



## Apple's Refreshed MacBooks Pro

Apple announced the release of a new line of refreshed, enhanced MacBook Pro laptops last week. The new MacBook Pros represent a boon for the Apple company, which is currently soaring from its sale of a new line of iPads, representing two major product releases in the same month.

Apple says that the new laptop computers will have longer battery lives and run at faster speeds, and the revamped line ranges in size from 13 to 17 inches.



### **New Processors**

The 13-inch MacBook Pro now features a 2.3GHz Intel Core i5 processor or the fastest dual-core processor available- the 2.7GHz Intel Core i7. With Turbo Boost speeds up to 3.4GHz, these processors allow the 13-inch MacBook Pro to perform up to twice as fast as the previous generation.

The new 15- and 17-inch models bring quad-core power to the MacBook, and the available 2.3GHz quad-core Intel Core i7 processor, with Turbo Boost speeds up to 3.4GHz and up to 8MB of shared L3 cache, enables these MacBook Pro models to run applications up to twice as fast as their top-of-the-line predecessors.

The new processors also allow for maximum flexibility and versatility. The latest Intel Core architecture puts the processor, cache, memory controller, and graphics engine on a single chip. This translates to faster performance and greater efficiency in any host of processes. Whether one is watching a movie, updating their blog, or editing photos, data has to travel from place to place to be processed, and since data doesn't have as far to travel, the new MacBook Pro allows maximum performance in fulfilling these tasks.

In addition, the MacBook Pro greatly facilitates the use of a processor-intensive application like Aperture 3 or Final Cut Pro that benefits from extra power, as the new MacBook Pro utilizes Turbo Boost 2.0 technology. Turbo Boost is a dynamic performance technology that automatically increases the speed of the active cores, up to 3.4GHz.

Turbo Boost 2.0 is even more dynamic and efficient. By shifting core frequency in smaller increments than before, it allows the processor to manage performance without sacrificing efficiency.

Another added feature is the Integrated Memory Controller. With faster access to memory, each core can get right to work on the data, rather than waiting for it to arrive. This is why the new Intel Core architecture uses an integrated memory controller to connect fast 1333MHz memory directly to the processor. Together with up to 8MB of shared L3 cache, the integrated memory controller helps applications run at peak performance.



Written by [Daniel Sayani](#) on March 3, 2011

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Lastly, Energy-Efficient Graphics make the new MacBook Pro an enhanced option. Thanks to the new microarchitecture, the graphics processor is on the same chip as the central processor and has direct access to L3 cache. That proximity translates into performance. The graphics processor also automatically increases clock speeds for higher workloads. An integrated video encoder enables HD video calls with FaceTime, while an efficient decoder gives the notebook long battery life when watching DVDs or iTunes movies.

### **Thunderbolt I/O Technology**

After years of waiting, [Apple](#) has launched its implementation of Intel's Light Peak standard, known as Thunderbolt, an integral feature of the new MacBook Pro, which provides access to a world of high-resolution displays and high-speed peripherals with one compact port. This is made possible due to two fundamental technologies: PCI Express and DisplayPort.

PCI Express is the technology that links all the high-performance components in a Mac. This allows you to connect external devices like RAID arrays and video capture solutions directly to MacBook Pro, and get PCI Express performance, a first for notebooks. Thunderbolt also provides 10 watts of power to peripherals, allowing you to tackle workstation-class projects on the go. With PCI Express technology, existing USB and FireWire peripherals can be used, and one can even connect to Gigabit Ethernet and Fibre Channel networks using simple adapters.

In addition, because Thunderbolt is based on DisplayPort technology, the video standard for high-resolution displays, any Mini DisplayPort display plugs right into the Thunderbolt port. To connect a DisplayPort, DVI, HDMI, or VGA display, one only needs to use an existing adapter.

In addition, Thunderbolt I/O technology provides two channels on the same connector with 10 Gbps. of throughput in both directions. That makes it ultra-fast, and ultra-flexible, and allows you to move data to and from peripherals up to 20 times faster than with USB 2.0 and more than 12 times faster than with FireWire 800.

### **The FaceTime HD Camera**

One of the most innovative features of the MacBook Pro is the addition of the FaceTime high-definition camera. Taking a traditional webcam to an entirely new level, the FaceTime camera, which makes it possible to talk, smile, and laugh with anyone on an iPhone 4, iPod touch, or Mac from another Mac.

The window frame and controls fade away so you can enjoy your conversation without distractions. With picture-in-picture view, you can see how you look to the person you're calling, in eye-popping 720p clarity. When you call someone on an iPhone 4 or iPod touch, you see everything on the other end.

Added benefits are convenience and flexibility. To set up FaceTime on the new MacBook Pro, all that is needed is an Apple ID and an email address. To start a video call, just find the name of the person you are trying to reach in the contacts list. FaceTime works perfectly with Address Book so you don't have to enter your contacts from scratch. Click on the phone number if you want to call an iPhone 4. To call an iPod touch or Mac, use the email address- an invitation pops up on the screen, and when your party accepts, the video call begins.

Somewhat surprising is that FaceTime for the Mac works even if the application isn't opened and running. When someone sends you a FaceTime call, the app will open and display a caller preview window similar to what is displayed on an iPhone or iPod touch. The application always stays on, and in Mac version of FaceTime, you can also switch your views from portrait to landscape by clicking either



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Use Portrait or Use Landscape from the Video menu. You can also click the small arrow that appears when you mouse over your video viewer. You can also use Command + R to rotate from portrait or landscape.

### **Choosing the Right MacBook Pro**

The two primary differences in features for the new MacBook Pro are differentiated by the screen size. The 13-inch model, and the 15 and 17 inch models each offer different features, reflected in their respective [prices](#):

**13-inch Models:** Each of the lower-end models uses an NVIDIA GeForce 320M graphics processor, which Apple says will run graphics 80 percent faster than the current model. They will also come equipped with a 10-hour built-in battery. Chip configurations include a 2.4 GHz Intel Core Duo or the same processor running at 2.66 Ghz. These models begin at \$1,200 and go up to \$1,500.

**15-inch and 17-inch Models:** These MacBook Pro models have been upgraded to Intel Core i5 and i7 processors and Apple's proprietary graphics switching technology. It toggles between the more powerful Intel HD Graphics chip and the NVIDIA GeForce GT 330M. The 15-inch models range in price from \$1,800 to \$2,000. The most expensive model is the 2.53 GHz, 17-inch MacBook Pro, which sells for \$2,300.

For those who have the older MacBook Pro models (Apple introduced the MacBook Pro in January 2006), Apple offers several [upgrade kits](#), so customers who own older models can still reap the benefits of the new features:

The hard disk drive kits come in storage sizes of 750GB and 1TB, priced at \$124.99 and \$122.99, respectively. The 750GB disk is a 7,200 RPM drive. The Mercury Extreme Pro solid state drive kits begin at \$114.99 and have storage capacities that go up to 480GB. Apple also claims that the 750GB kit offered 50 percent more storage capacity and a faster drive at a cheaper price than what was available from Apple. Users would get either a 500GB 7,200RPM drive from the factory, or upgrade for \$150 to a 750GB, 5400RPM drive.

The storage upgrade kits provide all the necessary tools required for easy installation and data transfer. There are also steps on how to continue using the original drive as an additional external drive with the provided enclosure or as a backup drive using Time Machine.

The memory kits upgrade the MacBook Pros from 4GB of memory to either 6GB or 8GB of memory. The new MacBook Pros has two memory slots and currently ship with two 2GB memory cards installed for a total of 4 GB memory. The 6GB kit, priced at \$59.99, contains a single 4GB memory chip that will be swapped with one of the 2GB modules. The 8GB kit, priced at \$114.99, contains two 4GB memory chips to replace the existing memory.

The kits come with DDR3 13333 MHz memory chips, matching Apple's specifications.

An upgrade program is also provided, in which users can send in unneeded Apple memory for discounts on the memory upgrade kits. The discounted prices are \$46.99 for the single 4GB memory and \$89.99 for the two 4GB modules.



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