

EXHIBIT 20



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Internet Archive
300 Funston Avenue
San Francisco, CA 94118

AFFIDAVIT OF CHRISTOPHER BUTLER

1. I am the Office Manager at the Internet Archive, located in San Francisco, California. I make this declaration of my own personal knowledge.

2. The Internet Archive is a website that provides access to a digital library of Internet sites and other cultural artifacts in digital form. Like a paper library, we provide free access to researchers, historians, scholars, and the general public. The Internet Archive has partnered with and receives support from various institutions, including the Library of Congress.

3. The Internet Archive has created a service known as the Wayback Machine. The Wayback Machine makes it possible to surf more than 240 billion pages stored in the Internet Archive's web archive. Visitors to the Wayback Machine can search archives by URL (i.e., a website address). If archived records for a URL are available, the visitor will be presented with a list of available dates. The visitor may select one of those dates, and then begin surfing on an archived version of the Web. The links on the archived files, when served by the Wayback Machine, point to other archived files (whether HTML pages or images). If a visitor clicks on a link on an archived page, the Wayback Machine will serve the archived file with the closest available date to the page upon which the link appeared and was clicked.

4. The archived data made viewable and browseable by the Wayback Machine is compiled using software programs known as crawlers, which surf the Web and automatically store copies of web files, preserving these files as they exist at the point of time of capture.

5. The Internet Archive assigns a URL on its site to the archived files in the format [http://web.archive.org/web/\[Year in yyyy\]\[Month in mm\]\[Day in dd\]\[Time code in hh:mm:ss\]/\[Archived URL\]](http://web.archive.org/web/[Year in yyyy][Month in mm][Day in dd][Time code in hh:mm:ss]/[Archived URL]). Thus, the Internet Archive URL <http://web.archive.org/web/19970126045828/http://www.archive.org/> would be the URL for the record of the Internet Archive home page HTML file (<http://www.archive.org/>) archived on January 26, 1997 at 4:58 a.m. and 28 seconds (1997/01/26 at 04:58:28). A web browser may be set such that a printout from it will display the URL of a web page in the printout's footer. The date assigned by the Internet Archive applies to the HTML file but not to image files linked therein. Thus images that appear on a page may not have been archived on the same date as the HTML file. Likewise, if a website is designed with "frames," the date assigned by the Internet Archive applies to the frameset as a whole, and not the individual pages within each frame.

6. Attached hereto as Exhibit A are true and accurate copies of printouts of the Internet Archive's records of the HTML files for the URLs and the dates specified in the footer of the printout.

7. I declare under penalty of perjury that the foregoing is true and correct.

DATE: 1/22/13



Christopher Butler

Exhibit A

I'm a PC. I'm a Mac. Why you'll love a Mac. You can make amazing stuff.



Goodwill



Gift Exchange



Sales Pitch



Meant for Work

See all the ads

1. It just works.

How much time have you spent troubleshooting your PC? Imagine a computer designed by people who hate to waste time as much as you do. Where all the hardware and software just works, and works well together. Get a Mac and get your life back. [More](#)



2. You can make amazing stuff.

Every Mac comes with iLife '06, a suite of software that transforms your photos, music, and video into all kinds of projects. Make high-quality websites, photo books, DVDs, songs, slideshows, music CDs, calendars, cards, prints, podcasts, music videos, documentaries, and more. [More](#)

3. Design that turns heads.

You won't want to hide your Mac in a corner of the den. You'll want it front and center in your life. The Apple style shows in every detail, from its sculpted surfaces to its gorgeous Mac OS X graphics. [More](#)



4. 114,000 Viruses? Not on a Mac.

Mac OS X was designed with security in mind. Windows just wasn't built to bear the onslaught of attacks it suffers every day. A Mac offers a built-in firewall, doesn't advertise its existence on the Net, and isn't compromised within an hour of being turned on. [More](#)



5. Next year's OS today.

Since Mac OS X engineers aren't busy damming a flood of viruses, they have the time to think up amazing new technology. Like Dashboard widgets, mini-applications offering a world of capabilities just a keystroke away. Or a built-in RSS news reader. [More](#)

6. The latest Intel chips.

Intel Core Duo processors put you on the cutting edge. In fact, a Mac with an Intel chip is so fast it surprises even longtime Windows pundits, who keep running benchmarks again and again. Results? Fast. Fast. Yup, still fast. [More](#)



7. Instant video chats.

Setting up a video chat with the people next door — or across the globe — should be as simple as picking up the phone. On a Mac, you just click an icon to have a four-way video chat in a full-screen window with amazing clarity and special effects.

[More](#)

8. More fun with photos.

On a Mac, you don't need any extra software to make a photo book. You don't have to leave your photo software to visit a separate website and wait for forms to load. All you need is a camera and a Mac. [More](#)



9. One-click websites.

How long does it take to post a photo or video to your blog on a PC? On a Mac, you can shoot a picture or a movie with the built-in camera, then

All those reasons you never bought a Mac? Not true anymore.

1. Know iTunes? You know the Mac. You'll recognize features like library collection, playlist arrangement, and instant search in many Mac programs. So you're something of a Mac expert already. [More](#)

2. You can take it with you. A Mac can open most of your files with the right software. Most popular applications for Mac and PC use the same file formats, making it simple to exchange documents with coworkers or move existing files from a PC to a Mac. [More](#)

3. Yes, Macs run Microsoft Office. Microsoft Office for Mac OS X gives you Word, PowerPoint, and Excel, all with familiar features and the same shortcut commands. And when you need to use it for collaborative work, Office for Mac connects to Microsoft Exchange servers. [More](#)

4. No, Macs aren't slow. The latest Intel Core Duo processors put other chips to shame. And a Mac just loves that second core, since Mac OS X has known about multiple processors from the start. Try burning a DVD while watching a TV show on iTunes. [More](#)

5. No, you don't have to buy new stuff. Your printer, camera, keyboard, and mouse will work with a Mac. PCs and Macs can usually share peripherals if they connect via USB, FireWire, or Bluetooth, three industry standards built into every new Mac. [More](#)

6. Yes, you can even run Windows. So you have to run just that one thing, or maybe your office requires it. No PC? No problem. New software helps the latest Intel-based Macs run Windows applications. [More](#)

post it on the web in a few clicks. Pontificate, preachify, and publish. The hardest part is coming up with something to say. [More](#)

10. Amazing podcasts.

Want to get your message out to the world? Podcast it. A Mac makes it simple to create professional podcasts, complete with artwork. Add sound effects and jingles, even use the built-in radio engineer to make it perfect. So you can be a talk star in seconds. [More](#)



11. Rock star tunemaking.

Musicians get all the girls (or guys). And a Mac has the software to turn you into the musician of your dreams. Choose from hundreds of cool riffs and instruments to create your own songs. Get good enough and you could be on iTunes. [More](#)

12. Hollywood-style movies.

Connect your DV camera and turn your movies into spectacles. Add graphics, titles, and sound effects in minutes. Then use your Mac to burn a DVD or post to your website. [More](#)



13. No hunting for drivers.

Just plug in your stuff. A Mac includes USB drivers for mass storage, digital cameras, input devices, iPod, and more. It can see Bluetooth cell phones and headsets, as well as FireWire cameras. No rebooting. [More](#)

14. Awesome out of the box.

Other computers include software, it's true. But once you start using that software, you find that you're hobbled in some way or another. Software included with the Mac, on the other hand, is critically acclaimed as best in class. [More](#)

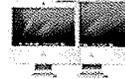


Which Mac are you?

Meet the new Intel-based Macs.

iMac

iMac conceals all its working parts behind the gorgeous widescreen display, which comes in 17-, 20-, and 24-inch sizes.



Mac mini

Say hello to Mac mini, the low-cost dynamo that packs a complete Mac experience into a 6.5-inch square frame.



MacBook

This decision is black and white. Have fun with MacBook and take your digital life on the road.



MacBook Pro

Now available in both 15-inch and 17-inch models, MacBook Pro is a marvel of form and function.



Tell a friend about this site.

Send us feedback.

Watch the TV ads.



Which Mac are you?



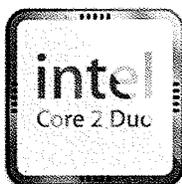
[Home](#) > [Get a Mac](#)

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The new iMacs. Faster. Bigger. Brighter.

Cast your gaze on the ultimate eye-opening experience: the new faster, bigger, and brighter iMacs. Starting at just \$999, the most personal of personal computers comes out packing a powerful punch. That's thanks to the new 64-bit Intel Core 2 Duo processor, you'll find in each and every new iMac.



All in the family

The fastest iMac ever, the 24-inch iMac provides professional performance along with the convenience of an all-in-one design. Like its 17-inch and 20-inch siblings, it features the new 64-bit Intel Core 2 Duo processor with speeds ranging from 1.83GHz to 2.33GHz. The new processor delivers up to 50% more performance than the previous 20-inch iMac. It also doubles the amount of L2 cache, the twin cores sharing 4MB between them.(2) The result? Turbocharged

performance, making it easier — and more fun — than ever to work with digital photos, movies, music, and the web.

Dazzling Displays

Whether you're surfing the web, editing video, managing photos, or enjoying face-time with far-flung friends, you'll thoroughly enjoy the lush visual experience of working on iMac. With excellent color saturation, all three models feature a cinematic 16:10 wide aspect ratio that's perfect for watching movies. And iMac delivers a beautifully bright display with the new 24-inch model lighting the way. In fact, it's a full 40% brighter than the 20-inch model.

It's a wonderful iLife

iMac comes with iLife '06, a suite of easy-to-use applications that make the spectacular a regular part of your everyday life. Enhance, organize and share your photos via iPhoto. Make an epic starring your kid in iMovie. Turn your photo and movie creations into professional DVDs with iDVD. Create original music in GarageBand, even if you can't carry a tune. Make podcasts and blogs. Then publish them online via your .Mac account and the all-new iWeb (3).



The ultimate see and say

There's an iSight camera built into every new iMac, so you can start a video chat (or join one) at a moment's notice. There's nothing extra to buy(4), nothing to attach, no cords to fumble with, no software to install or configure(5). Simply start up iChat AV, click your buddy's video icon and you're ready to chat with sight and sound — with up to three friends at once(6). Proper attire suggested.

Now showing

With iMac, you've got the best seat



[Top-selling Mac & iPod essentials. Shop now.](#)

iMac Performance Benchmark

SPEC performance: Up to 50% faster than previous 20-inch iMac.(1)

iMac Core Duo 2.0GHz	iMac Core 2 Duo 2.33GHz	Δ
32.4	48.7	1.5X
SPECint_rate_base2000 Integer calculation (estimate)		

iMac Core Duo 2.0GHz	iMac Core 2 Duo 2.33GHz	Δ
27.3	37.2	1.4X
SPECfp_rate_base2000 Floating-point calculation (estimate)		

iMac At a Glance

- Up to 2.33GHz Intel Core 2 Duo processor
- Get the big picture with a 17-, 20-, or 24-inch widescreen flat-panel display
- Quintessential all-in-one design
- See and be seen with built-in iSight camera and iChat AV(5)
- Enjoy truly personal theater with Front Row and Apple Remote
- Burn DVDs or CDs with 8x SuperDrive(7)
- Banish clutter with built-in wireless networking
- Connect your digital life with three USB 2.0 ports and two FireWire 400 ports
- Extend your desktop on your TV, display or projector with optional adapters
- Connect to a Windows network
- Organize and share music, movies and photos with iLife '06 featuring iWeb
- Enjoy Mac OS X Tiger, the world's most advanced operating system
- 24-inch iMac features:
 - NVIDIA 7300 GT graphics card,

in the house. The full-screen Front Row media experience — with its intuitive menus, large text and brilliant graphics — lets you browse the music, photos, and videos on your iMac as easily as you browse music on your iPod. And the new Apple Remote lets you do your browsing from anywhere in the room. So gather your friends and dazzle them with a slideshow of your vacation pics, a home movie or a DVD. iMac was born to entertain.



offering up to 60% faster performance over the 20-inch model.

- FireWire 800, making it easy to connect high-bandwidth drives
- 24-watt digitally amplified speakers

[Complete Specifications...](#)

[Gallery](#)

Gallery

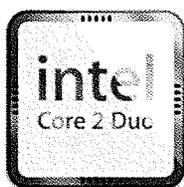
[Take a closer look](#)

1. Testing conducted by Apple in August 2006 using preproduction 24-inch iMac units with 2.33GHz Intel Core 2 Duo processors; all other systems were shipping units. All systems were configured with 1 gigabyte of RAM. SPEC® is a registered trademark of the Standard Performance Evaluation Corporation (SPEC); see www.spec.org for more information.
2. The 17-inch iMac model with a 1.83GHz Intel Core 2 Duo processor has 2MB of L2 cache.
3. Some features require .Mac. The .Mac service is available to persons age 13 and older. Annual membership fee and Internet access required. Terms and conditions apply.
4. Provided you already have an Internet connection, of course.
5. Okay, so you might have to set up your iChat AV buddy list. And sign up for a free .Mac(2) trial account.
6. Requires broadband Internet connection; fees may apply.
7. The 17-inch iMac model with 1.83GHz Core 2 Duo processor features a 24x Combo Drive that can burn CDs but not DVDs. See the [specs](#) for full details.

[Home](#) > [Hardware](#) > iMac

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Simply powerful.



iMac has always made it fast and easy to do the most amazing things. And now the fast and easy part comes via the Intel Core 2 Duo. A single chip that consists of two processors, the Intel Core 2 Duo processor gives iMac up to 50% faster performance than it had previously, executes 64-bit instructions, and is available at speeds up to 2.33GHz.(1) Yes, this is one fast iMac.

Two Cores. Exceptional Performance.

Based on Intel's next-generation Core microarchitecture, the Intel Core 2 Duo offers a second-generation chip born of Intel's new 65-nanometer process. That process lets Intel create incredibly small transistors — small enough, in fact, to fit a hundred inside a single human cell. With two powerful processors designed to share resources and circuitry so unimaginably small, Intel Core 2 Duo achieves far higher levels of performance while actually consuming less power.

And, with its 64-bit processor architecture, the Intel Core 2 Duo can manipulate data and execute instructions in chunks that are twice as large (64 bits versus 32 bits), delivering advanced computational power to iMac. That adds up to exceptional speed and agility, improved performance you'll notice when working with photos in iPhoto or Aperture, creating Keynote presentations, editing video in Final Cut Pro or playing Doom.

Speedy System Architecture

Augmenting the advanced Core 2 Duo processor is an equally advanced system architecture. It includes, for example, 4MB of shared L2 cache.(2) That's double the amount previously available, and it really lets iMac fire on all cylinders. With such substantial L2 cache, data instructions can be kept close to those two processor cores, greatly increasing performance and allowing the entire system to work more efficiently. And, because the processors share the 4MB of L2 cache, either of the processor cores can use the entire amount if the other core happens to be idle.

And let's not forget the enhanced, 128-bit SSE3 vector engine that the Intel Core 2 Duo processor introduces to the iMac family. Able to handle 128-bit computations in a single clock cycle, the SSE3 vector engine accelerates data manipulation by simultaneously applying a single instruction to multiple data. That means you can get more done in less time. So, the next time you use iMovie HD, Final Cut Express, or Final Cut Pro to render effects, you can thank the SSE3 vector engine for the snappier performance.



Software just works

Not to worry. Though the Intel Core 2 Duo may take you to a higher performance realm, the world of iMac remains blissfully uncomplicated. So when it comes to running software on your Intel-based iMac, prepare for the expected: it just works. Applications with the Universal symbol take full advantage of the performance

advantages offered by the Intel-based iMac computers. And most existing applications will run on your Intel-based iMac, too. Simply launch them as always. Thanks to the Rosetta technology in Mac OS X, they look and feel just like they did before.(3)

1. While it comes standard with a 2.16GHz processor, you can order your 24-inch iMac with a 2.33GHz Intel Core 2 Duo processor.
2. The 17-inch iMac with a 1.83GHz Intel Core 2 Duo processor offers 2MB of L2 cache.
3. Get more information on [Rosetta](#) supported Apple software. Contact the manufacturer directly for 3rd party software.
4. Testing conducted by Apple in August 2006 using preproduction 24-inch iMac units with 2.33GHz Intel Core 2 Duo processors; all other systems were shipping units. All systems were configured with 1 gigabyte of RAM. SPEC® is a registered trademark of the Standard Performance Evaluation Corporation (SPEC); see www.spec.org for more information.
5. Testing conducted by Apple in August 2006 using preproduction 24-inch iMac units with 2.33GHz Intel Core 2 Duo processors. All other systems were shipping units. Safari HTML Load Speed (cached) test is a subset of the i-Bench 5.0 benchmark. iMac Core 2 Duo systems ran beta versions of Final Cut Pro. All systems were configured with 1 gigabyte of RAM.

iMac Performance Benchmark

SPEC performance: Up to 50% faster than previous 20-inch iMac.(4)

iMac Core Duo 2.0GHz	iMac Core 2 Duo 2.33GHz	Δ
32.4	48.7	1.5X
SPECint_rate_base2000 Integer calculation (estimate)		

iMac Core Duo 2.0GHz	iMac Core 2 Duo 2.33GHz	Δ
27.3	37.2	1.4X
SPECfp_rate_base2000 Floating-point calculation (estimate)		

iMac Application Performance

Up to 1.5x faster than previous 20-inch iMac.(5)

Final Cut Pro (DV Render and Encode)

1.5x faster

Keynote (Common application tasks)

1.4x faster

Safari (HTML load speed (cached))

1.3x faster

iPhoto (Common application tasks)

1.3x faster

iMac (Core Duo 2GHz)

Baseline

[Home](#) > [Hardware](#) > [iMac](#) > Intel Core 2 Duo

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Technical Specifications

In the Box

- iMac
- Apple Keyboard
- Mighty Mouse
- Apple Remote(1)
- Power cord
- Install/restore DVDs
- Printed and electronic documentation



Processor and memory

- 1.83GHz, 2.0GHz, 2.16GHz or 2.33GHz Intel Core 2 Duo processor
- 4MB shared L2 cache at full processor speed on iMac with 2.0GHz, 2.16GHz, or 2.33GHz Intel Core 2 Duo processor
- 2MB shared L2 cache at full processor speed on iMac with 1.83GHz Intel Core 2 Duo processor
- 667MHz system bus
- 17-inch model with 1.83GHz processor
 - 512MB (2x256MB) of PC2-5300 (667MHz) DDR2 memory
 - Two SODIMM slots support up to 2GB
- 17-inch model with 2.0GHz processor, 20-inch and 24-inch models
 - 1GB (2x512MB) of PC2-5300 (667MHz) DDR2 memory
 - Two SODIMM slots support up to 3GB



Storage

- 17-inch model
 - 160GB Serial ATA 7200-rpm hard drive
 - Optional 250GB and 500GB Serial ATA 7200-rpm hard drives on model with 2.0GHz processor
- 20-inch model
 - 250GB Serial ATA 7200-rpm hard drive (2)
 - Optional 500GB Serial ATA 7200-rpm hard drive
- 24-inch model
 - 250GB Serial ATA 7200-rpm hard drive (2)
 - Optional 500- or 750GB Serial ATA 7200-rpm hard drive

Optical drive

- 17-inch model with 1.83GHz processor with slot-loading 24x Combo drive (DVD-ROM/CD-RW)
 - Reads DVDs at up to 8x speed
 - Writes CD-R discs at up to 24x speed
 - Writes CD-RW discs at up to 16x speed
 - Reads CDs at up to 24x speed
- 17-inch model with 2.0GHz processor, 20-inch model and 24-inch model with slot-loading 8x SuperDrive (DVD+R DL/DVD-RW/CD-RW)
 - Writes DVD+R DL discs at up to 2.4x speed
 - Writes DVD-R and DVD+R discs at up to 8x speed
 - Writes DVD-RW and DVD+RW discs at up to 4x speed

Display

- Built-in 17-inch (viewable), 20-inch (viewable), or 24-inch (viewable) widescreen TFT active-matrix liquid crystal display
- Millions of colors at all resolutions
- Typical viewing angle:
 - 17-inch model
 - 140° horizontal
 - 120° vertical
 - 20-inch model
 - 170° horizontal
 - 170° vertical
 - 24-inch model
 - 178° horizontal
 - 178° vertical
- Typical brightness: 250 cd/m (17-inch model); 280 cd/m (20-inch model); 400 cd/m (24-inch model)
- Typical contrast ratio: 500:1 (17-inch model); 800:1 (20-inch model); 700:1 (24-inch model)

Communications

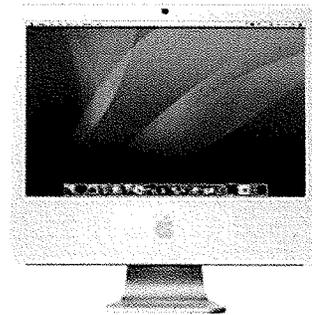
- Built-in 54-Mbps AirPort Extreme Card (802.11g standard) (3)
- Built-in Bluetooth 2.0+EDR (Enhanced Data Rate) module (1)
- Built-in 10/100/1000 BASE-T Gigabit Ethernet (RJ-45 connector)
- Works with 56K V.92 Apple USB Modem (sold separately)

USB

Modem

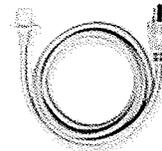
Graphics and video

- 17-inch model with 1.83GHz processor
 - Intel GMA 950 graphics processor with 64MB of DDR2 SDRAM shared with main memory
- 17-inch model with 2.0GHz processor and 20-inch model
 - ATI Radeon X1600 graphics processor using PCI Express
 - 128MB of GDDR3 SDRAM
 - Optional 256MB of GDDR3 SDRAM on 20-inch model
- 24-inch model
 - NVIDIA GeForce 7300 GT graphics processor with 128MB of GDDR3 SDRAM using PCI Express
 - Optional NVIDIA GeForce 7600 GT graphics processor with 256MB of GDDR3 SDRAM using PCI Express
- Mini-DVI output port with support for DVI, VGA, S-video, and composite video connections via adapter(4)
- Built-in iSight camera
- Support for external display in extended desktop
 - Digital resolutions up to 1920 x 1200
 - Analog resolutions up to 2048 x 1536
- Support for external display in video mirroring mode



Electrical and environmental requirements

- Meets ENERGY STAR requirements
- Line voltage: 100-240V AC
- Frequency: 50Hz to 60Hz, single phase
- Maximum continuous power: 180W (17- and 20-inch models); 220W (24-inch model)
- Operating temperature: 50° to 95° F (10° to 35° C)
- Storage temperature: -40° to 185° F (-40° to 85° C)
- Relative humidity: 5% to 95% noncondensing
- Maximum altitude: 10,000 feet



Size and weight (17-inch)

- Height: 16.9 inches (43.0 cm)
- Width: 16.8 inches (42.6 cm)
- Depth: 6.8 inches (17.3 cm)
- Weight: 15.5 pounds (7 kg)(5)

Size and weight (20-inch)

- Height: 18.6 inches (47.2 cm)
- Width: 19.4 inches (49.3 cm)
- Depth: 7.4 inches (18.9 cm)
- Weight: 22 pounds (10 kg)(5)

Size and weight (24-inch)

- Height: 20.6 inches (52.3 cm)
- Width: 22.6 inches (57.4 cm)
- Depth: 8.1 inches (20.7 cm)
- Weight: 24.7 pounds (11.2 kg)(5)

Peripheral connections

- 17-inch and 20-inch models
 - Two FireWire 400 ports; 8 watts shared
- 24-inch model
 - One FireWire 400 and one FireWire 800 port; 15 watts shared
- Total of five USB ports: three USB 2.0 ports (up to 480 Mbps) on computer, two USB 1.1 ports on keyboard

Audio

- Built-in stereo speakers
- 17-inch and 20-inch model
 - Internal 12-watt digital
- 24-inch model
 - Internal 24-watt digital
- Headphone/optical digital (minijack)
- Audio line in/optical digital (minijack)
- Built-in microphone

Software

- Mac OS X v10.4 Tiger (includes Spotlight, Dashboard, Mail, iChat AV, Safari, Address Book, QuickTime, iCal, DVD Player, Xcode Developer Tools)
- iLife '06 (includes iTunes, iPhoto, iMovie HD, iGarageBand, Microsoft Office Mac Test Drive, iWork (30+ Big Bang Board Games, Con Omni Outliner, and Apple i-Test)
- Front Row
- Photo Booth

Software

- Reads DVDs at up to 8x speed
- Writes CD-R discs at up to 24x speed
- Writes CD-RW discs at up to 16x speed
- Reads CDs at up to 24x speed

Configurations

	17-inch iMac (MA710LL)	17-inch iMac (MA590LL)	20-inch iMac (MA589LL)	24-inch iMac (MA456LL)
Processor	1.83GHz Intel Core 2 Duo	2.0GHz Intel Core 2 Duo	2.16GHz Intel Core 2 Duo	
L2 Cache	2MB Shared	4MB Shared		
Frontside Bus	667MHz			
Memory	512MB (2x256MB) 667MHz DDR2 SDRAM (PC2-5300), supports up to 2GB	1GB (2x512MB) 667MHz DDR2 SDRAM (PC2-5300), supports up to 3GB		
Hard drive	160GB Serial ATA(2); 7200 rpm	250GB Serial ATA(2); 7200 rpm		
Optical drive	24x Combo Drive	Slot-loading 8x SuperDrive with 2.4x Dual Layer burn (DVD+R DL/DVD±RW/CD-RW)		
Display	17-inch (viewable) widescreen TFT active-matrix LCD, 1440 x 900 pixels, millions of colors		20-inch (viewable) widescreen TFT active-matrix LCD, 1680 x 1050 pixels, millions of colors	24-inch (viewable) widescreen TFT active-matrix LCD, 1280 x 800 pixels, millions of colors
Video	Built-in iSight; Mini-DVI output port with support for DVI, VGA, S-video, and composite video connections via adapter (4)			
Graphics	Intel GMA 950 graphics processor with 64MB of DDR2 SDRAM shared with main memory	ATI Radeon X1600 with 128MB GDDR3 SDRAM		NVIDIA GeForce 7300 with 64MB GDDR3
FireWire	Two FireWire 400 ports; 8 watts shared			One FireWire 400 port; 8 watts shared
USB	Three USB 2.0 ports; two USB 1.1 ports (on keyboard)			
Audio	Built-in stereo speakers, built-in microphone, optical digital audio output/headphone out, optical digital audio input/audio line in			
Ethernet	Built-in 10/100/1000BASE-T (Gigabit)			
Wireless	Built-in 54 Mbps AirPort Extreme (802.11g)3	Built-in 54 Mbps AirPort Extreme (802.11g)3; built-in Bluetooth 2.0+EDR (Enhanced Data Rate)2		
Hardware accessories	Apple Keyboard and Mighty Mouse	Apple Remote, Apple Keyboard, and Mighty Mouse		
Other	Built-in IR Receiver			Built-in IR Receiver and VESA mount adapter
Configure-to-Order Options	<ul style="list-style-type: none"> • 1GB Memory Upgrade (2x512MB) • 2GB Memory Upgrade (2x1GB) • Apple Remote • Apple USB Modem • Software: iWork '06 	<ul style="list-style-type: none"> • 2GB Memory Upgrade (2x1GB) • 3GB Memory Upgrade (1x1GB, 1x2GB) • 2.16GHz Core 2 Duo • 250 or 500GB Hard Drive • Apple Wireless Keyboard/Mighty Mouse • Apple USB Modem • Software: iWork '06, Aperture, Logic Express, Final Cut Express 	<ul style="list-style-type: none"> • 2GB Memory Upgrade (2x1GB) • 3GB Memory Upgrade (1x1GB, 1x2GB) • 2.33GHz Core 2 Duo • 500GB Hard Drive • 256MB VRAM • Apple Wireless Keyboard/Mighty Mouse • Apple USB Modem • Software: iWork '06, Aperture, Logic Express, Final Cut Express 	<ul style="list-style-type: none"> • 2GB Memory Upgrade (2x1GB) • 3GB Memory Upgrade (1x1GB, 1x2GB) • 2.33GHz Core 2 Duo • 500GB or 750GB Hard Drive • NVIDIA 7600 VRAM • Apple Wireless Keyboard/Mighty Mouse • Apple USB Modem • Software: iWork '06, Aperture, Logic Express, Final Cut Express

Limited warranty and service

Your iMac comes with 90 days of free telephone support and a one-year limited warranty. Purchase the [AppleCare Protection Plan](#) for your service and support to three full years. Only the AppleCare Protection Plan provides you with direct telephone support from technical experts and the assurance that repairs will be handled by Apple-certified technicians using genuine Apple parts. For information, visit [Apple support](#) or call 800-823-2775.

Options

Software

Accessories

- AirPort Express Base Station (M9470LL/A)
- AirPort Extreme Base Station (M8799LL/A)
- Apple 8x DVD-R Media Kit (M9472G/A)
- Apple mini-DVI to DVI Adapter (M9321G/A)
- Apple mini-DVI to VGA Adapter (M9320G/A)
- Apple mini-DVI to Video Adapter (M9319G/A)
- Apple FireWire Cable (M8706G/A)
- AppleCare Protection Plan (MA520LL/A)
- .Mac Subscription (M9888Z/A)
- iMac 24-inch VESA Mount Adapter (MA473G/A)

Software

- iWork (MA222Z/A)
- Aperture (MA438Z/A)
- Logic Express (MA338Z/A)
- Final Cut Express (MA261Z/A)

-
1. Not included with 17-inch iMac with a 1.83GHz processor.
 2. 1GB = 1 billion bytes; actual formatted capacity less.
 3. Wireless Internet access requires AirPort Express or AirPort Extreme Base Station and Internet access (fees may apply). Some ISPs are not currently compatible with AirPort.
 4. Requires adapter, sold separately.
 5. Weight varies by configuration and manufacturing process.

Intel and Intel Core are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

Internet access requires a compatible Internet service provider; fees may apply.

Product contains electronic documentation.

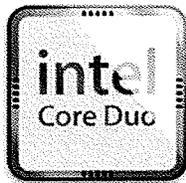
Backup copy of software is included.

[Home](#) > [Hardware](#) > [iMac](#) > Tech Specs

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Live the digital life in stylish simplicity — up to five times faster. Just 6.5 inches square and 2 inches small, Mac mini lets you have more fun with your music, photos and movies, more quickly and more easily. Enjoy them up close or far away with the included Apple Remote. The most affordable way to Intel Core Duo, iLife '06, and Front Row starts at \$599.

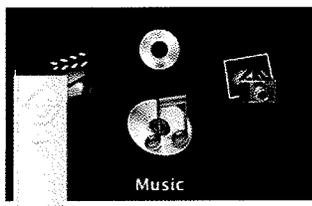


Power has never been this economical

Mac mini makes it easy and affordable to work with digital photos, movies, music, and the web. And now it all happens with the blazing speed of the Intel Core Duo. Delivering unprecedented power in such a small package — the Mac mini runs up to five times faster than previously. Coupled with an all new architecture and the world's most advanced operating system, Mac OS X, Mac mini runs all your modern and innovative software, speedily.

Your digital life starts here

Mac mini comes with iLife '06, a suite of easy-to-use applications that make the spectacular part of your everyday life. Enhance, organize and share your photos via iPhoto. Create calendars, books, and cards. Make an epic starring your kid in iMovie. Turn your photo and movie creations into professional DVDs with iDVD. Create original music in GarageBand, even if you can't carry a tune. Make podcasts and blogs. Then publish them online via .Mac and the all-new iWeb.(2) You'll be amazed at how quickly, easily, and beautifully you can share your digital life.



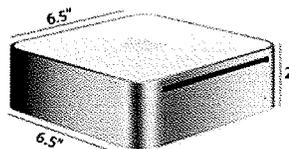
Now showing

The full-screen Front Row media experience — with its intuitive menus, large text and brilliant graphics — lets you browse the music, photos, and videos on your Mac mini as easily as you browse music on your iPod. The included Apple Remote lets you enjoy your media from anywhere in the room from your desk chair to favorite sofa. Front Row and Mac mini can even play music, photos, and videos saved on other computers in the

house, thanks to Bonjour instant networking.(3) So gather your friends and dazzle them with a slideshow of your vacation pics, a home movie, your latest playlist, or a DVD.

More Mac per square inch

Inside its petite 2-inch tall, 6.5-inch square anodized aluminum enclosure, Mac mini houses that fast Intel Core processor, a 60 or 80GB hard drive, slot-loading Combo or SuperDrive, as well as built-in wireless — all whisper-quiet. This modular design lets you upgrade



Twin Power

The Intel Core Duo gives Mac mini up to five times the horsepower it had previously, accelerating your digital life.(1)



Mac mini Performance Benchmarks

SPEC performance: Up to 5X times faster than previous Mac mini. (1)

Mac mini G4 1.42GHz	Mac mini Core Duo 1.83GHz	Δ
6.0	30.8	5.13X
SPECint_rate_base2000 Integer calculation (estimate)		

Mac mini G4 1.42GHz	Mac mini Core Duo 1.83GHz	Δ
4.6	26.3	5.72X
SPECfp_rate_base2000 Floating-point calculation (estimate)		

Mac mini At a Glance

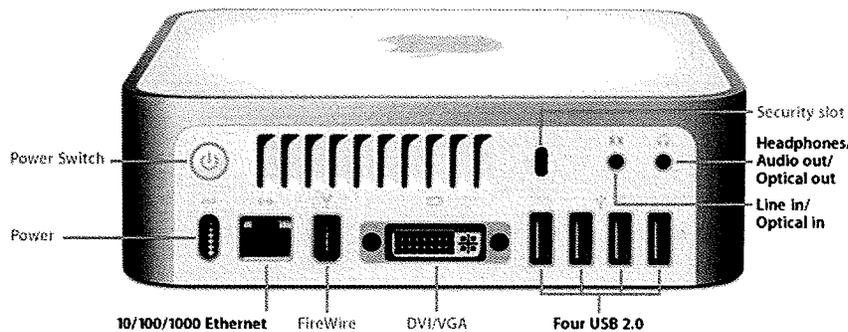
- 1.66GHz or 1.83GHz Intel Core Duo processor
- Apple Remote with Front Row
- Up to 2GB memory(4)
- Intel GMA 950 graphics processor
- DVI connector, VGA adapter
- Slot-loading optical drive
- Up to 160GB hard drive(4)
- Built-in gigabit Ethernet
- Analog and digital audio
- Expansion via USB and FireWire
- iLife '06, Mac OS X Tiger

[Complete Specifications...](#)

Take a closer look at a [gallery of](#)



your current system to the elegance, simplicity and reliability of Macintosh without a lot of extra expense. **BYODKM**: Bring your own monitor, keyboard and mouse (or buy new ones). Either way you'll be up and running in minutes.



Mac mini also gives you plenty of room to grow, with more expansion options than previous models. Simply connect your digital devices, such as cameras, iPod, printer, camcorder or keyboard to the Mac mini over USB 2.0 or FireWire. Share files around your house at blazing speeds with built-in 10/100/1000 BASE-T Ethernet. Enjoy high-quality sound on almost any speaker system with double-duty analog/digital audio. Record digital and analog sources through the line in, perfect for your latest podcast in GarageBand. Mac mini gives you built-in amenities you need to enjoy the digital lifestyle.

1. Testing conducted by Apple in August 2006 using preproduction Mac mini units with 1.83GHz Intel Core Duo; all other systems were production 1.42GHz G4 units. Estimated SPECint_rate_base2000 score: 30.8. Estimated SPECfp_rate_base2000 score: 26.3. SPEC® is a registered trademark of the Standard Performance Evaluation Corporation (SPEC); see www.spec.org for more information. Benchmarks were compiled using the IBM and Intel compilers for Mac OS.
2. Some features require .Mac. The .Mac service is available to persons age 13 and older. Annual membership fee and Internet access required. Terms and conditions apply.
3. Sharing photos requires iPhoto (i.e. a Mac). Sharing music and videos requires iTunes 6.0.4 or later.
4. Some options must be installed by Apple at the factory; the rest can be added in-store at an [Apple Store](#) or an Apple authorized [reseller](#).

[Home](#) > [Hardware](#) > Mac mini

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high-resolution photos of Mac mini.

Big Ideas

The compact design of Mac mini makes it the perfect addition to your den or dorm room. But some adventurous Mac mini customers have taken it places Apple never imagined (or warrants). These links are purely for inspiration, not instruction.

- [123Macmini.com](#)
- [1998 Macleep](#)
- [Crispin Porter + Bogusky](#)
- [MacMod](#)
- [MacVroom](#)
- [Mac mini colocation](#)
- [Millennium Falcon Mac mini](#)
- [Mini Dock](#)
- [Minitosh](#)
- [Team Banzai](#)
- [Threshold Wave](#)
- [Telescopic Mac mini](#)
- [The Mac mini with a heart](#)

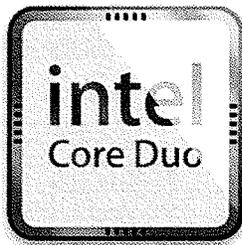
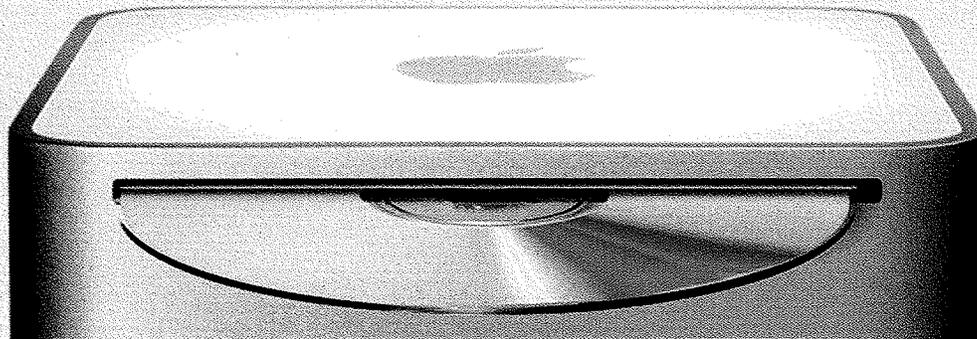
Upgrade from Mac

Move your stuff to Mac mini with the Mac OS X [Setup Assistant](#).

Windows Compatibility

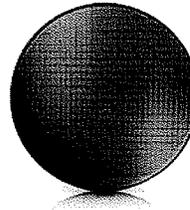
Learn about Macs and [Windows](#).

So small. So fast.



Mac mini has always made it easy to do the most amazing things. Now you can do everything faster — Intel Core Duo processors power the newest Mac mini models. From Front Row to iLife '06, both models of Mac mini deliver more wows per second than ever before.

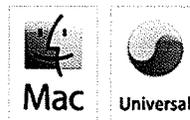
One giant leap for Mac mini
The Intel Core Duo is actually two processors built into a single chip, giving this model Mac mini up to five times the horsepower it had



previously. More than an evolution of processor design, Intel Core Duo is an order-of-magnitude leap forward. It's the first power-efficient Intel chip born of the new 65-nanometer process, which allows for the creation of transistors so small, you could fit a hundred inside a single human cell. With two powerful processors designed to share resources and circuitry so unimaginably small, Intel Core Duo achieves far higher levels of performance while actually consuming less power. In fact, the new Mac mini is even quieter than the already whisper-quiet previous generation.

Software just works

In the world of Mac mini, nothing is complicated — even when the internal architecture advances so dramatically. So when it comes to running software on your Intel-based Mac mini, prepare for the expected: it just works. Applications with the Universal symbol run on either PowerPC- or Intel-based Mac mini computers. Most existing applications will run on your Intel-based Mac mini, too. Simply launch them as always. Thanks to the Rosetta technology in Mac OS X, they look and feel just like they did before.(1)



1. Get more information on [Rosetta](#) supported Apple software. Contact the manufacturer directly for third-party software.
2. Testing conducted by Apple in August 2006 using preproduction Mac mini units with 1.83GHz Intel Core Duo; all other systems were production 1.42GHz G4 units. Estimated SPECint_rate_base2000 score: 30.8. Estimated SPECfp_rate_base2000 score: 26.3. SPEC® is a registered trademark of the Standard Performance Evaluation Corporation (SPEC); see www.spec.org for more information. Benchmarks were compiled using the IBM and Intel compilers for Mac OS.
3. Testing conducted by Apple in August 2006 using preproduction Mac mini units with 1.83GHz Intel Core Duo; all other systems were production units. Safari HTML Load Speed (cached) test is a subset of the i-Bench 5.0 benchmark.
4. Memory available to Mac OS X may vary depending on graphics needs. Minimum graphics memory usage is 80MB, resulting in 432MB of system memory available (to the default configuration, which ships with 512MB of RAM).

Mac mini Performance Benchmarks
SPEC performance: Up to 5X times faster than previous Mac mini. (2)

Mac mini G4 1.42GHz	Mac mini Core Duo 1.83GHz	Δ
6.0	30.8	5.13X
SPECint_rate_base2000 Integer calculation (estimate)		

Mac mini G4 1.42GHz	Mac mini Core Duo 1.83GHz	Δ
4.6	26.3	5.72X
SPECfp_rate_base2000 Floating-point calculation (estimate)		

Faster Across the Spectrum
Mac mini Application Performance (3)

GarageBand (Export to iTunes)
2.4x faster

Safari (HTML load speed, cached)
2.4x faster

QuickTime (Encode video for iPod)
2.3x faster

Pages (Common word processing tasks)
1.9x faster

iMovie HD (Consumer Video Editing)
1.7x faster

Mac mini with 1.42GHz PowerPC G4
Baseline

Integrated Graphics
Mac mini features a graphics processor integrated into the system, and one that's no slouch, to boot. The Intel GMA 950 graphics supports Core Graphics and the latest 3D games. It shares fast 667MHz memory(4) with the Intel Core processor, for an

incredible value proposition.

[Home](#) > [Hardware](#) > [Mac mini](#) > Features: Intel Core

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Technical Specifications

In the Box

- Mac mini
- Apple Remote
- Power cord
- Install/restore DVDs
- Printed and electronic documentation

Processor and memory

- Intel Core Duo processor
- 2MB on-chip L2 cache
- 667MHz frontside bus
- 512MB of 667MHz DDR2 SDRAM (PC2-5300) on two DIMMs; supports up to 2GB

Size and weight

- Height: 2 inches (5.08 cm)
- Width: 6.5 inches (16.51 cm)
- Depth: 6.5 inches (16.51 cm)
- Weight: 2.9 pounds (1.31 kg)

Peripheral connections

- One FireWire 400 port (8 watts)
- Four USB 2.0 ports (up to 480 Mbps)

Back upper angled shot

Graphics and Video Support

- Intel GMA 950 graphics processor with 64MB of DDR2 SDRAM shared with main memory(1)
- DVI video output to support digital resolutions up to 1920 by 1200 pixels; supports 20-inch Apple Cinema Display and 23-inch Apple Cinema HD Display; supports coherent digital displays up to 154MHz; supports noncoherent digital displays up to 135MHz
- VGA video output (using included adapter) to support analog resolutions up to 1920 by 1080 pixels
- S-video and composite video output to connect directly to a TV or projector (using Apple DVI to Video Adapter, sold separately)

Communications

- Built-in 10/100 / 1000BASE-T Gigabit Ethernet (RJ-45 connector)
- Built-in 54-Mbps AirPort Extreme wireless networking (based on 802.11g standard)
- Built-in Bluetooth 2.0 + Enhanced Data Rate (EDR) up to 3 Mbps
- Optional external Apple USB Modem

Audio

- Built-in speaker
- Combined optical digital audio input/audio line in (minijack)
- Combined optical digital audio output/headphone out (minijack)

Apple Remote

Storage

- 60GB or 80GB 5400-rpm Serial ATA hard disk drive; optional 120GB or 160GB drive(2)
- One of the following Slot-load optical drives:
 - Slot-loading Combo drive (DVD-ROM/CD-RW): reads DVDs at up to 8x speed, writes CD-R discs at up to 24x speed, writes CD-RW discs at up to 16x speed, reads CDs at up to 24x speed
 - Slot-loading SuperDrive with double-layer support (DVD+R DL/DVD-RW/CD-RW): writes DVD+R DL discs at up to 2.4x speed, writes DVD-R and DVD+R discs at up to 8x speed, writes DVD-RW and DVD+RW discs at up to 4x speed, reads DVDs at up to 8x speed, writes CD-R discs at up to 24x speed, writes CD-RW discs at up to 16x speed, reads CDs at up to 24x speed

Electrical and environmental requirements

- Meets ENERGY STAR requirements
- Line voltage: 100-240V AC
- Frequency: 50Hz to 60Hz, single phase
- Maximum continuous power: 110W
- Operating temperature: 50° to 95° F (10° to 35° C)
- Storage temperature: -40° to 116° F (-40° to 47° C)
- Relative humidity: 5% to 95% noncondensing
- Maximum altitude: 10,000 feet

Software

- Mac OS X v10.4 Tiger (includes Spotlight, Dashboard, Mail, iChat AV, Safari, Address Book, QuickTime, iCal, DVD Player, Xcode Developer Tools)
- iLife '06 (includes iTunes, iPhoto, iMovie HD, iDVD, iWeb, GarageBand), Microsoft Office 2004 for Mac Test Drive, iWork (30-day trial), Big Bang Board Games, Comic Life, Omni Outliner, and Apple Hardware Test
- Front Row



Software

Configurations

	1.66GHz Mac mini (MA607LL/A)	1.83GHz Mac mini (MA608LL/A)
Processor	1.66GHz Intel Core Duo	1.83GHz Intel Core Duo
L2 Cache	2MB Shared	
System bus	667MHz	
Memory	512MB of 667MHz DDR2 SDRAM (PC2-5300), supports up to 2GB	
Hard drive	60GB 5400-rpm Serial ATA(2)	80GB 5400-rpm Serial ATA
Optical drive	Slot-loading Combo drive (DVD-ROM/CD-RW)	Slot-loading SuperDrive with double-layer support (DVD+R DL/DVD-RW/CD-RW)
Graphics	Intel GMA 950 graphics processor with 64MB of DDR2 SDRAM shared with main memory(1)	
Ports	One FireWire 400 port (8 watts); Four USB 2.0 ports (up to 480 Mbps); DVI output; VGA output (using included adapter); S-video and composite video output(4)	
Audio	Built-in speakers, combined optical digital audio input/audio line in, combined optical digital audio output/headphone out	
Networking	Built-in 10/100/1000BASE-T (Gigabit)	
Wireless	Built-in 54-Mbps AirPort Extreme Wi-Fi (802.11g)(3); built-in Bluetooth 2.0+EDR (Enhanced Data Rate) module.	
Limited warranty and service	Your Mac mini comes with 90 days of free telephone support and a one-year limited warranty. Purchase the AppleCare Protection Plan to extend your service and support to three full years. Only the AppleCare Protection Plan provides you with direct telephone support from Apple technical experts and the assurance that repairs will be handled by Apple-certified technicians using genuine Apple parts. For more information, visit Apple support or call 800-823-2775.	

Options

Mac mini

Configure to Order

- 80 GB hard drive (1.66GHz only)
- 120 GB hard drive
- 160 GB hard drive
- Up to 2GB of 667MHz DDR2 SDRAM
- Apple Wireless Keyboard (M9270LL/A)
- Apple Wireless Mighty Mouse (M9269Z/A)
- Apple USB Modem (MA034Z/A)

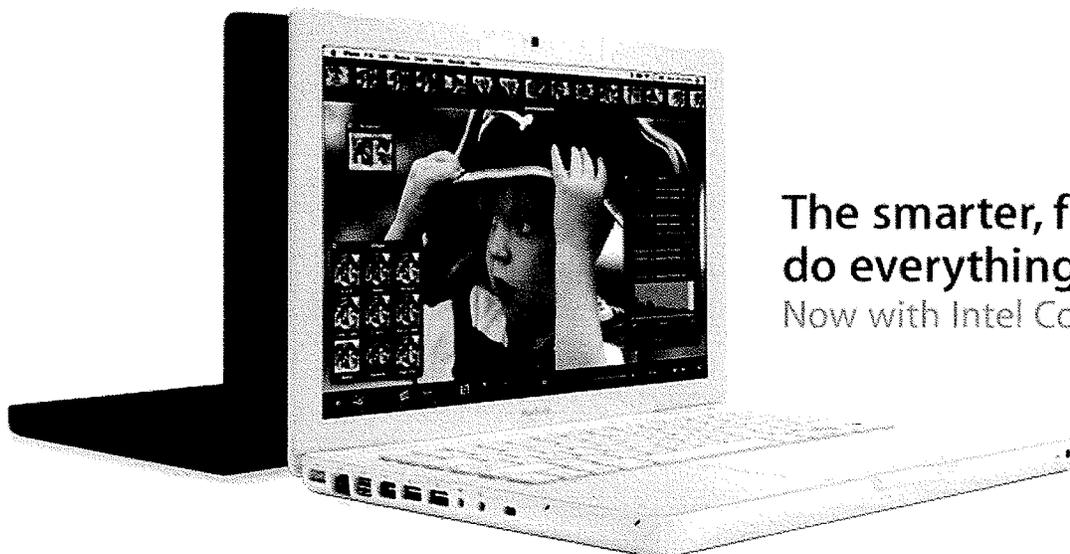
Accessories

- AirPort Express Base Station (M9470LL/A)
- AirPort Extreme Base Station (M8799LL/A)
- Apple 8x DVD-R Media Kit (M9472G/A)
- Apple DVI to Video Adapter(M9267G/A)
- Apple FireWire Cable (M8706G/A)
- AppleCare Protection Plan (MA514LL/A)
- .Mac Subscription (M9888Z/A)
- iWork (MA222Z/A)

1. Memory available to Mac OS X may vary depending on graphics needs. Minimum graphics memory usage is 80MB, resulting in 432MB of system memory available.
 2. 1GB = 1 billion bytes; actual formatted capacity less.
 3. Wireless Internet access requires AirPort Express or AirPort Extreme Base Station and Internet access (fees may apply). Some ISPs are not currently compatible with AirPort.
 4. Requires Apple DVI to Video Adapter, sold separately
- Intel and Intel Core are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.
Internet access requires a compatible Internet service provider; fees may apply.
Product contains electronic documentation.
Backup copy of software is included.

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The smarter, faster,
do everything MacBook.
Now with Intel Core 2 Duo.

Starting at just \$1099, MacBook delivers the power of the Intel Core 2 Duo — the latest generation of Intel processors — and a slew of innovative features, including: a built-in iSight camera for video chatting on the go; iLife '06; Front Row; a glossy 13-inch widescreen display; even dual-display support.



Better bang-to-buck ratio

The most advanced and affordable Mac notebook ever gives you a blazingly fast mobile architecture in a beautiful design that costs less than slower, clunkier models.

It's like getting a sports car for the price of a scooter. Talk about performance, MacBook's powered with an Intel Core 2 Duo processor with speeds revving up to 2.0GHz.

Pack more punch

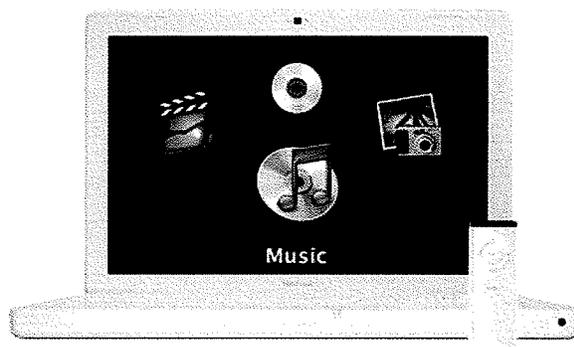
In bright white or sleek black, MacBook supports up to 2GB of memory and plenty of storage. Standard models offer up to 120GB of hard drive space, but if you haul a lot of data around, you can order your MacBook with up to 200GB of storage.

That's not all. MacBook keeps you untethered courtesy of built-in Bluetooth and AirPort Extreme (802.11g). A 6x double-layer-burning SuperDrive — standard equipment on the 2.0GHz models — not only lets you burn DVDs faster but lets you burn capacious double-layer media. And those 2.0GHz models pack 4MB of shared L2 cache, which helps deliver a 6x leap in performance over the iBook or PowerBook before them.(1)



Friends for iLife

Every MacBook comes with iLife '06 — an amazing suite of applications that make it easy to live the digital life. Use iPhoto to share entire high-res photo albums with

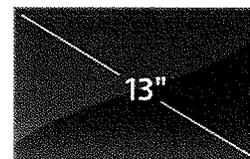


Take it on tour

MacBook also features Front Row, so you can navigate your movies, music, photos, and more at the touch of the included Apple Remote — no matter where you roam. Give an impromptu vacation photo slideshow in your favorite café. Screen your latest iMovie creation on the train. Watch a DVD in bed. MacBook and Front Row give you the best seat in the house (or out of it).

Positively brilliant

Thanks to a 13.3-inch glossy widescreen display, MacBook provides the perfect combination of pixels and portability. Photos feel crisper. Movies play vividly. Even daily tasks like surfing the web and checking email take on a whole new sheen.



Hit the hot spots

The built-in wireless capability of MacBook puts the "world" back in "World Wide Web." If there's a wireless hot spot nearby, you can get online. No need to waste valuable surfing time configuring your computer. Just open it up. MacBook automatically detects wireless networks within range and asks

anyone who's got an email address. Record your own songs and podcasts with GarageBand. Break into indie filmmaking with iMovie HD and iDVD. Then take all the stuff you made on your MacBook and share it on the web in one click with iWeb.⁽²⁾ Just turn on your MacBook and you're halfway there.



All smiles

Look closely. See that little lens in the display bezel? That's the built-in iSight camera. Use it to video chat simply by opening iChat AV and clicking a buddy icon (or three). Or fire up Photo Booth and take a few snapshots with the iSight, play around with 16 fun effects, then admire your handiwork. That little camera lets you create web-ready videos, too. Just open up iMovie and start the action. From there, iWeb makes it one-click easy to get your talking head on the web.⁽²⁾ Looks like fun.

nically if you'd like to join any of them. That's it. Catch up on your blog, share this weekend's trip as a Photocast, or just chat with your friends. Anytime, anywhere.

On the go.



MagSafe Airline Adapter

Out of power in flight? Plug your MacBook into the new [MagSafe Airline Adapter](#) and get back to work (or play).



Built-in Bluetooth

Connect wirelessly to [Bluetooth-enabled](#) peripherals or connect to the Internet via your mobile phone.



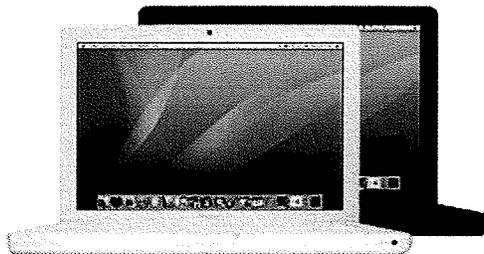
AirPort Express

MacBook offers built-in wireless capability, and you can create your own [wireless network](#) with an AirPort Express.

MacBook At a Glance

[Complete specifications...](#)

13.3-inch glossy display
1.83GHz or 2.0GHz Intel Core 2 Duo
Up to 2GB memory
Up to 200GB hard drive
Apple Remote with Front Row
Built-in iSight camera



Intel Graphics Media Accelerator 950
Slot-loading optical drive
Built-in AirPort Extreme
FireWire 400 and two USB 2.0 ports
Gigabit Ethernet
Bluetooth 2.0+EDR

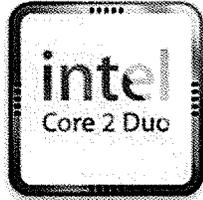
1. Testing conducted by Apple in October 2006 using preproduction MacBook units with Intel Core 2 Duo; iBook G4 and PowerBook G4 systems that were shipping units. Estimated SPECint_rate_base2000 score: 5.8 for 14-inch 1.42GHz iBook G4, 6.2 for 12-inch 1.5GHz PowerBook G4, and 39.8 for 2.0GHz Intel Core 2 Duo-based MacBook. Estimated SPECfp_rate_base2000 score: 4.3 for 14-inch 1.42 GHz iBook G4, 4.6 for 12-inch 1.5GHz PowerBook G4, and 32.6 for 2.0GHz Intel Core 2 Duo-based MacBook. SPEC®, SPECfp®, and SPECint® are registered trademarks of the Standard Performance Evaluation Corporation (SPEC); see www.spec.org for more information. Performance tests are conducted using specific computer systems and reflect the approximate performance of MacBook.
2. Some features require .Mac. The .Mac service is available to persons age 13 and older. Annual membership fee and Internet access required. Terms and conditions apply.

[Home](#) > [Hardware](#) > MacBook

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Race you to the future.

Delivering a significant leap in performance, MacBook now ships with Intel's next-generation processor. The Intel Core 2 Duo. A powerhouse processor, the Core 2 Duo brings 64-bit execution to the MacBook and offers performance that's up to 25% percent greater than previous models.(1)



Double your everything

The Intel Core 2 Duo — based on Intel's advanced Core microarchitecture — offers a second-generation chip born of Intel's new 65-nanometer process. That process lets Intel create incredibly small transistors — small enough, in fact, to

fit a hundred inside a single human cell. With two powerful processors designed to share resources and circuitry so unimaginably small, the Intel Core 2 Duo achieves far higher levels of performance while actually consuming less power.

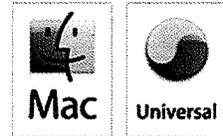
Do more, faster

With its 64-bit processor architecture, the Intel Core 2 Duo can manipulate data and execute instructions in chunks that are twice as large (64 bits versus 32 bits), delivering advanced computational power to MacBook. That adds up to a 6x performance boost over the iBook and 12-inch PowerBook before it(1) — speed and agility you'll notice when working with photos in iPhoto, creating Keynote presentations, or editing podcasts in GarageBand.



Software just works

In the world of MacBook, nothing is complicated. So when it comes to running software on your Intel-based MacBook, prepare for the expected: it just works. Applications with the Universal symbol run on either PowerPC- or Intel-based Macs. Most existing applications will run on your Intel-based MacBook, too. Simply launch them as always. Thanks to the Rosetta technology in Mac OS X, they look and feel just like they did before.(2)



Speedy processor

4MB of shared L2 cache augments the advanced Core 2 Duo processor on the 2.0GHz models.(3) That's double the amount previously available, and it really lets MacBook fire on all cylinders. With such substantial L2 cache, data and instructions can be kept close to those two processor cores, greatly increasing performance and allowing the entire system to work more efficiently. And, because the processor cores share the L2 cache, either can use the entire amount if the other happens to be idle.

The Intel Core 2 Duo's enhanced, 128-bit SSE3 vector engine handles 128-bit computations in a single clock cycle, accelerating data manipulation by simultaneously applying a single instruction to multiple data. That means you can get more done in less time. So, the next time you use iMovie HD or Final Cut Express to render effects, you can thank the SSE3 vector engine for the snappier performance.

MacBook application performance (3)

Aperture Common application tasks	25% faster
iWeb Common application tasks	27% faster
iMovie Common application tasks	20% faster
GarageBand(3) software track playback	20% faster
iPhoto Common application tasks	18% faster
iTunes Common application tasks	12% faster
MacBook with 2.0GHz Intel Core Duo	Baseline

Up to 25% faster than previous generation(1)

MacBook Core Duo 2.0GHz	MacBook Core 2 Duo 2.0GHz	Δ
31.9	39.8	25%
SPECint_rate_base2000 Integer calculation (estimate)		
26.8	32.6	22%
SPECfp_rate_base2000 Floating-point calculation (estimate)		
SPECint_rate_base2000 Integer calculation (estimate)		25% faster
SPECfp_rate_base2000 Floating-point calculation (estimate)		22% faster
MacBook with 2.0GHz Intel Core Duo		Baseline

Up to 6x Faster than iBook and PowerBook(1)

14-inch iBook	MacBook Core 2 Duo 2.0GHz	Δ
5.8	39.8	6.9X
SPECint_rate_base2000 Integer calculation (estimate)		
4.3	32.6	7.6X
SPECfp_rate_base2000 Floating-point calculation (estimate)		
12-inch PowerBook	MacBook Core 2 Duo 2.0GHz	Δ
6.2	39.8	6.4X
SPECint_rate_base2000 Integer calculation (estimate)		
4.6	32.6	7.0X
SPECfp_rate_base2000 Floating-point calculation (estimate)		

1. Testing conducted by Apple in October 2006 using preproduction MacBook units with Intel Core 2 Duo; MacBook systems with Intel Core Duo, iBook G4 and PowerBook G4 systems that were shipping units. SPEC®, SPECfp®, and SPECint® are registered trademarks of the Standard Performance Evaluation

Corporation (SPEC); see www.spec.org for more information. Performance tests are conducted using specific computer systems and reflect the approximate performance of MacBook.

2. Get more information on [Rosetta](#) supported Apple software. Contact the manufacturer directly for third-party software.
3. Testing conducted by Apple in October 2006 using preproduction MacBook units with Intel Core 2 Duo; MacBook systems with Intel Core Duo that were shipping units. On a 2.0GHz Intel Core 2 Duo-based MacBook, GarageBand showed a 20% performance improvement, playing 24 reverb plug-ins, compared to 20 reverb plug-ins played on a 2.0GHz Intel Core Duo-based MacBook. Performance tests are conducted using specific computer systems and reflect the approximate performance of MacBook.

< Tech Specs

iLife '06 >

[Home](#) > [Hardware](#) > [MacBook](#) > Intel Core

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Technical Specifications

In the box

- MacBook
- Apple Remote
- 60W MagSafe Power Adapter, AC wall plug, and power cord
- Lithium-polymer battery
- Install/restore DVDs
- Printed and electronic documentation



Processor and memory

- 1.83GHz or 2.0GHz Intel Core 2 Duo processor
- 4MB shared L2 cache running at full processor speed on MacBook with 2.0GHz Intel Core 2 Duo processor
- 2MB shared L2 cache running at full processor speed on MacBook with 1.83GHz Intel Core 2 Duo processor
- 667MHz frontside bus
- 667MHz DDR2 SDRAM (PC2-5300; two SO-DIMM slots support up to 2GB
 - 1GB (two 512MB SO-DIMMs) in 2.0GHz models
 - 512MB (two 256MB SO-DIMMs) in 1.83GHz model



Storage

- 60GB, 80GB, or 120GB 5400-rpm Serial ATA hard disk drive; optional 80GB, 120GB, or 160GB 5400-rpm; or 200GB 4200-rpm drive.(1)
- One of the following optical drives:
 - 24x slot-loading Combo drive (DVD-ROM/CD-RW)
 - Reads DVDs at up to 8x speed
 - Writes CD-R discs at up to 24x speed
 - Writes CD-RW discs at up to 16x speed
 - Reads CDs at up to 24x speed
 - 6x slot-loading SuperDrive (DVD+R DL/DVD±RW/CD-RW)
 - Writes DVD+R DL (double layer) discs at up to 2.4x speed
 - Writes DVD-R and DVD+R discs at up to 6x speed

Battery and power

- 55-watt-hour lithium-polymer battery (with integrated charge indicator LEDs) providing up to 6 hours of battery life (2)
- 60W MagSafe Power Adapter with cable management system
- MagSafe power adapter port

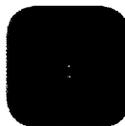
MagSafe power adapter coiled

Display

- 13.3-inch (diagonal) glossy widescreen. TFT display with support for millions of colors
- Supported resolutions: 1280 by 800 (native), 1152 by 720, 1024 by 768, 1024 by 640, 800 by 600, 800 by 500, 720 by 480, and 640 by 480 at 16:10 aspect ratio; 1024 by 768, 800 by 600, and 640 by 480 pixels at 4:3 aspect ratio; 720 by 480 at 3:2 aspect ratio

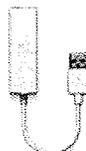
Graphics and video support

- Intel GMA 950 graphics processor with 64MB of DDR2 SDRAM shared with main memory(3)
- Extended desktop and video mirroring: Simultaneously supports full native resolution on the built-in display and up to 1920 by 1200 pixels on an external display, both at millions of colors
- Built-in iSight camera
- Mini-DVI port
- DVI output using mini-DVI to DVI adapter (sold separately)
- VGA output using mini-DVI to VGA adapter (sold separately)
- Composite and S-video output using mini-DVI to video adapter (sold separately)



Communications

- Built-in 10/100/1000BASE-T Gigabit Ethernet (RJ-45 connector)
- Built-in 54-Mbps AirPort Extreme wireless networking (based on 802.11g standard)



Peripheral connections

- One FireWire 400 port (up to 400 Mbps)
- Two USB 2.0 ports (up to 480 Mbps)

Electrical and environmental requirements

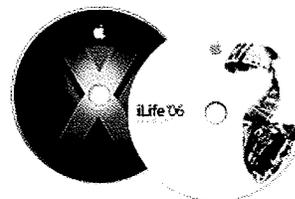
- Meets ENERGY STAR requirements
- Line voltage: 100–240V AC
- Frequency: 50Hz to 60Hz
- Operating temperature: 50° to 95° F (10° to 35° C)
- Storage temperature: -13° to 113° F (-24° to 45° C)
- Relative humidity: 0% to 90% noncondensing
- Maximum operating altitude: 10,000 feet
- Maximum storage altitude: 15,000 feet
- Maximum shipping altitude: 35,000 feet

Size and weight

- Height: 1.08 inches (2.75 cm)
- Width: 12.78 inches (32.5 cm)
- Depth: 8.92 inches (22.7 cm)
- Weight: 5.2 pounds (2.36 kg)

Software

- Mac OS X v10.4 Tiger (includes Spotlight, Dashboard, Mail, iChat AV, Safari, Address Book, QuickTime, iCal, DVD Player, Xcode Developer Tools)
- iLife '06 (includes iTunes, iPhoto, iMovie HD, iDVD, iWeb, GarageBand, Microsoft Office 2004 for Mac Test Drive, iWork (30-day trial), Big Bang Board Games, Comic Life, OmniOutliner, and Apple Hardware Test)
- Front Row



Input

- Built-in full-size keyboard with 78

- Writes DVD-RW and DVD+RW discs at up to 4x speed
- Reads DVDs at up to 8x speed
- Writes CD-R discs at up to 24x speed
- Writes CD-RW discs at up to 10x speed
- Reads CDs at up to 24x speed

- Built-in Bluetooth 2.0 + Enhanced Data Rate (EDR)
- Optional external Apple USB Modem

Audio

- Built-in stereo speakers
- Built-in omnidirectional microphone
- Combined optical digital audio input/audio line in (minijack)
- Combined optical digital audio output/headphone out (minijack)

(U.S.) or 79 (ISO) keys, including 12 function keys, 4 arrow keys (inverted "T" arrangement), and embedded numeric keypad

- Solid-state scrolling trackpad for precise cursor control; supports two-finger scrolling, tap, double-tap, and drag capabilities
- Apple Remote

Security

- Kensington cable lock slot

Configurations

	<u>1.83GHz MacBook (MA699LL/A)</u>	<u>2.0GHz MacBook (MA700LL/A)</u>	<u>2.0GHz MacBook (MA701LL/A)</u>
Color	White	White	Black
Processor	1.83GHz Intel Core 2 Duo	2.0GHz Intel Core 2 Duo	2.0GHz Intel Core 2 Duo
L2 cache	2MB shared	4MB shared	4MB shared
System bus	667MHz		
Memory	512MB (2x256MB) of 667MHz DDR2 SDRAM (PC2-5300); supports up to 2GB	1GB (2x512MB) of 667MHz DDR2 SDRAM (PC2-5300); supports up to 2GB	
Hard drive (1)	60GB Serial ATA; 5400-rpm	80GB Serial ATA; 5400-rpm	120GB Serial ATA; 5400-rpm
Slot-loading optical drive	Combo drive (DVD-ROM/CD-RW)	6x SuperDrive (DVD+R DL/DVD±RW/CD-RW)	
Graphics	Intel GMA 950 graphics processor with 64MB of DDR2 SDRAM shared with main memory ³		
Video	Built-in iSight camera; mini-DVI output port with support for DVI, VGA, S-video, and composite video (requires adapters, sold separately)		
Display	13.3-inch (diagonal) glossy TFT widescreen display, 1280 by 800 resolution		
FireWire	One FireWire 400 port (8 watts)		
USB	Two USB 2.0 ports (up to 480 Mbps)		
Audio	Built-in stereo speakers, built-in omnidirectional microphone, combined optical digital audio input/audio line in, combined optical digital audio output/headphone out		
Networking	Built-in 10/100/1000BASE-T (Gigabit)		
Wireless	Built-in 54-Mbps AirPort Extreme Wi-Fi (802.11g)(4); built-in Bluetooth 2.0+EDR (Enhanced Data Rate) module		
Hardware accessories	Apple Remote, 60W MagSafe Power Adapter, AC wall plug, power cord, lithium-polymer battery		
Limited warranty and service	Your MacBook comes with 90 days of free telephone support and a one-year limited warranty. Purchase the AppleCare Protection Plan to extend your service and support to three full years. Only the AppleCare Protection Plan provides you with direct telephone support from Apple technical experts and the assurance that repairs will be handled by Apple-certified technicians using genuine Apple parts. For more information, visit Apple support or call 800-823-2775.		

Options

MacBook

Configure to order

- 80GB (5400 rpm) hard drive
- 120GB (5400 rpm) hard drive
- 160GB (5400 rpm) hard drive

Accessories

- [AirPort Express Base Station](#) (M9470LL/A) Airline Adapter Kit
- [AirPort Extreme Base Station](#) (M9471LL/A) Airline Adapter Kit

- 200GB (4200 rpm) hard drive
- Up to 2GB of 667MHz DDR2 SDRAM
- [Apple USB Modem \(MA034Z/A\)](#)
- [Apple Mini-DVI to DVI Adapter \(M9321G/B\)](#)
- [Apple Mini-DVI to VGA Adapter \(M9320G/A\)](#)
- [Aperture \(MA715Z/A\)](#)
- [Final Cut Express \(MA261Z/A\)](#)
- [Logic Express \(MA603Z/A\)](#)
- [iWork '06 \(MA222Z/A\)](#)
- [Station \(M8799LL/A\)](#)
- [MagSafe Airline Adapter \(MA598Z/A\)](#)
- [Apple 8x DVD-R Media Kit \(M9472G/A\)](#)
- [Apple mini-DVI to Video Adapter \(M9319G/A\)](#)
- [Apple FireWire Cable \(M8706G/A\)](#)
- [AppleCare Protection Plan \(MA519LL/A\)](#)
- [Mac Subscription \(MA361Z/A\)](#)
- [Apple Wireless Keyboard \(M9270LL/A\)](#)
- [Apple Wireless Mighty Mouse \(MA272LL/A\)](#)

1. 1GB = 1 billion bytes; actual formatted capacity less.
2. Battery life depends on configuration and use.
3. Memory available to Mac OS X may vary depending on graphics needs. Minimum graphics memory usage is 80MB, resulting in 432MB of system memory available on 1.83GHz models and 944MB of system memory available on 2.0GHz models.
4. Wireless Internet access requires AirPort Express or AirPort Extreme Base Station and Internet access (fees may apply). Some ISPs are not currently compatible with AirPort.

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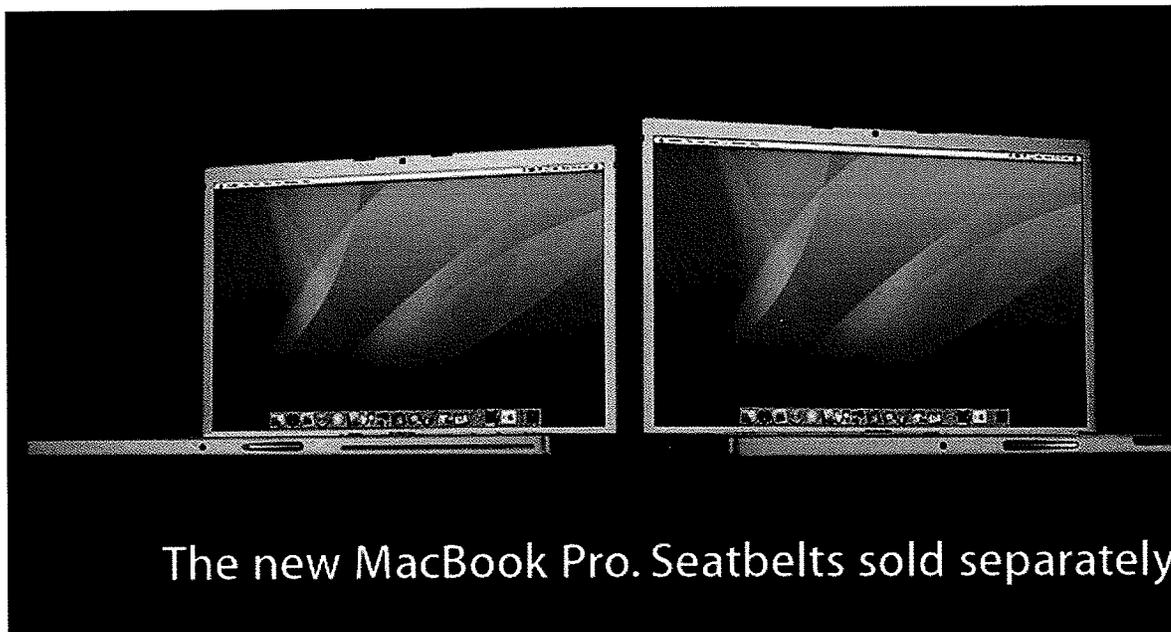
Internet access requires a compatible Internet service provider; fees may apply.

Product contains electronic documentation.

Backup copy of software is included.

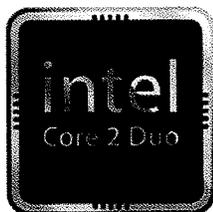
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The new MacBook Pro. Seatbelts sold separately.

A 2.16GHz or 2.33GHz Intel Core 2 Duo. Up to 39% faster than its predecessor.(1) A built-in iSight for instant video conferencing on the move. Front Row with Apple Remote to dazzle everyone in the room. Now available in 15- and 17-inch models starting at just \$1999. Start your engines.



Performance squared

MacBook Pro is built on the revolutionary Intel Core 2 Duo — which packs the power of two processor cores (up to 2.33GHz) inside a single chip. It provides 4MB of Smart Cache, L2 cache that can be shared between the cores as needed.

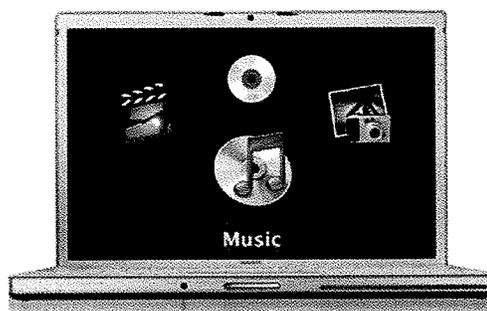
It delivers higher performance in 2D and 3D graphics, video editing, and music encoding. But the new engine is only part of the story. MacBook Pro supports hard drives up to 200GB and up to 3GB of 667MHz DDR2 memory. And now every MacBook Pro boasts both a FireWire 800 port and a double-layer burning SuperDrive. Ultimate speed, performance, and connectivity. To go. That's MacBook Pro.



iSight to behold

Sit down. Click someone's iChat icon. Video conference from anywhere in the world. Though you can barely see it, there's an iSight camera built into the thin bezel just above

the display. So now you can conference with associates during the day and chat with the kids at night. iChat AV lets you video chat with up to three other people simultaneously. And when



Road show

MacBook Pro delivers the Front Row media experience, making it easy (and rather spectacular) to showcase your latest creations. Whether you're at the client's office, on location, or back at your hotel room, just use the Apple Remote to control your videos, music, movies, and more. Front Row lets you quickly navigate through your work and play from anywhere in the room. You can even use the Apple Remote to navigate through Keynote presentations.

On the go.



MagSafe Airline Adapter

Out of power in flight? Plug in the new MagSafe Airline Adapter. Check with your airline regarding availability of in-seat power ports.



AirPort Express

MacBook Pro offers built-in wireless capability, and you can create your own wireless network with an AirPort Express.



you go head to head, you'll see your colleagues clearly, at VGA resolution.



Built-in Bluetooth

Connect wirelessly to Bluetooth-enabled peripherals or connect to the Internet via your mobile phone.

Packs power, not pounds

What makes MacBook Pro so mobile? Performance in a portable package. Only one inch thin and 5.6 and 6.8 pounds, respectively, the 15- and 17-inch MacBook Pros are amongst the thinnest, lightest notebooks in their display class.



On display

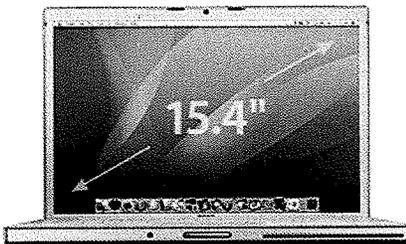
Extend your desktop by connecting your MacBook Pro to a larger display or an HDTV via the DVI port or an optional video adapter.

MacBook Pro at a Glance

[Complete specs...](#)

15 inch

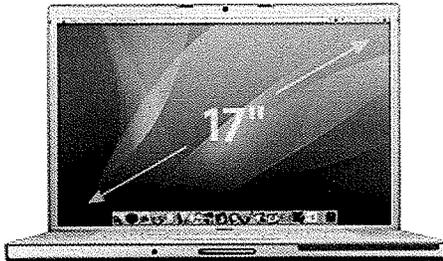
- 15.4-inch display —
- 2.16GHz or 2.33GHz Intel Core 2 Duo —
- 5.6 pounds —
- 6x double-layer-burning SuperDrive —
- One FireWire 400 —
- One FireWire 800 —
- Two USB —
- ExpressCard/34 —



- Up to 200GB hard drive
- Gigabit Ethernet
- ATI Mobility Radeon X1600
- Built-in AirPort Extreme
- Bluetooth 2.0+EDR
- Illuminated keyboard
- Scrolling trackpad
- MagSafe Power Adapter

17 inch

- 17-inch display —
- 2.33GHz Intel Core 2 Duo —
- 6.8 pounds —
- 8x double-layer-burning SuperDrive —
- One FireWire 400 —
- One FireWire 800 —
- Three USB —
- ExpressCard/34 —



- Up to 200GB hard drive
- Gigabit Ethernet
- ATI Mobility Radeon X1600
- Built-in AirPort Extreme
- Bluetooth 2.0+EDR
- Illuminated keyboard
- Scrolling trackpad
- MagSafe Power Adapter

1. Based on estimated SPECint_rate_base2000 results for the 2.33GHz 17-inch MacBook Pro with Core 2 Duo. Testing conducted by Apple in October 2006 using preproduction MacBook Pro units with Core 2 Duo; MacBook Pro systems with Core Duo and PowerBook G4 systems were shipping units. SPEC® and SPECint are registered trademarks of the Standard Performance Evaluation Corporation (SPEC); see www.spec.org for more information.

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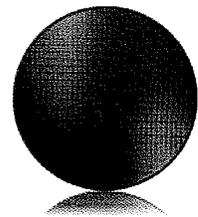
Command performance.



You've seen improvements in notebook performance before — but never on this scale. That's because the Intel Core 2 Duo powering MacBook Pro is actually two execution cores built into a single chip.

More power, using less power

The Intel Core 2 Duo uses Intel's groundbreaking 65-nanometer process — resulting in transistors so small, you could fit a hundred inside a single human cell. With smaller distances for electrons to travel, and two execution cores designed to share resources and conserve power, the Intel Core 2 Duo achieves higher levels of performance as it uses fewer watts. Which is what makes it possible to design a super-powerful MacBook Pro that's only one inch thin.



Lucky number 7x

Combined with 4MB L2 cache and a myriad of other engineering leaps, the Intel Core 2 Duo boosts performance up to 39% higher than the previous MacBook Pro and over 7x higher than the fastest PowerBook G4.(1) With this awesome power, it's a breeze to render complex 3D models, enjoy smooth playback of 1080p HD video, or host a four-way video conference.



Application Performance(1)

Logic Pro* Reverb plug-ins



Final Cut Pro DV encode & render



Aperture Benchmark total



PyMOL Multiple CPU performance

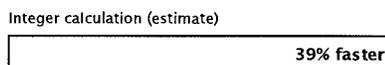


17-inch MacBook Pro 2.16GHz Intel Core Duo

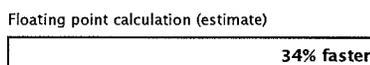


Benchmark Performance(2)

SPECint_rate_base2000



SPECfp_rate_base2000



Cinebench Multiple CPU rendering



17-inch MacBook Pro 2.16GHz Intel Core Duo



Up to 39% faster than 17-inch MacBook Pro with 2.16GHz Intel Core Duo(2).

MacBook Pro Core Duo 2.16GHz	MacBook Pro Core 2 Duo 2.33GHz	Δ
34.8	48.4	39%
SPECint_rate_base2000 Integer calculation (estimate)		

MacBook Pro Core Duo 2.16GHz	MacBook Pro Core 2 Duo 2.33GHz	Δ
27.6	37.1	34%
SPECfp_rate_base2000 Floating-point calculation (estimate)		

1. Testing conducted by Apple in October 2006 using preproduction MacBook Pro units with Core 2 Duo; MacBook Pro with Core Duo and PowerBook G4 systems were shipping units. *On a 2.33GHz Core 2 Duo-based MacBook Pro, Logic Pro showed a 45% performance improvement, playing 240 reverb plug-ins, compared to 165 reverb plug-ins played on a 2.16GHz Core Duo MacBook Pro. MacBook Pro continuously monitors system thermal and power

conditions, and may adjust processor speed as needed to maintain optimal system operation.

2. Estimated SPECint_rate_base2000 score: 6.6 for 1.67GHz PowerBook G4, 48.4 for 2.33GHz Core 2 Duo system and 34.8 for 2.16GHz Core Duo system.
Estimated SPECfp_rate_base2000 score: 4.9 for 1.67GHz PowerBook G4, 37.1 for 2.33GHz Core 2 Duo system and 27.6 for 2.16GHz Core Duo system.
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Technical Specifications

In the box

- MacBook Pro
- 85W MagSafe Power Adapter, AC wall plug, and power cord
- Lithium-polymer battery
- Apple Remote
- DVI to VGA adapter
- Install/restore DVDs
- Printed and electronic documentation

Processor and memory

- 15-inch MacBook Pro Intel
 - 2.16GHz or 2.33GHz Intel Core 2 Duo processor, 4MB on-chip shared L2 cache running 1:1 with processor speed
 - 1GB (single SO-DIMM) of PC2-5300 (667MHz) DDR2 memory on 2.16GHz configuration; and 2GB (two SO-DIMMs) on 2.33GHz configuration; two SO-DIMM slots support up to 3GB
 - 667MHz frontside bus
- 17-inch MacBook Pro
 - 2.33GHz Intel Core 2 Duo processor, 4MB on-chip shared L2 cache running 1:1 with processor speed
 - 2GB (two SO-DIMMs) of PC2-5300 (667MHz) DDR2 memory; two SO-DIMM slots support up to 3GB
 - 667MHz frontside bus

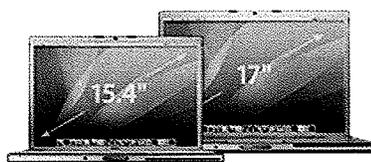
Expansion

- One FireWire 400 port at up to 400 Mbps
- One FireWire 800 port at up to 800 Mbps
- 15-inch MacBook Pro
 - Two 480-Mbps USB 2.0 ports
- 17-inch MacBook Pro
 - Three 480-Mbps USB 2.0 ports
- ExpressCard/34 slot

Security

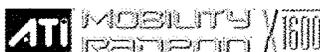
- Kensington cable lock slot

Battery and power



Display

- 15-inch MacBook Pro
 - 15.4-inch (diagonal) TFT display, support for millions of colors; optional glossy widescreen display
 - Supported resolutions: 1440 by 900 (native), 1280 by 800, 1152 by 720, 1024 by 640, and 800 by 500 at 16:10 aspect ratio; 1024 by 768, 800 by 600, and 640 by 480 at 4:3 aspect ratio; 1024 by 768, 800 by 600, and 640 by 480 at 4:3 aspect ratio stretched; 720 by 480 at 3:2 aspect ratio, 720 by 480 at 3:2 aspect ratio stretched
- 17-inch MacBook Pro
 - 17-inch (diagonal) TFT display, support for millions of colors; optional glossy widescreen display
 - Supported resolutions: 1680 by 1050 (native), 1280 by 800, 1152 by 720, 1024 by 640, and 800 by 500 at 16:10 aspect ratio; 1280 by 1024 at 5:4 aspect ratio; 1280 by 1024 at 5:4 aspect ratio stretched; 1024 by 768, 800 by 600, and 640 by 480 at 4:3 aspect ratio; 1024 by 768, 800 by 600, and 640 by 480 at 4:3 aspect ratio stretched; 720 by 480 at 3:2 aspect ratio; 720 by 480 at 3:2 aspect ratio stretched

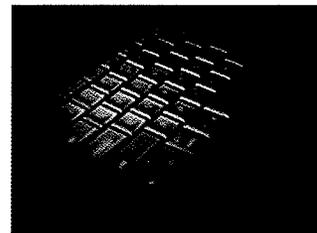


Video and graphics support

- 15-inch MacBook Pro
 - ATI Mobility Radeon X1600 graphics processor, dual-link DVI support, 128MB of GDDR3 SDRAM on 2.16GHz configuration; 256MB of GDDR3 SDRAM on 2.33GHz configuration
- 17-inch MacBook Pro
 - ATI Mobility Radeon X1600 graphics processor, dual-link DVI support, 256MB of GDDR3 SDRAM.

Input

- Built-in full-size keyboard with 78 (U.S.) or 79 (ISO) keys, including 12 function keys, 4 arrow keys (inverted "T" arrangement), and embedded numeric keypad
- Backlit keyboard with ambient light sensors for automatic adjustment of keyboard illumination and screen brightness



- Solid-state scrolling trackpad for precise cursor control; supports two-finger scrolling, tap, double-tap, and drag capabilities
- Apple Remote

Electrical and environmental requirements

- Meets ENERGY STAR requirements
- Line voltage: 100V or 240V AC
- Frequency: 50Hz to 60Hz
- DC input: 18.5 Vdc, 4.6 A max.
- Operating temperature: 50° to 95° F (10° to 35° C)
- Storage temperature: -13° to 113° F (-24° to 45° C)
- Relative humidity: 0% to 90% noncondensing
- Maximum operating altitude: 10,000 feet
- Maximum storage altitude: 15,000 feet
- Maximum shipping altitude: 35,000 feet

Size and weight

- 15-inch MacBook Pro
 - Height: 1.0 inch (2.59 cm)
 - Width: 14.1 inches (35.7 cm)
 - Depth: 9.6 inches (24.3 cm)
 - Weight: 5.6 pounds (2.54 kg) with battery and optical drive

- 15-inch MacBook Pro
 - 60-watt-hour lithium-polymer battery (with integrated charge indicator LEDs) providing up to 5 hours of battery life(1)
- 17-inch MacBook Pro
 - 68-watt-hour lithium-polymer battery (with integrated charge indicator LEDs) providing up to 5.5 hours of battery life(1)
- 85W MagSafe Power Adapter with cable management system
- MagSafe power adapter port

Communications

- Built-in 54-Mbps AirPort Extreme wireless networking (802.11g standard)(2)
- Built-in Bluetooth 2.0+EDR (Enhanced Data Rate)
- Built-in 10/100/1000BASE-T Gigabit Ethernet (RJ-45 connector)

Audio

- Combined optical digital input/audio line in (minijack)
- Combined optical digital output/headphone out (minijack)
- Built-in stereo speakers
- Internal omnidirectional microphone (located under left speaker grille)

- Dual display and video mirroring: Simultaneously supports full native resolution on the built-in display and up to 2560 by 1600 pixels on an external display, both at millions of colors
- DVI output port
- VGA output using included DVI to VGA adapter
- Built-in iSight camera



Storage

- 15-inch MacBook Pro
 - 120GB 5400-rpm Serial ATA hard drive. Optional 160GB 5400-rpm, 200GB 4200-rpm drives(3).
 - 6x slot-loading SuperDrive (DVD+R DL/DVD±RW/CD-RW)
 - Maximum write: 6x DVD-R and DVD+R; 4x DVD+RW and DVD-RW; 2.4x DVD+R DL (double layer); 24x CD-R; 10x CD-RW
 - Maximum read: 8x DVD-ROM, DVD-R, DVD+R; 6x DVD-ROM (double layer DVD-9), DVD+RW, DVD-RW; 4x DVD+R DL (double layer); 24x CD
- 17-inch MacBook Pro
 - 160GB 5400-rpm Serial ATA hard drive. Optional 100GB 7200-rpm, 200GB 4200-rpm drives(3).
 - 8x slot-loading SuperDrive (DVD+R DL/DVD±RW/CD-RW)
 - Maximum write: 8x DVD-R, DVD+R, and DVD+RW; 6x DVD-RW; 4x DVD+R DL (double layer), 24x CD-R; 16x CD-RW
 - Maximum read: 8x DVD-ROM; 6x DVD-ROM (double layer DVD-9), DVD-R, DVD-RW, DVD+R and DVD+RW, DVD+R DL (double layer); 24x CD

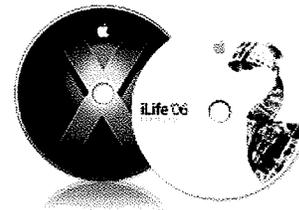
installed(4)

- 17-inch MacBook Pro
 - Height: 1.0 inch (2.59 cm)
 - Width: 15.4 inches (39.2 cm)
 - Depth: 10.4 inches (26.5 cm)
 - Weight: 6.8 pounds (3.1 kg) with battery and optical drive installed(4)

1-inch thick

Software

- Mac OS X v10.4 Tiger (includes Spotlight, Dashboard, Mail, iChat AV, Safari, Address Book, QuickTime, iCal, DVD Player, Xcode Developer Tools)
- iLife '06 (includes iTunes, iPhoto, iMovie HD, iDVD, iWeb, GarageBand), Microsoft Office 2004 for Mac Test Drive, iWork '06 (30-day trial), Comic Life, FileMaker Pro Trial, OmniOutliner
- Photo Booth
- Front Row



Configurations

	15.4-Inch: 2.16GHz (MA609LL)	15.4-Inch: 2.33GHz (MA610LL)	17-inch: 2.33GHz (MA611LL/A)
Display	15.4-inch (diagonal), 1440 x 900 resolution, TFT widescreen		17-inch (diagonal), 1680 x 1050 resolution, TFT widescreen
Processor	2.16GHz Intel Core 2 Duo	2.33GHz Intel Core 2 Duo	2.33GHz Intel Core 2 Duo

Memory	1GB (single SO-DIMM) 667MHz DDR2 SDRAM (PC2-5300)	2GB (two SO-DIMMs) 667MHz DDR2 SDRAM (PC2-5300)
PCI Express graphics	ATI Mobility Radeon X1600 with 128MB of GDDR3 SDRAM and dual-link DVI	ATI Mobility Radeon X1600 with 256MB of GDDR3 SDRAM and dual-link DVI
Hard disk drive(3)	120GB Serial ATA; 5400 rpm	160GB Serial ATA; 5400 rpm
Slot-loading optical drive	6x SuperDrive (DVD+R DL/DVD±RW/CD-RW)	8x SuperDrive (DVD+R DL/DVD±RW/CD-RW)
Expansion	One FireWire 400, one FireWire 800, two USB 2.0 ports, and ExpressCard/34 slot	One FireWire 400, one FireWire 800, three USB 2.0 ports, and ExpressCard/34 slot
Video	Built-in iSight camera, DVI, VGA (DVI to VGA adapter included)	
Audio	Combined optical digital input/audio line in, combined optical digital output/headphone out, stereo speakers, microphone	
Ethernet	Built-in 10/100/1000BASE-T (Gigabit)	
Wireless(2)	Built-in 54-Mbps AirPort Extreme (802.11g); built-in Bluetooth 2.0+EDR	
Modem	Apple USB Modem (sold separately)	
Input	Apple Remote; full-size, illuminated keyboard with ambient light sensor; scrolling trackpad	
Weight	5.6 pounds	6.8 pounds
Footprint	14.1 x 9.6 inches	15.4 x 10.4 inches
Thickness	1.0 inch	
Video accessories	DVI to VGA adapter included (other adapters sold separately)	
Hardware accessories	85W MagSafe Power Adapter, AC wall plug, power cord, lithium-polymer battery	
Limited warranty and service	Your MacBook Pro comes with 90 days of telephone support and a one-year limited warranty. For more information, visit Apple support or call 800-823-2775.	

Options

Mac Book Pro

- Apple Wireless Keyboard (M9270LL/A)
 - Apple USB Modem (MA034Z/A)
 - Apple Wireless Mighty Mouse (MA272LL/A)
 - Apple Keyboard (M9034LL/A)
 - .Mac Subscription (MA361Z/A)
 - AppleCare Protection Plan (MA515LL/A)
- Online store options**
- Up to 3GB main memory
 - 100GB 7200-rpm, 160GB 5400-rpm, 200GB 4200-rpm hard drive (3)
- AirPort Extreme Base Station (M8799LL/A)
 - AirPort Express (M9470LL/A)
 - Apple DVI to Video Adapter (M9267G/A)
 - Apple 85W MagSafe Power Adapter (MA357LL/A)
 - MagSafe Airline Adapter (MA598Z/A)
 - Rechargeable Battery, 15-inch MacBook Pro (MA348G/A)
 - Rechargeable Battery, 17-inch MacBook Pro (MA458G/A)
 - World Travel Adapter Kit (M8794G/B)
 - iWork (MA222Z/A)



1. Battery life depends on configuration and use.
2. Wireless Internet access requires base station or other wireless access point and Internet access (fees may apply). Achieving data rates up to 54 Mbps requires that all users have an AirPort Extreme Card and connect to an AirPort Extreme or AirPort Express Base Station. Some ISPs are not currently compatible with AirPort. Range may vary with site conditions.
3. 1GB = 1 billion bytes; actual formatted capacity less.
4. Actual weight varies by configuration and manufacturing process.

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Internet access requires a compatible Internet service provider; fees may apply. Product includes electronic documentation. Backup copy of software is included. Product specifications are subject to change without notice.

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ThinkPad Z Series

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Z Series gallery



14" or 15.4" widescreen display sizes



Intel® Core™2 Duo Processor

Lenovo recommends Windows® XP Professional.

Stylish notebooks for work and life

ThinkPad® Z Series are versatile and powerful to meet the most demanding work and home tasks. These powerful systems offer a bright widescreen with the option of either black or titanium models. Select models are Microsoft Windows Vista Capable with Intel® Core™2 Duo processors and feature new ThinkPad 11n Multiple Input/Multiple Output (MIMO) wireless technology that delivers greater levels of mobile performance, reliability, and manageability.

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Editor's Top Laptops

Thin-and-light (work): ThinkPad Z60t #2
- CNET, October 2006

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ThinkPad Z61t	ThinkPad Z61t with Wireless Wide Area Network	ThinkPad Z61t with Bluetooth	ThinkPad Z61m	ThinkPad Z61m Advanced	ThinkPad Z61p
From: \$1,060.00*	From: \$1,244.00*	From: \$1,089.00*	From: \$1,045.00*	From: \$1,184.00*	From: \$1,574.00*
Availability Ships within 1-2 weeks**	Ships within 1-2 weeks**	Ships within 1-2 weeks**	Ships within 1-2 weeks**	Ships within 1-2 weeks**	Ships within 1-2 weeks**
Customize	Customize	Customize	Customize	Customize	Customize
View Z61t demo	View Z61t demo	View Z61t demo	View Z61m demo	View Z61m demo	
Special Offers Free standard shipping	Free standard shipping	Free standard shipping	Free standard shipping	Free standard shipping	Free standard shipping
Processor ^[1] Intel Core 2 Duo processor T5500 (1.66GHz, 2MB L2, 667MHz FSB)	Intel Core 2 Duo processor T5500 (1.66GHz, 2MB L2, 667MHz FSB)	Intel Core 2 Duo processor T5500 (1.66GHz, 2MB L2, 667MHz FSB)	Intel Core 2 Duo processor T5500 (1.66GHz, 2MB L2, 667MHz FSB)	Intel Core 2 Duo processor T5500 (1.66GHz, 2MB L2, 667MHz FSB)	Intel Core 2 Duo processor T5500 (1.66GHz, 2MB L2, 667MHz FSB)
Operating system ^[12] Genuine Windows XP Home Edition	Genuine Windows XP Home Edition	Genuine Windows XP Home Edition	Genuine Windows XP Home Edition	Genuine Windows XP Home Edition	Genuine Windows XP Home Edition
Display 14.1" WXGA, Black	14.1" WXGA, Black	14.0" WXGA, Black	15.4" WXGA 200nit, Black	15.4" WSXGA+, Black	15.4" WUXGA, Black
System graphics Integrated Intel 945GM DVI pass through, (14.1" LCD & Core 2 Duo)	Integrated Intel 945GM DVI pass through, (14.1" LCD & Core 2 Duo)	Integrated Intel 945GM, DVI pass through, (14.0" LCD & Core 2 Duo)	Intel Graphics Media Accelerator 950	ATI Mobility Radeon X1300 64MB	ATI Mobility Fire GL V5200 256MB
Total memory ^[8] 512 MB PC2-5300 SDRAM DDR2 667MHz SODIMM Memory (1 DIMM)	512 MB PC2-5300 SDRAM DDR2 667MHz SODIMM Memory (1 DIMM)	512 MB PC2-5300 SDRAM DDR2 667MHz SODIMM Memory (1 DIMM)	512 MB PC2-5300 SDRAM DDR2 667MHz SODIMM Memory (1 DIMM)	512 MB PC2-5300 SDRAM DDR2 667MHz SODIMM Memory (1 DIMM)	512 MB PC2-5300 SDRAM DDR2 667MHz SODIMM Memory (1 DIMM)
Fingerprint reader No integrated fingerprint reader	No integrated fingerprint reader	No integrated fingerprint reader	No integrated fingerprint reader	No integrated fingerprint reader	Integrated fingerprint reader
Hard drive ^[4] 40GB Hard Disk Drive, 5400rpm	40GB Hard Disk Drive, 5400rpm	40GB Hard Disk Drive, 5400rpm	40GB Hard Disk Drive, 5400rpm	40GB Hard Disk Drive, 5400rpm	60 GB Hard Disk Drive, 5400rpm
Optical device ^[5] DVD-ROM 8x Max, Ultrabay Slim	DVD-ROM 8x Max, Ultrabay Slim	DVD-ROM 8x Max, Ultrabay Slim	CD-ROM 24x Max Ultrabay Enhanced	DVD-ROM 8x Max Ultrabay Enhanced	DVD-ROM 8x Max Ultrabay Enhanced

Wireless cards ^[10] ThinkPad 11a/b/g Wi-Fi wireless LAN Mini-PCIe US/EMEA/LA/ANZ	Intel PRO/Wireless 3945ABG	ThinkPad 11a/b/g Wi-Fi wireless LAN Mini-PCIe US/EMEA/LA/ANZ	Integrated Wireless-Ready	ThinkPad 11a/b/g Wi-Fi wireless LAN Mini-PCIe US/EMEA/LA/ANZ	Integrated Wireless-Ready
Battery ^[60] 4 cell Li-Ion Battery	4 cell Li-Ion Battery	4 cell Li-Ion Battery	6 cell Li-Ion Battery	6 cell Li-Ion Battery	6 cell Li-Ion Battery
Warranty ^[7] 1 Year Limited Warranty	1 Year Limited Warranty	1 Year Limited Warranty	1 Year Limited Warranty	1 Year Limited Warranty	1 Year Limited Warranty
Customize	Customize	Customize	Customize	Customize	Customize

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	Z61t	Z61m	Z61p
ThinkPad® Roll Cage	☑	☑	☑
Shock-Mounted Hard Drive	☑	☑	☑
Integrated Fingerprint Reader	☑	☑	☑
Wireless Wide Area Network Integration	☑	☐	☐
ThinkPad 11n MIMO Wi-Fi	☑	☑	☑
UltraNav™ multi-pointing device	☑	☑	☑
OpenGL® graphics for 3D application support	☐	☐	☑
ATI Discrete Graphics	☐	☑	☑
Integrated camera and stereo microphone	☑	☑	☐
3-1 Media Card Reader	☑	☐	☐
4-1 Media Card Reader	☐	☑	☑
Docking support	☑	☑	☑
ThinkVantage® Active Protection System™	☑	☑	☑
ThinkVantage® Rescue and Recovery™	☑	☑	☑

☑ Standard ☐ Select models ☐ Not available

Z Series features

The **thin and light design** of our Z61t notebook includes a 14" widescreen and the option of either black or titanium models. Designed with mobility in mind, the Z61t systems are the thinnest and lightest 14" widescreen notebook class of the top 10 notebook vendors⁵². Starting at 1.1" thin and only 4.5 lb.² with the standard 4 cell battery, these thin and light models also feature up to 5.5 hours⁶⁰ of battery life, when equipped with optional extended life or bay batteries. Z61t models offer impressive features, including:

- Intel® Centrino® Duo mobile technology technology for outstanding wireless performance (select models)
- Available with Genuine Windows® XP Professional; Windows Vista™ capable
- Intel® Core™2 Duo, Dual Core, or Celeron® M Processors available (select models)
- Intel 915GM, 945GM or 945PM Express Chipset
- PCI Express Integrated Graphics
- ThinkPad 11a/b/g/n MIMO^[14] wireless technology (select models)
- Bluetooth wireless (select models)
- 3-1 card reader (select models) and 1394 (4-pin) connections
- Secure Digital card slot (select models) and PC Card slot
- DVI connector pass-through support (select models)

Z61m models are **versatile and powerful** to meet the most demanding work and home tasks. These notebooks offer a bright, 15.4" widescreen with the option of either black or titanium models. They are only 1.4" thin and 6.6lb.², making travel easy. And with up to 6 hours⁶⁰ of standard battery life, you can stay unplugged longer without being tied to an electrical outlet. Z61m models offer impressive features, including:

- Intel® Centrino® Duo mobile technology for outstanding



Enhanced multimedia experience

With the stunning widescreens, there is more viewing area than standard TFT screens, allowing additional space for increased productivity when using multimedia applications. New optional MaxBright technology with 300nits is also available to make viewing crystal clear on select Z61m models.

To enhance your notebook experience, select Z61t and Z61m models offer an integrated camera and stereo microphone for video and voice applications. In addition, the stereo speakers are located to the right and left of the keyboard for a more robust





- wireless performance (select models)
- Available with Genuine Windows® XP Professional; Windows Vista capable
- Intel® Core™2 Duo processor (select models)
- Full-size keyboard¹¹
- Intel 915GM or 945GM Express Chipset
- PCI Express Integrated Graphics or ATI Discrete Graphics
- ThinkPad 11a/b/g/n MIMO¹⁰ wireless technology (select models)
- Bluetooth wireless (select models)
- 4-in-1 card reader (select models) and 1394 FireWire (4-pin) connections
- Express Card slot, Secure Digital card slot and PC Card slot



The most secure notebooks

Z Series are now even better with one integrated security solution out of the box(select models). The Integrated Fingerprint Reader is built conveniently into the palm rest area of your notebook, making your passwords available at your fingertip. Security software is preloaded for an integrated solution out of the box. You cannot get a higher level of security as a standard feature on a PC from any other manufacturer.

Optimized for connectivity

Select ThinkPad Z Series notebooks feature up to five built-in communications capabilities: Wi-Fi wireless¹⁰, Bluetooth® technology, Ethernet, 56K³ modem and wireless broadband access (select models). RJ-45 and RJ-11 ports are standard on all models. High-speed Gigabit Ethernet connectivity is also featured on select ThinkPad Z Series notebooks.

The UltraConnect™ antenna is built into the display cover for optimal signal reception³³. This combined design supports IEEE 802.11a, 802.11b and 802.11g wireless technologies to help maximize coverage and performance for improved wireless LAN connectivity around the world. Select models feature new ThinkPad 11a/b/g/n MIMO¹⁰ wireless technology with increased throughput and distance performance.

The Z Series models also have the option to integrate high-speed EvDO Wireless WAN³ (select models) with the largest coverage area for high-speed⁶⁵ wireless in the United States.

Unique data protection and reliability features on

ThinkPad Z models help safeguard your valuable data. The Active Protection System is an integrated, user-configurable motion sensor that continuously monitors your ThinkPad notebook and temporarily stops the hard drive to help prevent some hard drive crashes when a fall or similar event is detected. The ThinkPad HDD Shock Absorber provides impact protection from crashes that could occur when setting the notebook on a hard surface while in use.

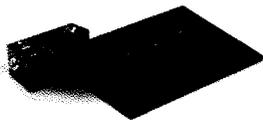


Also, by combining the ThinkPad Roll Cage with our shock-mounted hard drive the critical system components are protected against accidents or jolts with a magnesium alloy frame that surrounds the interior parts, absorbing shock and helping to reduce failures and improve durability and reliability.

Exceptional chipset and graphics provided by ATI on select ThinkPad Z Series models deliver mobile optimized performance for today's graphics-intensive business and communications applications, latest 3D games, and high-quality digital entertainment. ATI makes your notebook PC a complete Multimedia Center whether at home or on the road.

Get up to 8 hours of battery life

Achieve all-day computing on select models with the system battery plus the optional ThinkPad Z Series Ultrabay Battery.



Popular Accessories

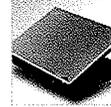
We offer a wide selection of accessories designed and tested to be compatible with your ThinkPad® notebook. These accessories meet the highest standards, so you can be certain of top quality. And they're backed by a Warranty by Lenovo with renowned Service and Support available from IBM®.

sound, better listening range and volume. Plus, new multimedia function keys are built directly into the keyboard making it easy to play DVDs and CDs with the touch of a finger.

Rescue and Recovery™ software provides a hassle-free one-button recovery solution that lets you restore your previously saved system image including data, applications and operating system. Learn more about ThinkVantage® Technologies.



Distinctive design elements like the TrackPoint pointing device are what set ThinkPad notebooks apart from the rest. This unique pointing device is standard on all of our notebooks legendary full-size keyboard.



A titanium special edition cover on select ThinkPad Z Series models provides enhanced strength, durability, and a scratch resistant finish. It helps protect your notebook while maintaining a thin, light, stylish design. Learn more about ThinkVantage® Design.

Work in low-light conditions with the ThinkLight keyboard light. Located on the top edge of the display, this tiny LED illuminates your keyboard to let you keep working. ThinkPad notebooks are the only notebook family with the ThinkLight keyboard light.



Mobile workstations

ThinkPad Z61p mobile workstations offer robust graphics capacity, raw processing power and long battery life coupled with classic, award-winning ThinkPad design. Enhanced design on these 15.4" widescreen models includes:

- Intel® Centrino® Duo mobile technology for outstanding wireless performance (select models)
- Available with Genuine Microsoft® Windows® XP; Microsoft Windows Vista™ capable
- Available with Intel® Core™2 Duo processor
- ThinkPad 11a/b/g/n MIMO¹⁰ technology (select models)
- ATI Mobility™ FireGL™ V5200 with 256MB VRAM
- OpenGL® graphics for 3D application support
- New larger, high-resolution 15.4" TFT displays
- 512MB DDR SDRAM, upgradeable to 2GB maximum
- Bluetooth wireless (select models)
- 4-in-1 card reader and 1394 FireWire (4-pin) connections
- Express Card slot and PC Card slot
- Hot-swappable Ultrabay Enhanced (supports 9.5mm opticals)



Service and support are always there for you

A range of award-winning Service and support solutions is available in 164 countries²³, including ThinkVantage Productivity Center with unique self-help tools for 24/7 online support⁹, as well as on-system support.

The **ThinkVantage Productivity Center** is a special user-support feature that can help you keep your ThinkPad notebook secure and operating efficiently without wasting a minute of your time. Simply press the Blue Button to open a powerful menu of applications and tools so you can perform routine system tasks while you work or while you are away. It's PC maintenance made simple.



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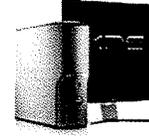
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High performance multimedia PC in a super slim, stylish design

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Up to 4GB* memory – run your music, video, & productivity programs without slowing down
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19-inch Flat Panel Monitor Included!

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