



# iChat AV

Video conferencing for the rest of us.

## Features

### Personal video conferencing<sup>1</sup>

- Full-screen video with anamorphic resizing
- Optimized H.263 video codec with advanced pre- and post-processing
- Crystal-clear, full-duplex audio
- Easy to use—one click starts a video or audio conference
- Plug and play; no additional drivers to install
- Zero configuration even on networks using Network Address Translation
- Works with 100-Kbps or faster broadband connections

### Toll-free audio conferencing<sup>1</sup>

- Optimized audio codec for crystal-clear conversations
- Full-duplex audio for natural, two-way conversations
- Robust echo cancelation eliminates annoying feedback loops
- Works with 56-Kbps dial-up or faster Internet connections

### The best way to IM

- Compatible with .Mac and AOL AIM
- Drag-and-drop file transfer
- Rendezvous chat automatically displays colleagues on your local network
- Group chat with multiple people at once
- Buddy groups for quickly finding friends, family, or colleagues
- Presence technology lets you know if buddies are available for text, audio, or video chats

iChat AV introduces audio and video conferencing for keeping in touch with colleagues, family, and friends around the world. This is the first video conferencing solution that makes it easy to have natural conversations over the Internet. iChat AV features high-quality, full-screen video; crystal-clear, full-duplex audio; a familiar, easy-to-use interface; and setup that is immediate and effortless.

Now having audio and video conversations is as easy as instant messaging. The prevalence of broadband Internet connections allows you to video conference whether at home, in school, at work, or on the road. Video conferencing works great on 802.11 wireless networks, found in many airport terminals, offices, and cafes. Full-duplex audio conferencing works with just a 56-Kbps dial-up connection!

An innovative new feature of Mac OS X version 10.3 "Panther," iChat AV works with iSight and other FireWire-based cameras, including DV camcorders.



iChat AV enables high-quality, full-screen video conferencing over the Internet.

## Technology Brief

Mac OS X: iChat AV

## Personal Video Conferencing

iChat AV users can communicate using real-time, two-way video and crystal-clear audio. Now you can see and hear your colleagues, family, and friends no matter how far away they are. Unlike any other personal video conferencing solution, iChat AV features full-screen video with full-duplex audio for the most direct and engaging experience. Its optimized video conferencing engine delivers superior-quality video over any broadband Internet connection.

### High-quality video and audio

Using the Quartz graphics engine built into Mac OS X, iChat AV lets you set the video window to whatever size suits your computing style—from the large default of 352 by 288 pixels to full screen. You can even resize a window during a conference, and watch how images are dynamically adjusted on the fly without affecting video and audio quality.

In full-screen mode, advanced anamorphic resizing techniques keep the proportions of the person you are talking to correct, even if you use a wide-aspect-ratio display.

iChat AV uses the industry-standard H.263 video codec and advanced pre- and post-processing techniques to deliver picture-perfect video. It uses the sophisticated technologies built into QuickTime to compress the video and audio while maintaining rich detail, natural colors, and smooth video over any 100-Kbps or faster Internet connection. Specific technologies include:

- Spatial anisotropic diffusion to maintain edge detail and sharpness while reducing unnecessary digital “noise.”
- Temporal noise reduction to average out noise between video frames while avoiding motion blurring.
- Post-filtering of the received video to avoid blockiness and ringing artifacts.

iChat AV uses a sophisticated digital audio codec to deliver the same crystal-clear audio quality that you expect when you use a typical landline telephone. The full-duplex technology built into iChat AV lets you have natural conversations, just as with the advanced speakerphones found in conference boardrooms. Most other solutions force users to talk one at a time, providing an experience more akin to talking on a CB radio.



### Easy as text messaging

If you have used iChat for text messaging, you'll be instantly comfortable using iChat AV for video and audio conferencing. Everything has been integrated directly into the original easy-to-use iChat interface. If you're using iChat AV for the first time, you'll be amazed at how easy it is to keep in touch with friends, family, and colleagues with video, audio, and text.

An important addition to the familiar iChat buddy list is the intuitive status buttons, which indicate your buddies' conferencing capabilities and serve as a convenient way to initiate a conference. With just a glance, you can see if your buddy is available and if he or she is equipped for a video conference, an audio conference, or a text chat.



One click of a status button initiates a video or audio conference, depending on whether you and your buddy have video cameras. You don't have to look up your buddy's number or even bother with dialing it. In fact, you don't even have to worry about where your buddy is—her presence is independent of what computer she is using and where she is in the world.

An automatic video preview window lets you check your lighting and camera position before you begin your conference. A picture-in-picture window displays the video stream so you know exactly what your buddy is seeing. Audio mute and video pause are both available for when you need a moment of privacy.

### Zero Configuration

Setting up iChat AV is immediate and effortless. Video and audio devices are detected automatically, and there are no drivers to install.

iChat AV works with iSight and third-party FireWire cameras, including digital video (DV) camcorders. Plug in your camera and it just works, with no installation to worry about. Video and audio devices are automatically configured so you don't have to click through lengthy setup wizards. You can even have iChat AV open whenever you connect a camera, leaving you just one click away from chatting with friends and family.

Your video and audio settings are optimized based on available bandwidth and processing power. You get the best possible experience without having to manually configure frame rate, resolution, compression techniques, or other settings that need to change dynamically depending on the speed of the Internet traffic and the processing power of your buddy's system.



Apple's iSight camera works with iChat AV for effortless video and audio conferencing.

### iChat AV system performance

	Good quality	Better quality	Best quality
			
Window size	352 by 288 pixels to full screen	352 by 288 pixels to full screen	352 by 288 pixels to full screen
Video resolution	176 by 144 pixels	176 by 144 pixels	352 by 288 pixels
Frames per second	15	30	20–30
System required	600MHz G3, 350MHz G4, or faster	1GHz G4 or faster	Dual 800MHz G4 or faster, or any G5
Bandwidth	100–500 Kbps	100–500 Kbps	Above 500 Kbps

To use iChat AV for a high-quality video conference, you need a Macintosh computer with a 600MHz or faster PowerPC G3 or any G4 or G5 processor and a 100-Kbps or faster Internet connection.<sup>2</sup> With a 600MHz G3 system and a standard 100-Kbps or DSL modem, you can get 15 frames per second (fps) of high-quality two-way video that can even go full screen. When you and your buddy have faster computers and Internet connections, iChat AV optimizes the video stream. With an 800MHz G4 system and a standard cable or DSL modem, you can get 25 fps of high-quality video—smoother than motion picture video, which is projected at 24 fps.

iChat AV delivers a super-high-resolution image, with four times the detail of the standard high-resolution image at 30 fps, if you and your buddy each have a 1GHz or faster dual processor Power Mac G4 or a Power Mac G5 and at least a 500-Kbps Internet connection. This setup is ideal for corporate or education users who have access to a fast network.

### Toll-Free Calls<sup>1</sup>

iChat AV provides telephone-quality audio on your Mac. Like the most advanced speakerphones, iChat AV features full-duplex audio, so conversations are uninterrupted even when both sides try to talk at once.

iChat AV uses a sophisticated digital audio codec to deliver the same crystal-clear audio quality that you expect when you use a typical landline telephone. Robust echo cancelation lets you use any combination of internal and external microphones while eliminating annoying feedback loops.

Not only does iChat AV deliver the quality expected from a telephone conversation, it improves on the experience. The built-in presence technology lets you know whether your buddies are available, away, or doing something else. Custom status messages make it a snap to convey just the right information to your buddies. The result? No more phone tag and no need to leave a message.

For audio conferencing, all you need is iChat AV; a microphone; any Macintosh with a G3, G4, or G5 processor; and a 56-Kbps dial-up or faster Internet connection. You can select the audio input of your preference: the integrated dual-element microphone in iSight, a microphone built into your Mac, or an external microphone.



## Standards Based

iChat AV is standards based, using the industry-standard H.263 video codec, the telephone-quality QuickTime audio codec (PureVoice QCELP), and SIP—the next-generation protocol for signaling. This combination of modern video and audio conferencing standards is the foundation of the high-quality experience delivered by iChat AV.

Apple is leading the way with video conferencing technology, and iChat AV is the first personal video conferencing solution that offers a high-quality, easy-to-use experience. Apple is open to working with other parties on interoperability, but currently there is no other video conferencing application built on these modern standards.

## ISP and Router Friendly

iChat AV works with a wide variety of ISPs and routers, even those that often interfere with or block video and audio connections in other conferencing applications.

Some ISPs and home networking routers use a technology called Network Address Translation (NAT) to share an Internet connection. iChat AV uses an innovative approach to establish a direct audio and video connection even on networks that feature NAT. This means you can use iChat AV with AirPort Base Stations and other router devices without any special setup or configuration hassles.

### Firewall configuration instructions for network administrators

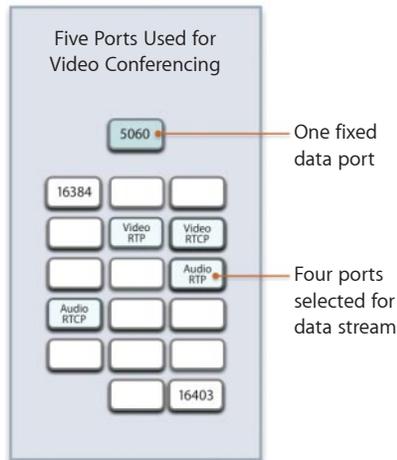
Frequently used by corporations and educational institutions for increased security, firewalls work by blocking certain Internet traffic from entering or leaving a network. Network administrators typically open a minimal number of network ports, allowing the traffic for approved applications to enter and leave the network while blocking other network traffic.

To use iChat AV behind a firewall, the following UDP ports must be open:

- UDP port 5060 is used by iChat AV for signaling and initiation of chat invitations. To use iChat AV behind a firewall, make sure your network administrator has opened UDP port 5060.
- UDP ports 16384 to 16403 are used to send and receive video and audio data. For any particular conference, four ports from that range of 20 are utilized.

One port is used for each of the following:

- Video Real-time Transport Protocol (RTP) for real-time video in and out of your computer.
- Video Real-time Transport Control Protocol (RTCP) for video quality optimization.
- Audio RTP for real-time audio in and out of your computer.
- Audio RTCP for audio quality optimization.



## The Best Way to IM

iChat was originally released with powerful and easy-to-use instant messaging capabilities as a key feature of Mac OS X v10.2 "Jaguar." With AOL Instant Messenger (AIM) and .Mac compatibility, an elegant interface, file transfer, Rendezvous chat, and group chat capabilities, it is the best way to IM. iChat AV features expanded support for instant messaging, with buddy groups and a new picture manager.

Thanks to built-in compatibility with AOL Instant Messenger, you have automatic, immediate access to the more than 150 million members of the AIM and .Mac communities. Simply sign in to iChat with your .Mac or AIM user account. If you don't have a .Mac account, you can sign up for a free trial account at [www.mac.com](http://www.mac.com). Your account name is free, and you can continue to use it with iChat AV.

Since its release in Mac OS X Jaguar, iChat has offered powerful features and an elegant, easy-to-use interface. You can easily attach and transfer files that are too large to send by email. Rendezvous, Apple's revolutionary networking standard, lets you see friends or colleagues on your local network without knowing their IM account names. Group chats let you participate in virtual chat rooms, where you can talk with multiple people at once.

iChat AV introduces even more great features for instant messaging. You can view your buddies by group to quickly find friends, family, or colleagues from a long list of buddies. Customize the picture used for your buddy icon with video snapshots and icons that fit your mood—the enhanced picture manager makes it easier than ever to switch between your favorite pictures.

## iChat AV and the Power of Mac OS X

iChat AV takes advantage of the powerful technologies of Mac OS X to deliver communications software that's simply not available anywhere else.



### OpenGL

Mac OS X includes the world's most advanced 3D graphics system, OpenGL. This technology lets you resize windows in iChat AV while the video plays. And you won't find postage-stamp-size windows. OpenGL makes possible the high-quality full-screen windows featured in iChat AV.



### Quartz Extreme

The advanced graphics capabilities of Mac OS X enjoy the benefits of hardware acceleration with Quartz Extreme. With a supported Macintosh, you'll see even better performance when moving windows around your screen. Whenever possible, Mac OS X offloads video tasks directly to the graphics card, so the processor can spend its time processing raw data.



### QuickTime

The same video and audio engine that powers Final Cut Pro and iMovie also powers iChat AV. iChat AV also uses QuickTime advanced media technology for real-time compression and decompression of high-quality video and crystal-clear audio over the Internet.



### Core Audio

The Core Audio technology in Mac OS X provides ultra-low-latency communication between applications and I/O devices that is measurably more efficient than with other solutions—as low as 1-millisecond throughput latency. This means you'll hear your buddy's words as they are spoken, in sync with his or her video.



#### **Rendezvous**

Rendezvous lets you see who is available to chat on your local network without even knowing their screen names. iChat AV can use Rendezvous to discover and directly connect with other iChat AV users on your network, adding colleagues and friends to your Rendezvous list when they enter the network and removing them when they leave, all automatically.



#### **AirPort Extreme**

Apple's AirPort wireless technology, based on 802.11b and the cutting-edge 802.11g wireless standard, delivers plenty of bandwidth to host wireless video chats. Imagine using your PowerBook to chat on the back porch, in a café, or at the airport.<sup>3</sup>



#### **Address Book**

Mac OS X Address Book keeps all your contacts in one place. iChat AV automatically stays in sync when you update or add .Mac and AIM accounts to your Address Book. You can even initiate chats from Address Book.

## iChat AV Requirements

### **Requirements for audio conferencing**

- Macintosh computer with any PowerPC G5, G4, or G3 processor
- Mac OS X v10.2.5 or later (Mac OS X v10.2.8 or later and QuickTime 6.4 recommended)
- iSight or any microphone (internal or external)
- 56-Kbps modem connection

### **Requirements for video conferencing**

- Macintosh computer with a PowerPC G5, G4, or G3 processor at 600MHz or faster
- Mac OS X v10.2.5 or later (Mac OS X v10.2.8 or later and QuickTime 6.4 recommended)
- Video: iSight or any FireWire-based video camera (DV camcorders require a G5 or G4 processor)
- Audio: iSight or any microphone (internal or external)
- Cable, DSL, or other broadband Internet connection (100 Kbps or faster)

**Note:** To use Mac OS X Panther, you need a Macintosh computer with a PowerPC G5, G4, or G3 processor; built-in USB; and at least 128MB of physical RAM.

## Mac OS X Version 10.3 "Panther": Power of UNIX, Simplicity of Macintosh

With iChat AV, Mac OS X Panther introduces audio and video conferencing for keeping in touch with colleagues, family, and friends around the world. In addition, Panther offers more than 150 new features and innovations, including Exposé for instantly finding any window and a new Finder for easy access to everything you need. It's like having an all-new Mac.

## Appendix: Comparison of Personal Video Conferencing Solutions

	iChat AV	MSN Messenger 6	Yahoo Messenger	Logitech IM Video Companion
Two-way video with full-duplex audio	●	●	—	—
Video window size	352 by 288 up to full screen	88 by 72 176 by 144 352 by 288	160 by 120 320 by 240	160 by 120
Resizable video window	●	Limited sizes	Limited sizes	—
Full-duplex audio conferencing	●	●	—	—
Echo cancelation	●	●	—	—
Driver-free installation	●	Based on camera type	Based on camera type	Based on camera type
Compatible with NAT (CONE) routers	●	—	—	—
Auto-gain microphone adjustment	●	—	—	—
Compatible with DV camcorders	●	—	—	—
Video and audio status buttons for buddy availability	●	—	—	—
Ad-hoc, peer-to-peer conferencing	●	—	—	—
Personal buddy icon with video snapshots	●	—	—	—
One-way video with full-duplex audio	●	—	—	—
Bandwidth control	●	—	—	—

Based on vendors' websites and product documentation; compiled June 2003.

### For More Information

For more information about iChat AV, visit [www.apple.com/ichat](http://www.apple.com/ichat). For more information about Mac OS X Panther, visit [www.apple.com/macosx](http://www.apple.com/macosx).

<sup>1</sup>Audio and video conferencing requires a compatible Internet service provider; fees may apply. See iChat AV Requirements for additional requirements. <sup>2</sup>Performance may vary based on processor and Internet connection speed. <sup>3</sup>Wireless Internet access requires AirPort Card or AirPort Extreme Card, AirPort Base Station or AirPort Extreme Base Station, and Internet access (fees may apply). Some ISPs are not currently compatible with AirPort and AirPort Extreme.