power Mac G4. Mac OS X features symmetric multiprocessing, so the Power Mac can automatically take advantage of a second processor to provide performance gains, even in applications that are not optimized for dual processors. To learn more about dual processing and to check a list of optimized applications, visit [www.apple.com/powermac/multiprocessing.html](http://www.apple.com/powermac/multiprocessing.html).

**Q. Which applications are accelerated for the PowerPC G4 processor with Velocity Engine?**

**A.** Many of the applications that are key to Apple’s professional customers achieve substantial gains in performance running on a PowerPC G4 with Velocity Engine. Those applications include Photoshop, Final Cut Pro, Deneba Canvas 7, Macromedia Director 8 Shockwave Studio, and Terran Interactive Media Cleaner Pro. In addition, support for the Velocity Engine is an important feature that is built into Mac OS X. The Velocity Engine boosts the performance of any application in Mac OS X that utilizes data parallelism, such as those performing 3D graphic imaging, image processing, video processing, and audio compression. Quartz, QuickTime, and QuickDraw are accelerated for Velocity Engine in Mac OS X, so any application using these technologies can benefit from the Velocity Engine. You can find more information on optimized applications on the web at [www.apple.com/g4](http://www.apple.com/g4).

**Q. In what ways does Mac OS X improve performance in the Power Mac G4?**

**A.** The industrial-strength UNIX-based foundation of Mac OS X delivers advanced features that contribute to the performance gains of the Power Mac G4.

- *Preemptive multitasking.* Mac OS X uses the PowerPC G4 processor more efficiently by prioritizing tasks and allocating resources depending on their importance. Preemptive multitasking works like an air traffic controller, watching over the computer’s processor, prioritizing tasks, making sure activity levels are at maximum, and ensuring that every task receives the resources it needs. In Mac OS 9, applications themselves determine when to allow other applications to use the CPU, so a complex task like rendering a video transition or compressing video—tasks that can take several minutes or even hours—will fully occupy the processor until complete. But with preemptive multitasking in Mac OS X, the operating system is the ultimate arbiter of the processor, allocating CPU cycles to applications in the most efficient manner. If the system is performing a video compression task and a new request comes along, like checking email or loading a web page, Mac OS X preempts the currently running video compression task with the new, more immediate task. Since applications can no longer “occupy” the CPU indefinitely, your system is far more responsive to the tasks you want to perform when you want to perform them. A more responsive system lets you get your work done more efficiently.
- *Protected memory.* An important part of improving system performance and productivity is ensuring maximum uptime and protecting data from loss or corruption. Mac OS X ensures reliability and offers crash-resistant computing by protecting applications through a modern, robust protected memory architecture that allocates a unique address space for each application or process running on the computer. This approach essentially walls off applications, isolating them in their own memory space so they can’t interfere with one another if one “goes bad.” If an application does crash, the operating system simply shuts it down, without affecting the rest of the system, and you can continue working without interruption and without restarting your



## FAQ

### Power Mac G4

computer. These benefits also apply to applications that stop responding to your input. You can simply force-quit any application running on the system without fear of harming other applications or the system itself.

- *Symmetric multiprocessing.* Because Mac OS X features full symmetric multiprocessing, the dual processor Power Mac G4 automatically takes advantage of both processors, so all applications can benefit from the higher performance a second processor offers. Symmetric multiprocessing means the operating system automatically assigns tasks to each processor, fully utilizing its capacity and thereby allowing the computer to do almost twice as much work in the same amount of time. For example, the operating system might use one processor to run a complex image transformation and the other to create a new MP3 file, cutting the total time required to complete both tasks nearly in half when compared to a single processor system. And in multithreaded applications, which take special advantage of dual processor systems by “splitting” a single processor-intensive task between processors, complex operations can run up to twice as fast using Mac OS X on a dual processor Power Mac G4. In fact, Mac OS X itself is multithreaded, so the operating system itself can use both processors.
- *Modern, standards-based networking.* Mac OS X incorporates the time-tested BSD networking stack, the backbone of most TCP/IP implementations on the Internet today, to take advantage of Gigabit Ethernet, which is built into all Power Mac G4 systems. This highly optimized networking architecture provides increased data throughput so you can move large files to or from a server faster. It supports DHCP, BootP, and manual network configurations, so you can seamlessly integrate Mac OS X into local area networks.

#### **Q. How does the Power Mac G4 compare with computers using the Intel Pentium 4 processor?**

**A.** The PowerPC G4 with Velocity Engine has a unique processor design that enables the Power Mac to outperform higher-megahertz Pentium 4–based PCs. A superefficient architecture and instruction set enable the G4 chip to process more instructions and data per cycle than a Pentium 4. The G4 also has a shorter pipeline (stages in the processor that feed instructions to the execution units), which lets the processor recover faster when instructions or data change. In Adobe Photoshop tests, for example, the Power Mac G4 with dual 800-MHz processors is 83 percent faster than PCs with a 1.7-GHz Pentium 4 processor. The 867-MHz Power Mac is 58 percent faster than the same PC, and even the 733-MHz Power Mac G4—the entry-level configuration—outperforms the PC by 33 percent.

## Graphics

#### **Q. Which graphics cards can I get with a Power Mac G4? And how do I choose the one that is right for me?**

- A.** The Power Mac product line features graphics cards from NVIDIA, the industry leader in high-performance graphics cards. The following cards are available for any Power Mac G4 system:
- *NVIDIA GeForce2 MX with 32MB of SDRAM.* NVIDIA’s award-winning GeForce2 MX provides blazing-fast graphics processing for incredible 2D and 3D performance in true 32-bit color. Powerful features, such as sophisticated transform and lighting, per-pixel shading, and 32MB of SDRAM for storing large texture maps, deliver incredibly realistic 3D graphics at very high resolutions.



## FAQ

### Power Mac G4

- *NVIDIA GeForce2 MX with TwinView and 64MB of SDRAM.* For the first time, Power Mac users can use two displays simultaneously without having to add a PCI card. The NVIDIA GeForce2 MX with TwinView delivers the same high-performance 2D and 3D graphics as the GeForce2 MX and also features dual display capability. The graphics card connects to one Apple display with an Apple Display Connector and a second monitor or projector with a VGA connector. It's ideal for users who demand high-performance graphics and want to expand their desktop workspace with two displays.
- *NVIDIA GeForce3 with 64MB of DDR RAM.* The GeForce3 is the ideal high-performance graphics system for 3D animation and visualization. Powered by the NVIDIA nfiniteFX engine and the Lightspeed Memory Architecture, the GeForce3 graphics processing unit delivers unprecedented 3D graphics performance. The 64MB DDR RAM frame buffer can handle a new generation of games and professional applications that use large texture maps. With more than 57 million transistors, the GeForce3 can perform 800 billion operations per second, including 76 billion floating-point operations per second (gigaflops). The result is incredibly realistic 3D environments, including textures that appear photorealistic, customizable lighting conditions, and creatures with organic imperfections and unique expressions. This card is available as a build-to-order option through the online Apple Store.

#### **Q. Which displays does Apple offer for connecting to Power Mac G4?**

**A.** Apple offers a family of all-digital flat-panel displays, designed to work with the Power Mac G4 and to provide unprecedented ease of setup with the Apple Display Connector (ADC):

- Apple Studio Display, 15-inch (viewable) digital flat panel
- Apple Studio Display, 17-inch (viewable) digital flat panel
- Apple Cinema Display, 22-inch (viewable) digital flat panel

Each display features an active-matrix LCD panel that delivers images with twice the brightness, twice the sharpness, and twice the contrast of traditional CRTs. Professionals will also appreciate the extended viewing angles, lightning-fast pixel response, broad color gamut, and award-winning industrial design that make these displays the best in their class. Learn more about Apple displays at [www.apple.com/displays](http://www.apple.com/displays).

#### **Q. Can I connect other monitors to the Power Mac G4?**

**A.** Yes. Any CRT monitor or flat-panel display with a VGA connector can connect to the VGA port on the NVIDIA GeForce2 MX graphics card in the Power Mac G4. If you have the GeForce2 MX with TwinView you can connect and use both an Apple display (with ADC) and a second display (with a VGA connector) simultaneously. If you have an older Apple Cinema Display or Apple Studio Display with a DVI connector, you will need a DVI to ADC adapter to connect it to the new Power Mac G4. This adapter is available from the Apple Store at [www.apple.com/store](http://www.apple.com/store).

#### **Q. Can I use two Apple displays with the NVIDIA GeForce2 MX with TwinView?**

**A.** No. The NVIDIA GeForce2 MX graphics card with TwinView and 64MB of SDRAM has one Apple Display Connector for use with any one of Apple's three flat-panel displays and one VGA connector for use with any VGA monitor. The card can also support a single display.



## FAQ

### Power Mac G4

#### **Q. How do I use multiple Apple displays?**

**A.** Additional Apple displays can be connected by adding an ATI RADEON PCI card to an available PCI slot and using a third-party DVI to ADC adapter. The adapter integrates USB and power with the DVI digital graphics signal from the RADEON card—creating an ADC connection that supports and powers any of the Apple displays with ADC. Visit the Apple Store at [www.apple.com/store](http://www.apple.com/store) to find these products.

## Expansion Capabilities

#### **Q. How can I expand my Power Mac G4?**

**A.** It's easy to expand the Power Mac G4 as your needs grow. In addition to an AGP 4X slot, it has four 64-bit, 33-MHz PCI slots with data throughput of up to 215MB per second and three expansion bays available for ATA or Ultra SCSI hard disk drives. With built-in USB and FireWire ports, you can also easily connect a wide range of peripherals, including video camcorders and hard disk drives. In addition, the three DIMM slots in the Power Mac G4 support up to 1.5GB of industry-standard PC133 SDRAM.<sup>1</sup>

#### **Q. What kinds of cards are available for use in the PCI slots in the Power Mac G4?**

**A.** Many cards are available that allow you to add functionality to your Power Mac system. For example, an ATI RADEON PCI card allows you to connect additional displays. Sound editing and video editing cards allow you to capture and digitize sound and video from both digital and analog sources. Serial port cards and SCSI cards allow you to connect legacy devices.

#### **Q. What is FireWire?**

**A.** FireWire is one of the fastest peripheral standards ever developed. The Power Mac G4 has two 400-Mbps FireWire ports<sup>2</sup> that allow you to capture video directly from new DV camcorders with FireWire ports and from older analog equipment using an AV to FireWire converter box (available from the Apple Store at [www.apple.com/store](http://www.apple.com/store)). You can also use the FireWire ports to connect other high-speed devices such as hard disk drives and printers. In addition, FireWire Target Disk Mode allows you to connect two FireWire-equipped Macintosh computers. The second computer will appear on the Power Mac desktop as an external hard disk, providing a convenient way to move large files from one system to another.

## Optical Drive Options

#### **Q. What are my choices for optical drives?**

**A.** You can outfit the Power Mac G4 with one of the following optical drives:

- CD-RW (CD-rewritable) drive for creating music and data CDs and playing CD-ROMs and music CDs.
- Combination DVD-ROM/CD-RW drive for recording your own music and data CDs, playing DVDs and music CDs, and reading CD-ROMs (build-to-order only).
- SuperDrive (DVD-R/CD-RW drive) for recording your own DVDs using iDVD or DVD Studio Pro, as well as for creating music or data CDs, reading CD-ROMs, and playing DVDs and music CDs.



## FAQ

### Power Mac G4

#### **Q. What disc formats do the new optical drives read?**

**A.** The optical drives in the Power Mac G4 support a wide variety of media.

- The CD-RW drive reads CDs at 32x, writes to CD-R at 12x, and writes to CD-RW at 10x. The drive supports CD-ROM, CD-Audio, CD-R, CD-RW (regular and high speed), CD-I, CD-I Bridge, CD Extended, CD Mixed Mode, and Photo CD media.
- The combination DVD-ROM/CD-RW drive writes to CD-R and CD-RW at 8x, reads DVDs at 8x, and reads CDs at 32x. The drive supports CD-ROM, CD-Audio, CD-R, CD-RW (regular and high speed), CD-I, CD-I Bridge, CD Mixed Mode, Photo CD, DVD-Video, and DVD-ROM media.
- The SuperDrive reads DVDs at 4x (5.4MB per second), writes to DVD-R at 2x (2.7MB per second), reads CDs at 24x (3.6MB per second), writes to CD-R at 8x (1.2MB per second), and writes to CD-RW at 4x (600K per second). The drive supports CD-ROM, CD-Audio, CD-R, CD-RW, CD-I, CD-I Bridge, CD Extended, CD Mixed Mode, Photo CD, DVD-Video, DVD-ROM, and DVD-R media.

#### **Q. What are the benefits of the SuperDrive?**

**A.** Apple's revolutionary SuperDrive (DVD-R/CD-RW) lets you create music CDs, archive data on CD-RW media, and burn DVD-Video discs for playback on most standard DVD players. Now at an unprecedented low cost, the Power Mac G4 with SuperDrive—combined with the included iDVD encoding and authoring software—gives you a complete DVD production solution.

#### **Q. What media do I need to burn DVDs?**

**A.** The SuperDrive in the new Power Mac G4 systems uses 4.7GB DVD-R General media, available from the online Apple Store at [www.apple.com/store](http://www.apple.com/store). For information on compatibility of DVD-R media with standard DVD players, visit [www.apple.com/dvd/dvdcompatibility](http://www.apple.com/dvd/dvdcompatibility).

#### **Q. What is the difference between CD-R and CD-RW media?**

**A.** The CD-RW drive in the Power Mac G4 supports both CD-R and CD-RW media.

- CD-R is short for CD-recordable. CD-R media is usually better for music, because it is compatible with most audio CD players. Depending on the application you use, you may be able to record multiple data sessions on CD-R media. However, once recorded, the information cannot be overwritten.
- CD-RW is short for CD-rewritable. CD-RW media is usually better for data archiving applications. With CD-RW media, you can save, change, and resave the information you record on your CDs depending on the application that you use.

#### **Q. What media do I need to burn music CDs using the CD-RW drive?**

**A.** Apple recommends CD-R media with a 74-minute capacity. Using media labeled “high speed” is not recommended for the SuperDrive. To ensure the best results, purchase your CD media from the online Apple Store at [www.apple.com/store](http://www.apple.com/store).



## FAQ

### Power Mac G4

## DVDs, Movies, and Music

### **Q. Does the Power Mac really offer everything I need to create DVDs and Desktop Movies? Which features allow me to do this?**

**A.** The Power Mac G4 can include all the tools you need to transfer digital video footage, turn it into movies, and even produce DVDs.

- Power Mac systems with the SuperDrive and iDVD software give you all the hardware and software you need to burn DVD-Video discs.
- The FireWire ports allow you to quickly and easily import DV source material from digital camcorders.
- The included iMovie software or optional Final Cut Pro software allows you to create Desktop Movies.
- Large hard drives allow you to store hours of digital video footage.

### **Q. Can I make movies and burn DVDs and CDs in Mac OS X?**

**A.** The Power Mac G4 comes with “Built for Mac OS X” versions of iTunes and iMovie 2 software so that you can make movies, manage your music collection, and burn music CDs in Mac OS X. DVD authoring in Mac OS X requires iDVD 2 and Mac OS X v10.1, available in late summer 2001. Burning data CDs is also a feature of Mac OS X v10.1. Customers who purchase a new Power Mac G4 with Mac OS X can upgrade to Mac OS X v10.1 via the Mac OS Up-to-Date program. See [www.apple.com/macosx](http://www.apple.com/macosx) for details.

### **Q. What exactly is DVD authoring, and how does it work on the Power Mac G4?**

**A.** DVD authoring is the process of preparing digital movies, audio, and slide shows of digital photos for recording on DVDs. With Apple’s revolutionary iDVD software and a SuperDrive, nonexperts will have the tools to create interactive DVDs from start to finish. For video professionals, DVD Studio Pro provides tools to create DVDs that include every feature in the DVD-Video standard: still or motion menus, buttons, subtitles, multiple audio tracks, Dolby audio, web links, and more. For information on DVD authoring, visit [www.apple.com/dvd](http://www.apple.com/dvd).

### **Q. Can I use my Power Mac system to make DVDs that run on the DVD player connected to my TV?**

**A.** DVDs created on your Power Mac G4 are fully compatible with the DVD-Video standard. Your DVDs will run on most set-top and computer-based players that are compliant with the DVD-Video standard.

### **Q. What is iDVD? How is iDVD 2 different from iDVD?**

**A.** iDVD is Apple’s easy-to-use DVD creation software that allows you to encode and assemble video files and record them on DVD using the SuperDrive. Just drag movies edited with iMovie or Final Cut Pro into the iDVD interface. iDVD takes care of all the details of authoring high-quality DVDs, allowing you to create menus, buttons, and slide shows with just a few clicks. Built for Mac OS X, iDVD 2 has all the great features of the original iDVD, along with new capabilities that give you added flexibility and make it even easier to create and customize your own DVDs.<sup>6</sup>





## FAQ

### Power Mac G4

New features in iDVD 2 include the following:

- *Motion menus.* Use your own video clips as menu backgrounds and buttons, just like the pros.
- *Increased capacity.* You can now include up to 90 minutes of video on a disc.
- *Movable buttons.* You can move buttons anywhere you want on a menu.
- *Background encoding and burning.* Using the power of Mac OS X, iDVD 2 allows you to continue working while your project is encoded in MPEG format and written to disc.

For more information, visit [www.apple.com/idvd](http://www.apple.com/idvd).

#### **Q. What are the main features of DVD Studio Pro?**

**A.** Apple's DVD Studio Pro is a complete suite of professional DVD authoring and production tools. Taking over where video editing applications such as Final Cut Pro leave off, DVD Studio Pro handles the MPEG encoding, menu creation, asset organization, linking, and output formatting that are required to produce DVD-Video discs. It has real-time previewing built in, so you don't need to wait for the project to be completed just to see how it looks and operates. With DVD Studio Pro, professionals who work with digital video and multimedia are now able to move away from low-resolution videotape and begin distributing their work on more durable, higher-quality DVDs. And DVD Studio Pro is designed for creative professionals, not DVD technicians. Formerly the domain of DVD wizards, creative control over your DVD projects is now in your hands. For more information, visit [www.apple.com/dvdstudiopro](http://www.apple.com/dvdstudiopro).

## Audio

#### **Q. What audio capabilities does the new Power Mac G4 support?**

**A.** The new Power Mac G4 supports multiple audio output capabilities. It features a redesigned internal speaker that provides twice the power output of its predecessor for a more dynamic range of sound quality and a frequency response of 185 hertz to 20 kilohertz. The Power Mac also includes an Apple speaker minijack that connects to and powers the Apple Pro Speakers; a standard headphone jack for headphones or externally powered speakers; and USB and FireWire ports for third-party microphones, speakers, and MIDI devices. Check the Apple Store at [www.apple.com/store](http://www.apple.com/store) for the latest Mac-compatible products.

#### **Q. What is the difference between the Apple speaker minijack and the headphone jack?**

**A.** Headphones or externally powered speakers connect to the standard headphone jack. The Apple speaker minijack is designed specifically for use with the Apple Pro Speakers—it connects to a powerful amplifier built into the Power Mac G4.

#### **Q. What are the benefits of the Apple Pro Speakers?**

**A.** The optional Apple Pro Speakers feature powerful Harman Kardon audio technology. They connect to your system via the Apple speaker minijack using a single cable. The Apple Pro Speakers provide excellent sound quality with a frequency range of 70 hertz to 20 kilohertz and can be used in conjunction with the Harman Kardon iSub system to enrich your audio experience even more. For more information, visit [www.apple.com/speakers](http://www.apple.com/speakers).





## FAQ

### Power Mac G4

#### **Q. How can I connect a microphone to the Power Mac G4?**

**A.** You can connect a USB microphone directly to one of the USB ports. To connect analog microphones to the Power Mac G4, you can use a USB to analog adapter. Apple offers converter boxes as well as digital USB microphones through the Apple Store at [www.apple.com/store](http://www.apple.com/store).

## Software

#### **Q. What software is included with my Power Mac system?**

**A.** The Power Mac G4 comes with QuickTime, iMovie 2, iDVD (requires SuperDrive), iTunes, Microsoft Internet Explorer, Microsoft Outlook Express, Netscape Communicator, FAXstf, and Palm Desktop.

#### **Q. Which operating system comes with the new Power Mac G4?**

**A.** The Power Mac G4 comes with Mac OS 9 and Mac OS X preinstalled. The first time you turn it on, the system will start up in Mac OS 9. You can use the Startup Disk control panel to restart the computer in Mac OS X. Customers who purchase a system with Mac OS X can upgrade to Mac OS X v10.1 via the Mac OS Up-to-Date program. See [www.apple.com/macosx](http://www.apple.com/macosx) for details.

#### **Q. What applications are available for Mac OS X? Will my Mac OS 9 applications work in Mac OS X?**

**A.** As of June, more than 600 “Built for Mac OS X” applications have been released—and more are coming every day. These applications take full advantage of the powerful graphics engine, Aqua user interface, and improved stability and performance of Mac OS X. Check [www.apple.com/macosx](http://www.apple.com/macosx) for the latest titles. Mac OS X also includes Classic, a technology that lets you use virtually all of your Mac OS 9-compatible applications in Mac OS X.

<sup>1</sup> Authoring DVDs and burning data CDs in Mac OS X requires Mac OS X v10.1, available in late summer 2001; see [www.apple.com/macosx](http://www.apple.com/macosx) for details.

<sup>2</sup> iTunes and iDVD are licensed for reproduction of noncopyrighted materials or materials the user is legally permitted to reproduce.

<sup>3</sup> Supports one VGA display and one ADC display simultaneously.

<sup>4</sup> 999MB maximum per application in Mac OS 9.

<sup>5</sup> Actual rates will vary.

<sup>6</sup> Available in late summer 2001. iDVD 2 may require Internet download; Internet access fees may apply.

## For More Information

For more information about the Power Mac G4, visit [www.apple.com/powermac](http://www.apple.com/powermac).

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