



Enhanced CU-SeeMe®



USER GUIDE

Version 2.1 for Windows

Version 2.0 for Macintosh

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Part Number CUSMM



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Welcome

Welcome to Enhanced CU-SeeMe



Enhanced CU-SeeMe® is the White Pine Software solution for inexpensive desktop videoconferencing offering color video, an easy-to-use interface and other exciting features.

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Where to Find Information

You can find information on *Enhanced CU-SeeMe* in this hard copy guide, online manuals, and online help specific to your platform. You can also check the White Pine Software Web pages (<http://www.cu-seeme.com>) for more information on Enhanced CU-SeeMe, including product updates and technical support.

Enhanced CU-SeeMe User Guide

This guide provides an introduction to *videoconferencing* and Enhanced CU-SeeMe, installation instructions, and an overview of some typical tasks you may perform while using Enhanced CU-SeeMe. It also provides troubleshooting information, including frequently asked questions about Enhanced CU-SeeMe.

Windows® and Macintosh® Information



This user guide contains information for using Enhanced CU-SeeMe Version 2.1 with the Microsoft® Windows® operating system and Enhanced CU-SeeMe Version 2.0 on the Mac™ OS operating system. Most of the features of these two versions are the same. Chapter 5 contains information on features that are new for Version 2.1 for Windows.

Some pictures in this guide show Windows dialog boxes and windows. Others show Macintosh dialog boxes and windows. In most cases, Enhanced CU-SeeMe will operate identically on these two platforms. When the two are substantially different, both versions of a dialog box or window appear.

Although Enhanced CU-SeeMe works on Windows Version 3.x, Windows NT, and Windows 95, this user guide shows Windows 95 pictures to represent all versions of the Microsoft Windows operating system.

Conventions

You will find the following conventions throughout this guide:

| This | Represents |
|---|--|
| <i>italic</i> | Words that are defined in the glossary at the back of this user guide. Each glossary term is italicized the first time it appears in this guide. |
|  | Information that relates to the Windows 3.x, Windows NT™, or Windows 95 platforms. |
|  | Information that relates to the Macintosh platform only. |

Online Help

Online Help is an integral part of this product. Help appears in a format native to the platform on which you are running Enhanced CU-SeeMe:



- ◆ Windows - Online help is available in the standard Windows Help format. To access help, choose Contents from the Help menu. Context sensitive help is also available by clicking the Help button in the dialog boxes or selecting an object and then pressing the F1 key.



- ◆ Macintosh - Online help is available in the standard Apple® Guide format. To access help, choose Enhanced CU-SeeMe Help from the Guide menu. Context sensitive help is also available through Help buttons in dialog boxes and through Balloon Help. To access Balloon Help, choose Show Balloons from the Guide menu.

Online Manuals

When you perform a Typical Install (Windows) or an Easy Install (Macintosh), or you select online manuals during a Custom Install, Enhanced CU-SeeMe creates the following folders:

- ◆ Manuals folder containing manuals in the Adobe® Portable Document Format (referred to as pdf files)
- ◆ Adobe Acrobat® folder containing the Acrobat Reader application required to view the online manuals

The following manuals are available online:

- ◆ PPP - The PPP.pdf file contains instructions on how to set up White Pine PPP™ for use with Enhanced CU-SeeMe.
- ◆ WhitePineBoard™ - The WhitePineBoard documentation (WPBoard.pdf) contains detailed instructions on using the WhitePineBoard. For a brief introduction to the WhitePineBoard, see “Using the WhitePineBoard” in Chapter 4.

What You Should Know Before Using Enhanced CU-SeeMe

The freeware version of CU-SeeMe™ from Cornell University has developed a great following of users that are *Internet* savvy. You may be one of those followers, or a user getting acquainted with the world of videoconferencing on the internet.

Either way, this manual will help ensure that you have the correct equipment to install and run Enhanced CU-SeeMe from White Pine Software. Enhanced CU-SeeMe also requires a computer, a camera for full videoconferencing, and in some cases, a modem and a video capture board. This manual does not provide information on how to use this equipment. If you are having any difficulties with this equipment, be sure to refer to the manufacturer's documentation.

Other Sources of Information

For information on Microsoft® Windows™, consult the Windows user guide provided with your version of Windows from Microsoft, Inc. For information on using Macintosh features, see the *Macintosh System Software User's Guide* from Apple Computer, Inc.

Enhanced CU-SeeMe by Robert Rustici is published by MIS:Press, ISBN 1-55828-490-7. This book explains the nuts and bolts and etiquette of running a videoconference with Enhanced CU-SeeMe.

The Internet TV with CU-SeeMe by Michael Sattler is published by SAMS/Macmillan, ISBN 1-57521-006-1. This book provides an in-depth look at the freeware version of CU-SeeMe.

Videoconferencing: The Whole Picture by Toby Trowt-Bayard is published by Flatiron Press, ISBN 0-936648-48-1. This book, a videoconferencing systems and network buyers guide, thoroughly describes all aspects of videoconferencing.

In addition to books and manuals, the World Wide Web (WWW) provides a wealth of information on videoconferencing. Check out some of these Web sites:

- ◆ For the latest news from White Pine Software about Enhanced CU-SeeMe, White Pine Software, and other White Pine products, see:
<http://www.cu-seeme.com>
- ◆ In addition to writing books, Michael Sattler also maintains a list of *reflectors* available for public use:
<http://www.indstate.edu/msattler/sci-tech/comp/CU-SeeMe/index.html>
- ◆ To visit the Cornell University web site, see:
<http://cu-seeme.cornell.edu>

To search the World Wide Web for sites related to video conferencing or CU-SeeMe, use a browser search tool, such as WebCrawler™ at <http://www.webcrawler.com>, or a search tool, such as Yahoo!™ at <http://www.yahoo.com>. When searching, use keywords such as cu-seeme, reflectors, or videoconferencing.



What Is Enhanced CU-SeeMe?



What's In This Chapter

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An Introduction to Videoconferencing and Enhanced CU-SeeMe

It used to be that communicating face-to-face over a telephone or computer was thought of as science fiction. Then, over a decade ago, *videoconferencing* became a reality, but only for large corporations that could afford to spend thousands of dollars on hardware and dedicate an entire room to videoconferencing equipment. Recently, videoconferencing became available on personal computers, but there was still a significant expense involved because of the extra network connections and other hardware required to handle the communications. *Enhanced CU-SeeMe* further simplifies videoconferencing by allowing you to use the *Internet* to connect to the world of videoconferencing using your personal computer.

What is Videoconferencing?

Videoconferencing allows people in different locations to communicate with each other not only by talking, but also by seeing each other.

With its low-cost Internet solution, Enhanced CU-SeeMe brings videoconferencing into the realm of personal use. Just think, instead of calling a friend or relative and imagining what they look like, you can actually see them!

Companies are facing new challenges to stay competitive and respond to customer requirements immediately. To meet these demands, companies are constructing collaborative environments where videoconferencing plays a key role. Teams can work more effectively when they can easily communicate with each other. Using *WhitePineBoard* technology, they even have the ability to share written drawings and ideas across town or across continents, just as if they were sitting at a table together. This kind of communication drastically cuts travel expenses, saving companies millions of dollars, as well as time and energy.

The History Behind CU-SeeMe

CU-SeeMe started in July 1992 as a research project led by Cornell University in partnership with many universities, as well as with non-profit and private organizations. Through the efforts of these groups, Cornell developed CU-SeeMe into a tool that provides videoconferencing using video, audio, and typed text across IP-based *local area networks (LANS)* and *wide area networks (WANS)* as well as over the Internet. As part of ongoing research efforts, Cornell provides freeware versions of CU-SeeMe which can be downloaded from the Internet.

In May 1995, Cornell Research Foundation selected White Pine Software as the master licensee of Cornell's CU-SeeMe desktop videoconferencing technology. Under this exclusive agreement, White Pine Software and Cornell University researchers have joined forces to make this low-cost, commercially enhanced version of CU-SeeMe available to Internet users world wide. Enhanced CU-SeeMe will help to make video communications part of everyday life.

Enhanced CU-SeeMe Features

Enhanced CU-SeeMe offers many features to make videoconferencing easy to use and to help you achieve professional videoconferencing results:

- ◆ Color - Using a high-quality, low *bandwidth* encoding method.
- ◆ WhitePineBoard - For written, as well as graphical collaboration during conferences.
- ◆ Web *Browser* Support - For launching Enhanced CU-SeeMe from any Internet Web page.
- ◆ PhoneBook - To manage your personal collection of conference addresses and for direct-dialing your favorite conferences.
- ◆ *Listener* - To alert you of incoming calls, giving you the option of accepting or rejecting incoming calls.

- ◆ Conference Management - Using the *Participants List* you can manage *Viewers*, whether they are visible, hidden, or *lurkers*. Controls allow you to single out individuals for a conversation, turn group microphone and speakers on and off, and easily identify the current speaker.
- ◆ Video Controls - To easily find out the status of your connection, configure transmission and reception settings, and to set the brightness and contrast for your local video window.
- ◆ Audio Controls - To adjust the volume, turn on and off the speaker and microphone, and to select either voice activated communications or a push-to-talk option.
- ◆ Win32® Native (Windows only) - The 32-bit version of Enhanced CU-SeeMe will take advantage of the full capabilities of Windows 95 and Windows NT®.
- ◆ Optimized for Low Bandwidth Environments - Allows you to videoconference over a low bandwidth connection, such as a 28.8k modem.
- ◆ Fully Compatible with Cornell's Freeware Version of CU-SeeMe - You can videoconference with thousands of existing CU-SeeMe users.
- ◆ Text-Based Chat Facility - For exchanging typed messages with other users.
- ◆ Easy-to-Use Preference Settings - To easily change your personal preferences for video, audio, and more.
- ◆ Easy-to-Use Online Help and Context-Sensitive Help - To provide helpful information on using Enhanced CU-SeeMe.

Understanding Data Transmission

Tip:

k and kbps means 1024 bits per second. For example, if you have a 28.8k modem, and you are using a 16k audio codec, you will have 12.8k of bandwidth left for video transmission.

When videoconferencing with Enhanced CU-SeeMe, several types of information will be transmitted across your LAN, WAN, telephone lines, or Internet connection. This information includes video, audio, and text/graphic data. To use Enhanced CU-SeeMe most efficiently, it may help to understand more about this data and how it is transmitted over these lines.

Data Compression

In uncompressed form, video and audio stored on a computer require large amounts of memory. Transmitting uncompressed video and/or audio information is impractical given the capabilities of today's LANs, WANs, phone lines, and Internet. The size of audio and video data in uncompressed form would be too large to feasibly transmit through a phone line or an Ethernet line.

To reduce the size of the information, data is compressed using a *codec* (Compressor/DECompressor). Expensive desktop videoconferencing systems use hardware codecs. Enhanced CU-SeeMe uses software codecs for video and audio.

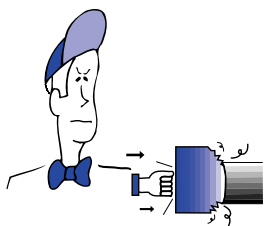
Enhanced CU-SeeMe's default video and audio codecs provide for acceptable transmission over a 28.8k modem. If your environment provides for higher transmission rates than 28.8k, you may want to change the default settings. For more information on changing codecs, see "Managing Your Connection" in Chapter 3.

Videoconference Data Types

Using Enhanced CU-SeeMe, you can conference using any combination of video, audio, text, and graphics. Video, audio, and graphics generate more data than text. The amount of data you are sending must not be greater than the bandwidth available on your network connection. For example, a LAN environment in an office will be able to support multiple video windows and audio, while a remote connection at home over a 28.8k modem may only be able to support one video window with audio.

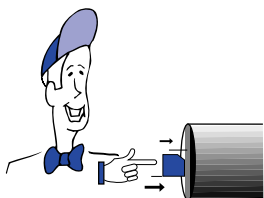
Communication Channels

It is helpful to understand how data is transmitted between conference participants. The size of the data varies depending on the data type (such as video, audio, text, or graphics). The speed at which that data is sent depends on the communication channel selected. Some examples of communication channels include a modem, *ISDN*, or Ethernet connection.



If you think of a communication channel as a pipe carrying data between locations, a modem would be the smallest pipe, ISDN the next larger size, and Ethernet would be an even larger pipe. A larger pipe will carry larger amounts of data.

Enhanced CU-SeeMe provides videoconferencing over a 28.8k modem as a minimum configuration (and audio-only conferencing over a 14.4k modem). You can achieve better results using a communication channel that provides more bandwidth.



A larger pipe will carry larger amounts of data.

You can configure Enhanced CU-SeeMe for your network environment. For example, Enhanced CU-SeeMe offers the ability to freeze video. If you have a communication channel that doesn't allow for video and audio communications, you can freeze the video and only communicate with audio or text.

The number of windows you have open for a particular conference also affects the bandwidth because as you open more windows, more data needs to be communicated. If you are making a connection to only one person (a *point-to-point* connection), there won't be much data to transfer between the two locations. Participating in a group conference requires more bandwidth, since Enhanced CU-SeeMe lets you open as many as eight windows at a time.

Basically, the more bandwidth you have, the more video, audio, text, and graphics you'll receive. "Managing Your Connection" in Chapter 3 describes the various ways you can adjust Enhanced CU-SeeMe to get the most out of your available bandwidth.

Understanding Enhanced CU-SeeMe Conference Types

Using Enhanced CU-SeeMe, you can participate in any of several types of conferences: person-to-person, group, or one way conferencing. These terms are introduced in the descriptions of the conference types that follow.

This section also introduces the concept of a *reflector*. A reflector is a UNIX® or Windows-based application which allows Enhanced CU-SeeMe users to have group conferences, or to *broadcast* events, much like TV stations do. The reflector accepts multiple CU-SeeMe connections and reflects the video, audio, text, and graphics to all other participants connected to the reflector.

Point-to-Point Conference

Point-to-point (or person-to-person) is the simplest form of videoconferencing, where one person conferences directly with another person. The two computers, both running Enhanced CU-SeeMe, can be connected over a modem, a private network, or the Internet. This is illustrated in Figure 1-1.

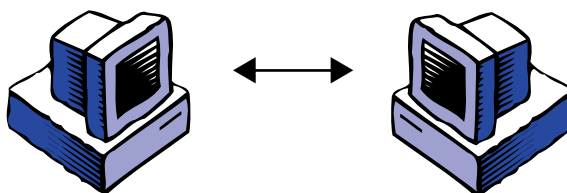


Figure 1-1. Example of a Point-to-Point Conference

As an example, suppose you want to videoconference directly with a friend. You would need to know that friend's *IP address*. You can then use Enhanced CU-SeeMe to call that IP address and conference with your friend, much like you would dial your friend's phone number if you wanted to connect for a telephone call.

Group Conference

Group conferencing (or many-to-many) provides a collaborative environment where co-workers, students, or whole families can participate in a conference. This is illustrated in Figure 1-2. To participate in a group conference, you must connect to a computer running reflector software. Any video, audio, text, or graphics that you transmit is received by the reflector, then transmitted to all others connected to the reflector or conference. The reflector has an IP address or host name that you enter to connect to it. Reflectors may require a unique conference id and/or password to join the conference.

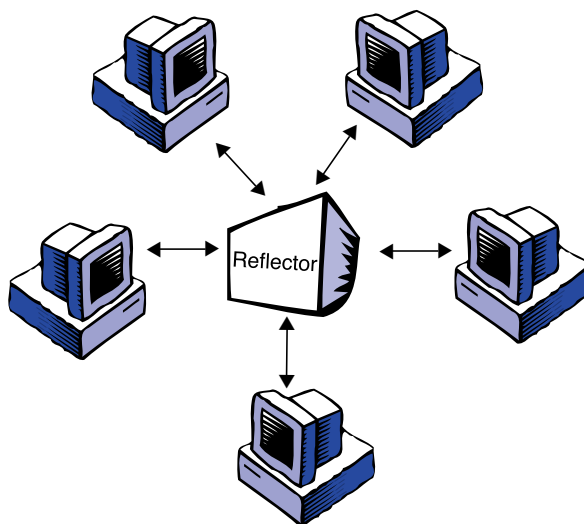


Figure 1-2. Example of a Group Conference

One-Way Conference

One-way (or broadcast) conferencing is similar to television broadcasting. This is illustrated in Figure 1-3. One computer, running reflector software, transmits audio and video to connected users. Other users can not transmit video, audio, text, or graphics; they can only receive broadcast data. Some examples of one-way conferencing are Internet radio stations that broadcast audio, NASA-TV that broadcasts video and audio about space shuttle missions, and trade shows that broadcast video and audio of keynote speakers.

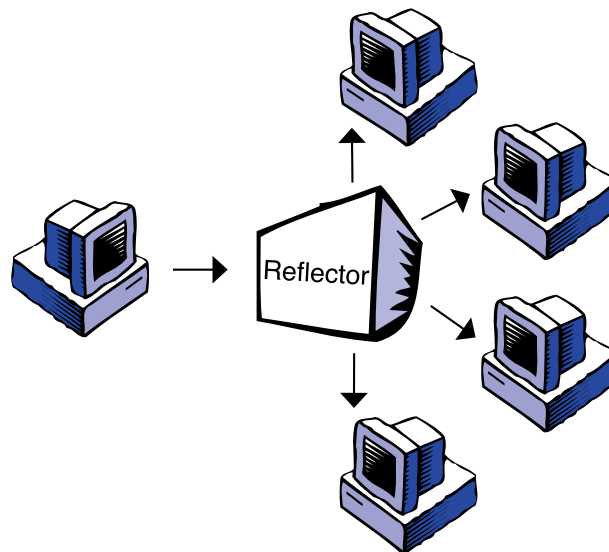


Figure 1-3. Example of a One-Way Conference

Becoming a Good Network Citizen



While using this manual or the online help, you will find sections that discuss network etiquette, or *netiquette*. Pay close attention to this information. These areas may give you hints on how to reduce bandwidth use, therefore getting better performance for yourself and other network users. If, however, you choose not to follow these hints, you may annoy other participants and you may not be allowed to connect to certain reflectors!

One of the easiest ways to become a good network citizen is to disconnect yourself from a reflector while you are out of your office for an extended period of time or when you are not using it. Other good network behaviors are discussed in the following sections.

Setting Transmission Rates

Transmission rates are set in the Preferences dialog box (see “Setting Transmission and Reception Rates” in Chapter 3). The default maximum transmission rate is 80 *kbps*; however, if you are transmitting with a 28.8k modem, you will be limited to a transmission rate of 28 *kbps*.

You may be tempted to increase your transmission rate for better performance, especially when bandwidth isn’t a problem. White Pine Software recommends only doing so for point-to-point connections. If you increase your transmission rate for reflector sessions (one-way or group conferencing), you will be using more than your share of reflector resources, slowing down reflector response time. To prevent this, some reflectors won’t allow you to connect if you are transmitting at more than 80 *kbps*.

Sending Empty Video

Broadcasting the contents of an empty office or work area is not good network behavior since some reflectors have limits on the number of connected users. By sending video of your empty office, you may be preventing others from using the reflector.

Leaving Enhanced CU-SeeMe Running

Tip:

Choose Hide All from the Windows menu to close all video windows

Leaving your computer with live video windows running consumes network bandwidth. To be a good network citizen, you should close all visible windows when you are not using Enhanced CU-SeeMe for an extended period of time.

Where Can You Connect?

Note:

These IP address numbers were current when this guide was published. Some of this information may change over time.

An Internet community of CU-SeeMe users has evolved, growing with each new release of CU-SeeMe freeware from Cornell University and Enhanced CU-SeeMe from White Pine Software. People have found exciting uses for CU-SeeMe including broadcasting the Global School Network, NASA-TV, and various concerts. Some places you may want to connect to are:

- ◆ White Pine Software - 199.94.217.135
- ◆ Cornell University - 132.236.91.204
- ◆ Utopia - 137.130.65.31
- ◆ InterNet Cafe/Nantucket - 204.249.164.2
- ◆ EDEN - 199.171.21.1
- ◆ NASA TV - 139.88.27.43

Periodically, White Pine Software sponsors events for organizations interested in videoconferencing. For example, White Pine has sponsored an ABC World News/Global School House event. ABC World News Now is the first regularly scheduled newscast on the Internet. From 2:00 AM to 4:00 AM Eastern Standard Time, you can view the overnight news program by connecting to the following IP addresses: 192.215.2.250 for the U.S. Reflector, and 158.36.33.3 in Europe. This is an ongoing project so you should refer to the ABC World News Now web pages at <http://www.gsn.org/gsn/event.abcwnn.html> for the latest information. You can also check the White Pine Software web pages at <http://www.cu-seeme.com> for other events.

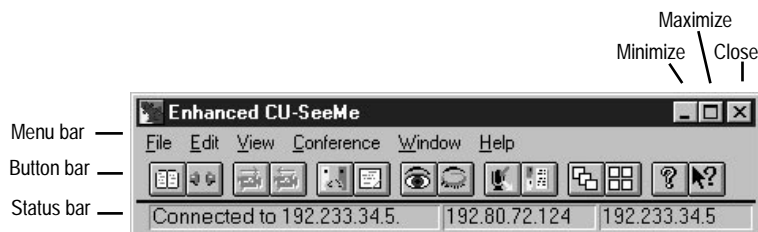
Using Enhanced CU-SeeMe Windows

When you start Enhanced CU-SeeMe, several windows appear on your desktop. This section explains the components of each of these windows, briefly describing their options. You may want to have the application running while reading this section to see how these windows work.

There are many icon buttons on the Enhanced CU-SeeMe windows, each one with a specific function. A summary of the icons that appear in these windows and their uses is provided in “Summary of Enhanced CU-SeeMe Icons” on page 1-24.

Main Application Window (Windows only)

In Windows, the main application window, illustrated in Figure 1-4, appears when you start Enhanced CU-SeeMe.



Tip:

In Windows, pressing the Home key brings the main application window to the front.

Figure 1-4: Windows Main Application Window

The main application window has a menu bar, a button bar, and a status bar. By choosing commands from the menu bar or from the button bar, you can access the many features of Enhanced CU-SeeMe.

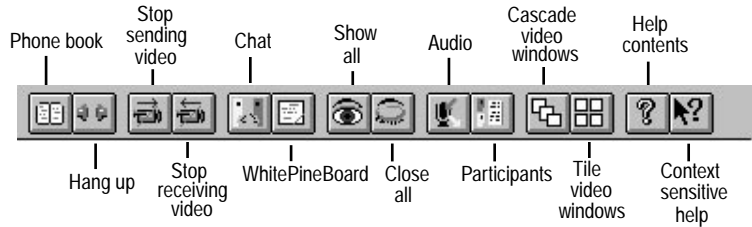


Figure 1-5. Main Application Window Button Bar



Figure 1-6. Main Application Window Status Bar

Menu Bar (Macintosh only)



On the Macintosh, the menu bar, shown in Figure 1-7, appears when you start Enhanced CU-SeeMe.



Figure 1-7. Macintosh Menu Bar

By choosing commands from the menu bar, you can access the many features of Enhanced CU-SeeMe.

Local Video Window

The local video window, shown in Figure 1-8, appears after you start Enhanced CU-SeeMe. If your camera is properly connected, your picture will appear in the window along with a button bar and status bars. If you do not have a camera, or if your camera is not working, only the button bar and status bars appear.

Tip:

If you click the right mouse button on the video window, you will see a pop-up window listing menu options.

(Windows only)

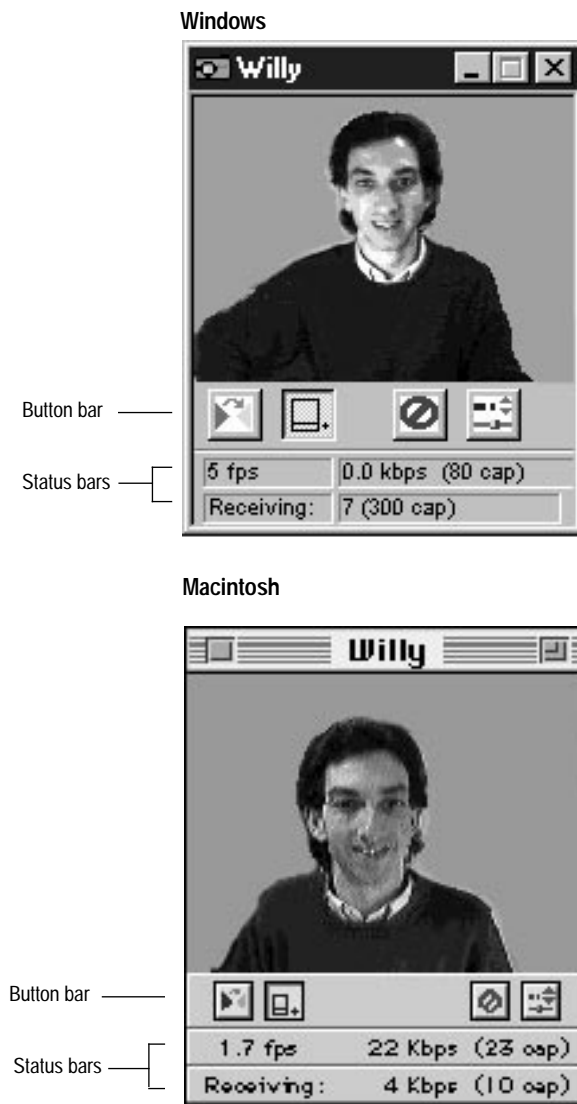


Figure 1-8. Local Video Window

Tip:

If you click and hold the Preferences button in the local video button bar, you will get a pop-up menu showing available Preference sections. (Macintosh only)

The local video button bar is shown in detail in Figure 1-9 and the local video status bars are shown in Figure 1-10.



Figure 1-9: Local Video Button Bar

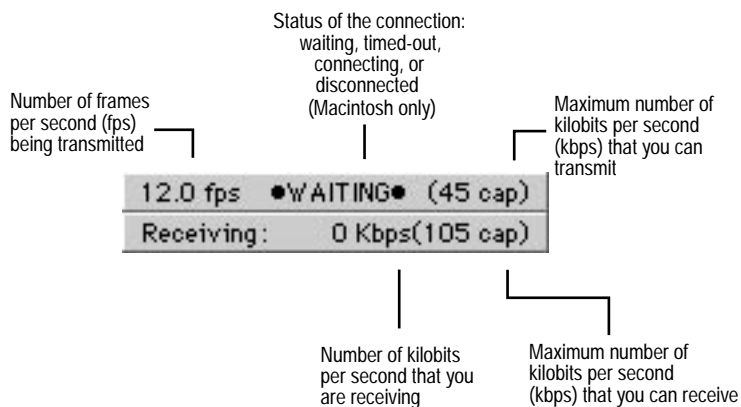


Figure 1-10: Local Video Status Bars

Remote Video Window

Each *remote video window* contains a button bar, a status bar showing the status of the connection, and video images being sent by another participant in the conference. Figure 1-11 shows the components of a remote video window.

Tip:

If you click the right mouse button the video window, you will see a pop-up window listing new options.
(Windows only)

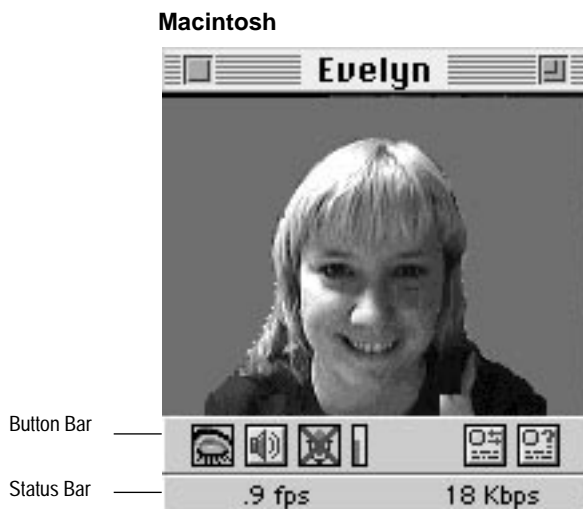
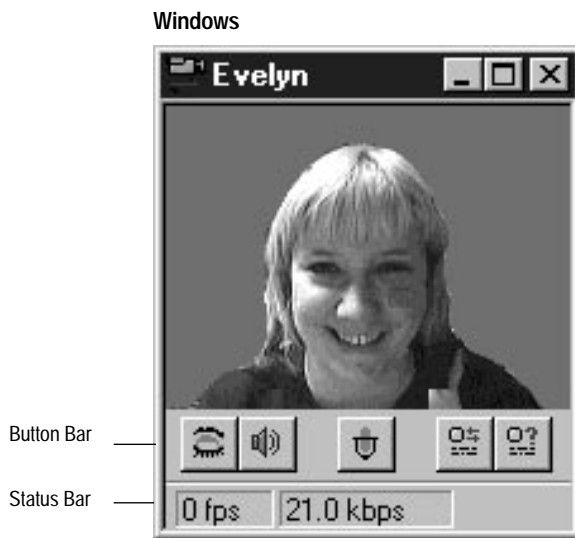


Figure 1-11. Remote Video Window

The remote video button bar is shown in detail in Figure 1-12, and the remote video status line is shown in Figure 1-13 below.

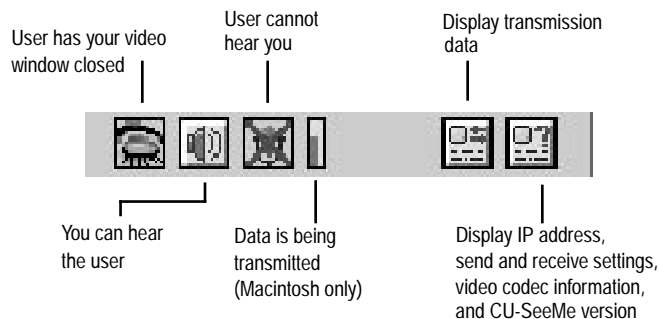


Figure 1-12: Remote Video Button Bar

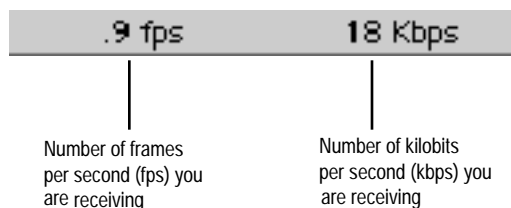


Figure 1-13: Remote Video Status Bar

Audio Window

You can transmit audio in your choice of two modes:

- ◆ Push To Talk mode - You only transmit audio when a button is pressed.
- ◆ Hands Free mode - You transmit audio continuously. Everything you say is transmitted.

If your PC sound card supports full-duplex audio, you can use Hands Free mode, which lets you talk while listening (similar to a telephone). If your audio sound card supports half-duplex audio, you can still use Hands Free mode, but you cannot talk and listen at the same time (that is, you can only receive audio when you are not talking). Macintoshes all come with built-in full-duplex audio. For Windows computers, it will depend on the features of your sound card.

The *audio window*, shown in Figure 1-14, allows you to control the sound coming in and going out of your computer. You can open the audio window by selecting Audio from the Window menu (or main window toolbar in Windows). Using the audio window, you can:

- ◆ Turn your speakers and microphone on and off
- ◆ Select between Push To Talk mode and Hands Free mode
- ◆ Filter incoming noise when receiving audio and background noise when transmitting audio

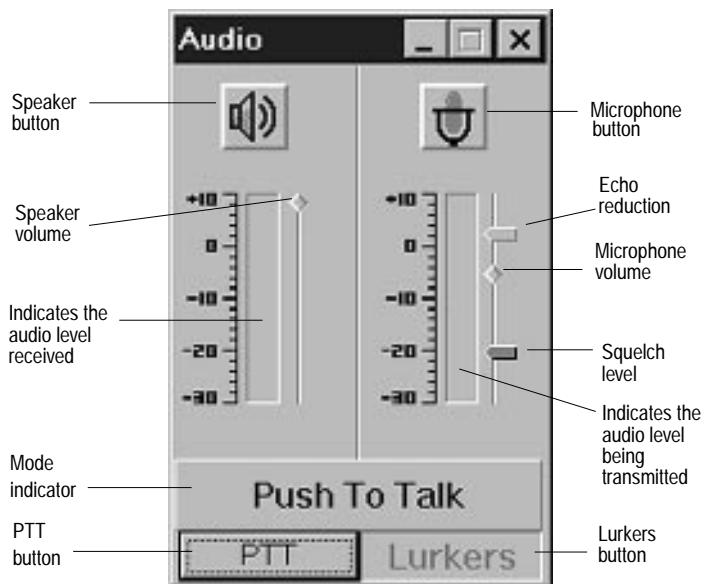


Figure 1-14: Audio Window

The components of the Audio Window are described as follows:

Tip:

You can also use the microphone and speaker icons in the Participants List and the Remote Video Windows to turn on/off audio send and receive.

- ◆ Speaker button - Click this button to turn your speakers on or off.
- ◆ Microphone button - Click this button to turn your microphone on or off.
- ◆ Speaker volume - Slide this control up or down to adjust the volume of your speaker.
- ◆ Microphone volume - Slide this control up or down to adjust the volume of your microphone.
- ◆ Echo Reduction - Slide this control up or down to adjust the maximum sound level that can be transmitted. Echo reduction is used to eliminate feedback, which can occur if your microphone is placed near your speakers. The echo reduction slider is only shown when you are in Hands Free mode.

- ◆ Squelch level - Slide this control up or down to adjust the squelch level. This control sets the minimum level for any sound; that is, any sound below this minimum volume level will not be transmitted. This can be useful when there is background noise in your environment. You can adjust the squelch level so that the background noise is not transmitted. The squelch level slider is only shown when you are in Hands Free mode.
- ◆ Mode indicator - When you are in Push To Talk mode, the indicator reads “Push To Talk.” In this mode, when you want to talk, you must click and hold on the mode indicator. It then reads “Transmitting.” If you are in Hands Free mode, the mode indicator reads “Hands Free.” In this mode, you can talk freely, without clicking on any buttons or indicator, similar to using a speakerphone.
- ◆ PTT button - Click this button to switch between Push To Talk mode and Hands Free mode.
- ◆ Lurkers button - Click this button to turn on or off your ability to hear lurkers.
- ◆ Audio level indicators - If the audio indicator bars turn yellow, this means that your computer is having trouble compressing your audio signal. The result is that your audio signal is not being sent. Wait briefly, and then try again. If you continue to see the yellow bars, you should select a different audio codec. See “Selecting Audio Compression” Chapter 3 for information on selecting audio codecs.

Participant List Window

The *Participant List* window, shown in Figure 1-15, lists the participants in a conference. Participants may be visible, hidden, or lurkers. You can open the participant list window by selecting Participants from the Window menu (or main window toolbar in Windows). Using the participant list window, you can select which users you will speak to and view.

You can also view a list of participants from the Window menu (Macintosh only). This may be helpful if you don’t have room for the participant list on your desktop.

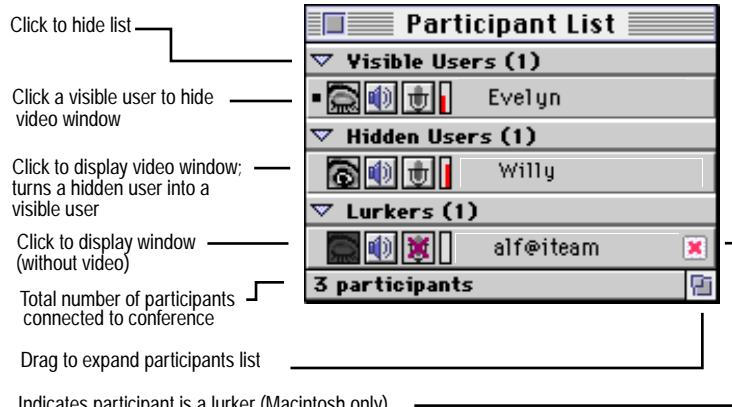
Tips:

To hear only one participant, hold down the option key and click that participant's speaker icon. To restore all speakers, hold down the option key and click again. (Macintosh only)

Click and hold a participant's microphone icon to send your audio to that participant only.

Hold down the command key and click a participant's speaker icon to turn off audio for everyone but that participant. (Macintosh only)

NOTE: In low bandwidth environments, you may wish to view only a small number of selected users so as to conserve bandwidth.



Note: On the Macintosh, a dark gray block indicates the person is talking. Medium gray block indicates that this was the last person to speak. In Windows, this is indicated by a green outline.

Figure 1-15: Participant List Window



In Windows, you can get information about each user (visible users, hidden users, and lurkers) in the Participant List window by following these steps:

1. Click the right mouse button on the name of a participant. The Show Info button is now displayed.
2. Click the left mouse button on the Show Info Button. A pop-up window now displays the IP address of the user, their transmission setting, and the version of CU-SeeMe they are using.

You can also display the information window this way:

1. Click and hold the right mouse button on the name of a participant. The show Info button is now displayed.
2. Drag the mouse pointer over the Show Info button and then release the right mouse button.

On the Macintosh, names that appear in red in the Participant List indicate users who are sending video using the WhitePine Color codec.



Summary of Enhanced CU-SeeMe Icons

There are many icons that appear in the Enhanced CU-SeeMe user interface. To use the product most effectively, you should become familiar with these icons and their use. Table 1-1 contains a list of icons in the local video window.

Table 1-1 . Local Video Window Icons





| Icon | Meaning |
|---|---|
|  | Flips the video image, for local viewing only. (Windows only) |
|  | Hides/shows status line. |
|  | Freezes video transmission. Click again to start video movement. |
|  | Displays the Preferences dialog box. |

Table 1-2 contains a list of icons used to indicate audio transmissions.

Table 1-2 . Audio Icons









| Icon | Meaning |
|---|--|
|  | You accept audio from a user. Click this icon button to turn audio off. (Macintosh only - Option click to turn off audio for all users except this one.) |
|  | When the speaker icon button is pushed in and contains a \ (slash), it means either of the following: You have turned off all audio reception and you will not receive audio from any users. Click on this icon in the audio window to turn all audio on. - or - You have turned off audio from a selected user. |
| No Speaker Icon | When the speaker icon is absent, it means either of the following: You are not able to receive audio (for example, you do not have speakers connected to your computer). - or - A user is not able to send audio to you (for example, that user does not have a microphone connected to their computer). Note that on a Windows-based computer, the speaker icon is always present. In cases where you are not able to receive audio, or the user is not able to send audio, you will see a speaker with a slash:  |
|  | User will hear you when you speak. |

Table 1-2 . Audio Icons

| Icon | Meaning |
|---|--|
|  | When the microphone icon button is pushed in, it means that you are speaking to a user in a private conversation. |
|  | When the microphone icon button contains a small x , it means that a user has turned off their ability to hear you when you speak. |
|  | <p>When the microphone icon button is pushed in and contains a large x, it means either of the following:</p> <p>A user has turned off all audio reception and has chosen not to hear anyone speak.</p> <p>- or -</p> <p>A user is not able to receive audio (for example, that user does not have speakers connected to their computer).</p> |
|  | <p>When the microphone icon button is pushed in and contains a \ (slash), it means either of the following:</p> <p>A user can't hear you because you have singled out another user for a private conversation.</p> <p>- or -</p> <p>You have chosen not to send audio (that is, you have turned off your microphone).</p> |










You can click on the speaker icon or microphone icon in the audio window to turn off these functions for all windows. You can turn off audio reception from an individual user by clicking the speaker icon on their remote video button bar or next to their name on the participant list. That user will see a **x** on the microphone icon on your video window (which will appear as a remote video window on their computer screen) indicating that you won't hear them when they speak.

To establish a private conversation with a user, click that user's microphone icon on their remote video button bar or next to their name on the participant list. The microphone icons next to all the other names on the participant list (and on all the other remote video windows) will show a \ (slash) indicating that those users won't hear you talk. Click the microphone icon again to return to general conference conversation. On a Macintosh, you can also click and hold the microphone icon to engage a user in a private conversation. This will continue until you release the microphone icon.

A green \ (slash) on an icon indicates that you have initiated a change (for example, you have turned off your microphone) and you have the ability to change that state. A red X on an icon indicates that another user has initiated a change (for example, a user has stopped receiving audio from you) and only the other user has the ability to change that state.

Table 1-3 contains a list of general status indicator icons.

Table 1-3 . General Status Indicator Icons

| Icon | Meaning |
|---|---|
|  | A black box means that this user is the current speaker. A gray box means that this user was the last person to speak. (Macintosh only) |
|  | A white box means that this user has spoken during the past 10 minutes. (Macintosh only) |
|  | An open eye means that a user has your video window open on their desktop |
|  | A closed eye means that your video window is not open on a user's desktop. |
|  | A shaded closed eye means that a user has video but is not currently sending it. (Macintosh only) |
|  | User is a lurker. (Macintosh only) |
|  | Displays transmission statistics. |
|  | Displays the IP address of the user, their transmission settings, the codec they are using, and the version of CU-SeeMe they are using. |
|  | Data is being transmitted. The left side shows data being received, while the right side shows data being sent. (Macintosh only) |

Keyboard Shortcuts

You can use keyboard shortcuts for some of the menu options in Enhanced CU-SeeMe. Table 1-4 contains the keyboard shortcuts for commands, listed by menu.

Table 1-4 . Keyboard Shortcuts

| To Choose | Press | |
|------------------------|-------------|---------------|
| | For Windows | For Macintosh |
| File menu | | |
| Exit | Ctrl+Q | Command+Q |
| Conference menu | | |
| Phone Book | Ctrl+B | Command+B |
| Hang Up | Ctrl+K | Command+K |
| Window menu | | |
| Show All | Ctrl+H | Command+H |
| Local Video | Ctrl+L | Command+L |
| Tile Video Windows | Ctrl+T | Command +L |



Before You Start



What's In This Chapter

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| What is a Typical Enhanced CU-SeeMe Connection? | 2-5 |
| What Do You Need? | 2-8 |
| Installing Enhanced CU-SeeMe from Disk or CD | 2-11 |
| Setting Up Your Windows-Based Computer | 2-12 |
| Setting Up Your Macintosh | 2-14 |

Understanding Networks

A network is a group of computers that communicate with each other. There are three basic types of networks: local area networks (LANs), wide area networks (WANs), and the Internet. It is important to understand the concept of networking before using Enhanced CU-SeeMe, which provides videoconferencing over networks.

Local Area Networks

A local area network (LAN) is made up of two or more computers connected together, typically located in the same building. These connections are made with serial lines or Ethernet cables, as shown in Figure 2-1. Most companies have LANs that share files or send e-mail between computers.

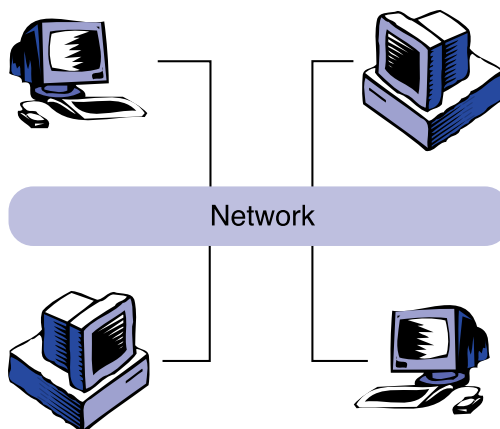


Figure 2-1. Example of a Local Area Network

Wide Area Networks

A wide area network (WAN) is similar to a LAN in that two or more computers are connected together, but they can be located at different geographical locations. WANs are separate LANs connected together. Computers in each site are connected together in a LAN, then the LANs are connected through telephone lines or other means, as shown in Figure 2-2. A company with offices in two different parts of the country would set up a WAN for the two offices to exchange data or to videoconference.

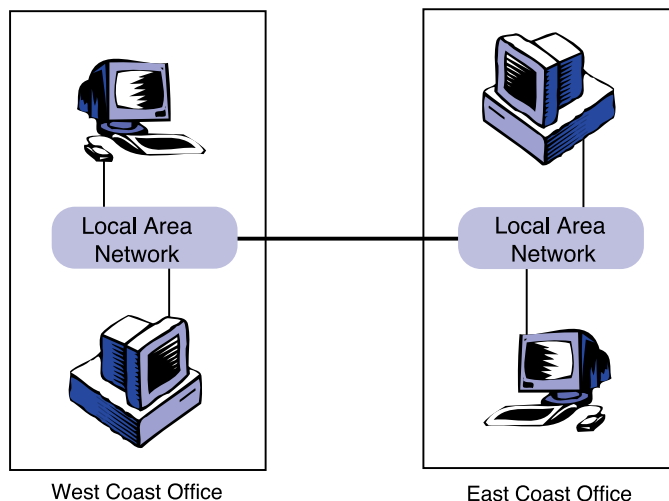


Figure 2-2. Example of a Wide Area Network

Internet

The Internet is a mass of smaller networks connected together, or Internetworked. The Internet is really just a logical connection between thousands of LANs and WANs. It's a lot like the telephone system, which joins individuals and companies. The actual Internet is made up of software to make computers talk together, computers that store the information, people who provide the information, and the connections that join the various networks.

The Internet allows you to access more information than ever before. Using the Internet, you can electronically send messages to people all over the world using e-mail, videoconference, access databases worldwide, and browse the World Wide Web. To do this, computers must communicate with each other using the same language, or *protocol*. The Internet uses the TCP/IP protocol for connection and communication of computer systems worldwide.

There are many ways networked computers connect to each other. Some computers are connected with actual cables, for example phone lines, ISDN, or high bandwidth T1 lines, while others are connected through a combination of cables and satellite links. There are companies that provide these connections for a fee, called *Internet Service Providers* (ISP). Figure 2-3 shows an example of Internet connections.

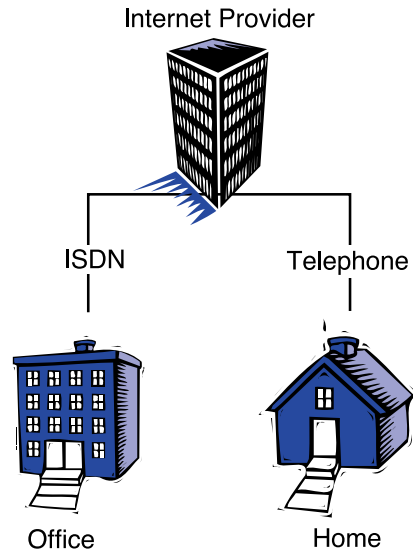


Figure 2-3. Example of Internet Connections

What is a Typical Enhanced CU-SeeMe Connection?

Since Enhanced CU-SeeMe provides videoconferencing over the Internet, your computer can connect to other computers all over the world, or to other computers in a LAN or WAN environment. Depending on your setup, you may connect to a network over a modem (used in most home environments) or through an Ethernet or ISDN connection (used in most business environments).

Your computer must be able to communicate using the TCP/IP protocol. The software (or driver) required depends on your connection:

- ◆ For modem connections, you need a serial IP driver such as *SLIP* (Serial Line Internet *Protocol*) or *PPP* (Point-to-Point Protocol).
- ◆ For Ethernet or ISDN connections, a *TCP/IP* driver is required.

See the following section, “What Do You Need?” for a complete list of drivers that work with your computer.

Home/Modem Connections

When using Enhanced CU-SeeMe from your home computer, you are probably connected to an Internet provider through a modem. Your provider usually supplies you an IP address dynamically. Dynamic addressing means that you set up your TCP/IP software to obtain the address from the provider at the time of the connection.

You can also find your local internet service provider listed in the Internet Service Providers Directory on the World Wide Web at: <http://www.commerce.net/directories/products/isp>.

You can also use Enhanced CU-SeeMe on Windows 95 with Internet connections provided by some online services such as America Online®, Microsoft Network, and AT&T Worldnet (sm). Using Enhanced CU-SeeMe, you can connect to a videoconference or broadcast on a reflector, and even do point-to-point connections, just as if you were connected to the Internet through an Internet service provider. However, you should note that online service typically assign IP addresses dynamically. This means you may have a different IP address each time you connect to your online service.

Your IP address appears in the Enhanced CU-SeeMe main application window status bar. To find the IP address of another person using Enhanced CU-SeeMe, click on the right-most button of that user's remote video window. This displays data about that user's connection, including their IP address.

If you want to make a point-to-point connection, you can call another person's IP address directly. If another user wants to initiate a point-to-point connection with you, that user can connect to your IP address. However, your IP address may be different the next time you connect to your online service. If you plan to make a point-to-point connection with another user of Enhanced CU-SeeMe, you may wish to contact that other person ahead of time via e-mail and set up a time when you will both connect to the Internet and can determine your IP addresses at that time.

Enhanced CU-SeeMe may not work with America Online accounts, since America Online uses different connection methods depending on your location. To try using Enhanced CU-SeeMe with America Online, you will need to download AOL Winsock, a Windows add-on application which allows you to run Internet applications such as Enhanced CU-SeeMe. When you are connected to America Online, enter the Member Services area, and search for WINSOCK to find information explaining what Winsock is and how to download it. Also, note that currently you must install the 16-bit version of Enhanced CU-SeeMe if you plan to use it with America online. Future releases of America Online should support the 32-bit version of Enhanced CU-SeeMe.

To use Enhanced CU-SeeMe with Microsoft Network:

1. Start Microsoft Network.
2. Quit Microsoft Network.
3. Select Stay Connected when you are presented with options to Stay Connected or Disconnect.
4. Launch the Enhanced CU-SeeMe application.

WAN/LAN Connections

Most office networks have computers connected to a LAN/WAN which are then connected to the Internet through an ISDN or T1 connection via an Internet service provider. If you are making a connection over a company network, most likely it will be over an Ethernet cable.

What Do You Need?

There are many ways to use Enhanced CU-SeeMe, depending on the hardware and software you have. If you want to transmit video from your computer you will need to have a video digitizer card (sometimes referred to as a video capture board), or use a video camera that does not require a digitizer, such as the Connectix QuickCam. You can receive video from other users even if you don't have a video camera or a video digitizer card, however other users will not be able to see you.

If you are using a Macintosh, you already have sound capabilities built-in to your computer. If you are using Windows, you will need to have an audio card installed in your computer in order to send and receive audio.

White Pine maintains a list of recommended video digitizer cards, audio, cards, and cameras that work with Enhanced CU-SeeMe. This list is published online in our Frequently Asked Questions (commonly referred to as FAQs) on the World Wide Web. To reach the White Pine FAQ Web page, use the following URL:

<http://www.cu-seeme.com>

Table 2-1 contains a comprehensive checklist of the minimum components you'll need based on the environment in which you'll be using Enhanced CU-SeeMe. Use the bold headings to locate your requirements, then make sure you have each item listed below.

Table 2-1 . Checklist for Minimum System Requirements

| Make sure you have | ✓ |
|--|---|
| Network Identity | |
| IP Address You can have your own IP address or be assigned one dynamically through an Internet provider | |
| PC Requirements[†] | |
| 486 processor with 66 MHz clock or better | |
| 10 MB of hard disk space | |
| 8 MB RAM minimum | |
| Windows 3.1, 3.11, Windows NT, or Windows 95 | |
| TCP/IP (WinSock Compliant) Windows 3.1, 3.11 Windows 95 - built in | |
| Macintosh Requirements[†] | |
| 68020 processor with 25 MHz clock or better | |
| 10 MB of hard disk space | |
| 5 MB RAM minimum | |
| System 7.0 or greater | |
| TCP/IP MacTCP - included in kit Open Transport - available from Apple and built in System 7.5.2 | |

Table 2-1 . Checklist for Minimum System Requirements

| Make sure you have | ✓ |
|---|---|
| Remote Connections | |
| 14.4 Modem (for audio only) 28.8 Modem (for video and audio) | |
| PPP (included in kit) | |
| Direct Connections | |
| Ethernet or ISDN | |
| To Send Video | |
| Digital Camera | |
| Video Digitizer [#] | |
| To Send Audio | |
| Microphone [@] | |
| Sound Board and drivers (Windows only) | |
| To Receive Audio | |
| Sound Board and drivers (Windows only) | |
| Speakers or headset [@] | |

Notes:

- [#] Not required for Macintosh AV models or Connectix QuickCam cameras.
- [@] Built-in on some Macintosh models (check for the Sound In and Sound Out options in the Sound Control Panel).
- [†] Your computer's processing power greatly affects the speed at which Enhanced CU-SeeMe will run. For example, a Pentium™ processor or a Power Mac™ will run much faster and you'll have better results than a 486 processor or a 68040 Macintosh.

Installing Enhanced CU-SeeMe from Disk or CD



White Pine has made installing Enhanced CU-SeeMe as easy as clicking a button. Select the system on which you'll be installing Enhanced CU-SeeMe, then complete the instructions. Make sure you have your serial number; it is printed on your registration card. You'll need to enter the serial number during the installation process.

To install Enhanced CU-SeeMe on Windows:

From CD:

See the installation instructions included with your CD.

From Disk:

1. Insert the installer disk (disk 1) into the floppy disk drive.
2. **For Windows 95:** Click on Start, point to Run, then click.
For Windows 3.1, NT, and Windows for Workgroups: Choose Run from the File menu in the Program Manager. The Run dialog box appears.
3. Type the drive letter of your floppy disk drive followed by : \SETUP. For example: A : \SETUP
4. Click on OK and follow the instructions on your screen.

To install Enhanced CU-SeeMe on Macintosh:



From CD:

See the installation instructions included with your CD.

From Disk:

1. Insert the CD or installer disk (disk 1) into the drive.
2. Double-click on the disk icon.
3. Double-click on the Enhanced CU-SeeMe Installer icon.
4. Follow the instructions on your screen.

Setting Up Your Windows-Based Computer



Before running Enhanced CU-SeeMe, you need to be sure your computer is properly set up. Enhanced CU-SeeMe will let you know if there are problems with your camera or video capture board, but will not provide a specific diagnosis for any problem which may occur. Please make sure you check the following areas to ensure a successful first attempt at videoconferencing.

Setting Up PPP

PPP is a protocol that allows your computer to make a TCP/IP connection using a telephone line and a modem. For remote connections over modems, you need to have PPP installed and running on your computer prior to starting Enhanced CU-SeeMe. White Pine Software provides the White Pine PPP driver when you install Enhanced CU-SeeMe. If you didn't install White Pine PPP, install it from the Enhanced CU-SeeMe disks or CD.

Sending Audio

If you plan to send and receive audio, you must have a sound card and sound driver software installed and properly configured. To receive audio you need to have speakers or a headset connected to the sound output jack. To send audio you need to have a microphone connected to the sound input jack. Prior to using Enhanced CU-SeeMe, you may want to test your system's audio capabilities. Most sound card manufacturers provide playback files for this purpose. Refer to the sound card documentation for information on testing.

Sending Video

If you plan to send video, you must have a camera and camera software installed and properly configured. Some cameras may require a video capture board and video driver software. Some cameras, such as the Connectix QuickCam, do not require a separate video board. Prior to using Enhanced CU-SeeMe, you may want to test your camera and video capture board. Most video capture board manufacturers provide test programs, such as VIDCAP or VIDGRAB. Run this software to make sure your camera and capture board have been installed correctly. Refer to the video board/driver documentation for information on testing.

Specifying a Host Name for Your Computer

Every computer on an IP-based LAN, WAN, or the Internet is assigned an IP address with a corresponding host name. You can create a HOSTS file or edit the HOSTS file on your computer and add the IP address of your connection and a name (any name will do). For example:

```
200.20.20.20 Willy
```

If you are using a dial-up connection, the IP number may change for each connection and is usually provided when you first connect. You may have to change the HOSTS file for your IP stack each time prior to using Enhanced CU-SeeMe.

Setting Up Your Macintosh



Before using Enhanced CU-SeeMe, you may have to make some changes to your Macintosh system setup.

Make sure that the Monitors Control Panel is set to greater than or equal to 16 colors or 16 gray scales. Under the Apple menu, choose Control Panel and Monitors to change color settings.

Setting Up PPP

PPP is a protocol that allows your computer to make a TCP/IP connection using a telephone line and a modem. For remote connections over modems, you need to have PPP installed and running on your computer prior to starting Enhanced CU-SeeMe. White Pine Software provides the White Pine PPP driver when you install Enhanced CU-SeeMe. If you didn't install White Pine PPP, install it from the Enhanced CU-SeeMe disks or CD.

Sending Audio

If you plan to send audio, you need a microphone and Sound Manager. Some systems have microphones built-in or come with one that you plug in separately. All supported Macintosh computers have built-in speakers. Some systems already have Sound Manager installed. If not, you can install this as part of Enhanced CU-SeeMe Custom Install, an option you can select when you install the Enhanced CU-SeeMe software.

Sending Video

If you plan to send video, you must have a camera, camera software, and QuickTime® installed and properly configured. Some cameras may require a video capture board and video driver software. Macintosh AV models have a video capture board built in. Some cameras, such as the Connectix QuickCam, do not require a separate video board. If you do not have QuickTime installed, you need to install it as part of the Enhanced CU-SeeMe Custom Install option.

Prior to using Enhanced CU-SeeMe, you may want to test your camera. Most video digitizer cards come with software applications that you can use for testing your camera. If video is captured and displayed, your camera and board (if required) are working.

Setting Up a Macintosh AV

For Macintosh AV models, you may need to turn off Geo Port® devices and speech recognition in the Sound Control Panel to free up system memory. To access the Sound Control Panel, choose Control Panels from the Apple menu, then choose Sound. Connect your camera to your AV card. When using the AV card for capturing color video, you cannot exceed a maximum screen resolution of 800 x 600. This is a limitation of the AV card.

Prior to using Enhanced CU-SeeMe, you may want to test your camera. If video is captured and displayed, your camera is working.



Ready, Set, Go!



Chapter

3

What's In This Chapter

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When You First Start Enhanced CU-SeeMe



Now that you have the necessary hardware and software installed (which was discussed in Chapter 2), you are ready to begin using Enhanced CU-SeeMe. Before attempting to make your first connection, let's take a minute to review how to start the application, and what happens with the application after startup.

To start using Enhanced CU-SeeMe on your Windows-based computer:

1. Click Start, point to Programs, select Enhanced CU-SeeMe folder, then click the Enhanced CU-SeeMe icon. (Windows 95 only)

Double-click the Enhanced CU-SeeMe program group in the Program Manager, then double-click the Enhanced CU-SeeMe icon. (Windows 3.x and Windows NT only)

2. When Enhanced CU-SeeMe successfully starts, the local video window appears on your desktop. If you are using a camera, your picture appears in the video window. If you aren't using a camera, a shortened version of the local video window appears.
3. If you want to change the name of your local video window, select Preferences from the Edit menu, or click the Preferences icon in your local video window. The Preferences dialog box appears. Select the Conferencing tab. In the Title box, type the name you want to appear in the title bar of the local video window. This is typically your name, company name, country, or e-mail address. This is the name other users will see in your video window.

See "Changing Preferences" in Chapter 4 for more information about these options.

If you run into any problems, check "What Do You Need" in Chapter 2 before continuing to "Making a Basic Connection" on page 3-4.

Now that you've got the basics covered, you are ready to go!



To start using Enhanced CU-SeeMe on your Macintosh:

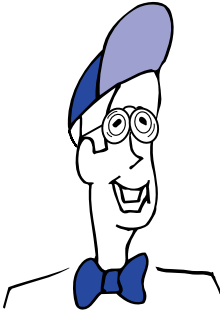
1. Double-click the Enhanced CU-SeeMe folder, then double-click the Enhanced CU-SeeMe icon.
2. When Enhanced CU-SeeMe successfully starts, the local video window appears on your desktop. If you are using a camera, your picture appears in the video window. If you aren't using a camera, a blank version of the local video window appears.
3. The Preferences dialog box usually appears automatically the first time you access Enhanced CU-SeeMe. If it does not appear, then select Preferences from the Edit menu. The Preferences dialog box appears. Select the Conferencing panel from the pop-up menu.
4. In the Title box, type the name you want to appear in the title bar of the local video window. This is typically your name, company name, country, or e-mail address. This is the name other users will see in your video window.

See “Changing Preferences” in Chapter 4 for more information about these options.

If you run into any problems, check “What Do You Need” in Chapter 2 before continuing to “Making a Basic Connection” on page 3-4.

Now that you've got the basics covered, you are ready to go!

Making a Basic Connection



Tip:

If a message appears stating that there are too many participants, try again in a few minutes.

This section guides you through a basic connection, explaining the various ways you can conference using Enhanced CU-SeeMe: seeing other users, typing text to other users, hearing other users, and talking to other users. By following the steps below, you can identify any problems before attempting a full-scale video conference using Enhanced CU-SeeMe.

Seeing

For your first conference, try connecting to White Pine Software, where we have a dedicated reflector set up for Enhanced CU-SeeMe users. Chances are you'll meet many other Enhanced CU-SeeMe users on our reflector. In addition, you'll meet some of the White Pine Software employees working to bring you new and improved versions of Enhanced CU-SeeMe!

Note: Refer to "Understanding Enhanced CU-SeeMe Conference Types" in Chapter 1 for more information about reflectors.

To make a connection and view other users:

1. Select *Phone Book* from the Conference menu (or click the Phone Book icon on the main button bar in Windows).
2. Select *cu-seeme.com*, White Pine Software, or 192.233.34.5 from the Phone Book.
3. Click the Call button. The status changes to "Connecting" in the local video window, or in the Windows main application window.
4. When a *Message of the Day* appears from the reflector, read it and then click OK. You also may get a list of available conferences from which to choose.

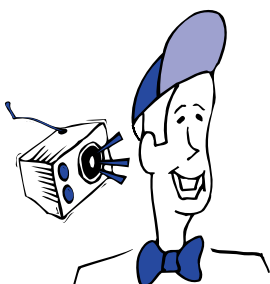
Each person sending video to the White Pine Software reflector appears in a separate remote video window.

Now that you are connected, let's go one step further. Try starting a dialog with other users by typing in the *Chat window*. You may want to "chat" with other users and verify that they can see you. We'll cover the steps on how to do this in the next section.

To start a chat session:

1. Select Chat from the Conference menu (or click the Chat icon on the main button bar in Windows).
2. Type text in the lower portion of the Chat window and press Return to send the text. Your text now appears in the top portion of the window with your name. Anyone that has a Chat window open will see your text and you will see the text that other users are typing.
3. Send a typed message letting other users know you are testing your Chat window.

You can learn more about using the Chat window in Chapter 4.

**Hearing**

The next step to a complete video conferencing connection is to hear users that are speaking. Remember that you must have speakers set up with your computer (some computers have them built in). See “What Do You Need” in Chapter 2 for a complete list of system requirements.

To listen to other users:

1. Open the Audio window by selecting Audio from the Window menu (or click the Audio icon on the main button bar in Windows).
2. Type a message in the Chat window asking another participant to talk. Other participants who have their Chat windows open will see your message
3. Watch the indicator under the speaker in the Audio window. You’ll see the audio level indicator rise as a person talks. If your audio is correctly set up, you should hear sounds when the indicator rises above the diamond marker. If not, try the volume control. You can easily identify the person speaking by watching for a highlighted bar in the Participants List window.

You may need to adjust the speaker levels. See “Using Enhanced CU-SeeMe Windows” in Chapter 1 for information on the Audio Window.



Talking

Now you are ready to talk to some of the users in the remote video windows. Remember, for this you need to have a microphone. See “What Do You Need” in Chapter 2 for a complete list of system requirements.

To talk to other users:

1. Click and hold the Push to Talk button in the Audio window. The button changes to Transmitting so you can talk to the other users.
2. Click on the microphone icon in a particular user’s window to talk directly to that user only.

You may need to adjust the audio levels in the Audio window. See “Using Enhanced CU-SeeMe Windows” in Chapter 1.

Managing Your Connection

Congratulations on a successful videoconference! Now you can fine tune your system for optimal performance. As discussed in “Understanding Data Transmission” in Chapter 1, Enhanced CU-SeeMe uses codecs to compress the audio and video data being transmitted over the network. Depending on your network connection and the type of computer you are using, there are many options available for using Enhanced CU-SeeMe efficiently.

Sending Color vs. Grayscale Video

Enhanced CU-SeeMe supports color and/or grayscale video. Before you select the type of video you want to send, you should consider the factors listed in Table 3-1:

Table 3-1 . Color Versus Grayscale Video

| Sending Color Video | Sending Grayscale Video |
|---|---|
| Uses less CPU power. | Uses more CPU power. |
| Displays video at a faster frame rate than grayscale. | Displays video at a slower frame rate than color. |
| Uses less bandwidth. | Uses more bandwidth. |
| Uses more application memory. | Uses less application memory. |
| Your video will be seen only by users of Enhanced CU-SeeMe. Users of freeware CU-SeeMe will not be able to see your video, although you will still see their video. However, you will be able to hear, talk, and chat with all users. | You will have full video and audio conferencing with all users. |

To select color or grayscale video:

1. Select Preferences from the Edit menu or click the Preferences icon in your local video window.
2. Click the Video tab (Windows) or select Audio/Video from the Group pop-up menu (Macintosh).

- 3. In the Video group, select a video codec from the Codec list. Select WhitePine Color to send color video or CU-SeeMe Gray to send grayscale video.
- 4. Set the quality of the video for color, or brightness/contrast for grayscale by dragging the slider. Click OK.

Each video codec provides additional configuration options.

Selecting Audio Compression

Enhanced CU-SeeMe provides several audio codecs, offering different audio compression options. Your choice will depend on your computer environment, especially whether you are communicating using a modem, a LAN, or an ISDN line. Use Table 3-2 to select the best audio codec for your environment.

Table 3-2 . Audio Codec Recommendations

| You can use this audio codec | If you are using this | | | |
|-------------------------------------|-----------------------|-------------|-----|------|
| | 14.4k modem | 28.8k modem | LAN | ISDN |
| DigiTalk (8.5 kbps) | ✓ | ✓ | ✓ | ✓ |
| Voxware (2.4 kbps) | ✓ | ✓ | ✓ | ✓ |
| Delta-Mod (16 kbps) | | ✓ | ✓ | ✓ |
| u-law (64 kbps) (Macintosh only) | | | ✓ | ✓ |
| Intel® DVI (32 kbps) | | | ✓ | ✓ |

The DigiTalk and Voxware audio codecs both work well with low bandwidths and therefore are both usable with modems, however they perform differently:

- ◆ DigiTalk - able to transmit voice and music
- ◆ Voxware - able to transmit voice only

To select audio compression:

1. Select Preferences from the Edit menu or click the Preferences icon in your local video window.
2. Click the Audio tab (Windows) or select Audio/Video from the Group pop-up menu (Macintosh).
3. In the Audio group, select an audio codec from the Codec list. Click OK. Some codec choices may be dimmed. This indicates that they are not usable for your computer.

Each audio codec provides additional configuration options.

Setting Transmission and Reception Rates

You can set the rate at which you send and receive video and audio data to maximize performance. Table 3-3 shows general guidelines for setting transmission and reception rates.

Table 3-3 . Setting Transmission and Reception Rates

| When using | Set transmission and reception rates to |
|------------|--|
| Modem | Match the speed of your modem, such as 14 kbps or 28 kbps |
| LAN | 80 kbps or higher, depending on the configuration of your LAN |
| ISDN | 40 kbps or higher, depending on the properties of your ISDN line |

Tip:

When participating in a group conference, you may find that many reflectors disconnect you if your transmission rate is higher than 80 kbps, and may prevent you from reconnecting for up to 10 minutes.

Enhanced CU-SeeMe selects 80 kbps as the default transmission rate. If you are on a LAN or have a connection with higher bandwidth, you can increase this rate for better performance. However, if you are transmitting with a 28.8k modem, you will be limited to a transmission rate of 28 kbps.

The reception options set the rate at which you receive audio and video. Limiting reception may be important if you have a 28.8k modem connection. If you are set to receive 30k for example, you may not be able to send any data out.

To set the transmit and receive rates:

1. Select Preferences from the Edit menu or click the Preferences icon in your local video window.
2. Click the Communications tab (Windows) or select Communications from the Group pop-up menu (Macintosh).
3. Set the minimum and maximum values for transmitting and receiving by clicking the arrows or by typing values. See Table 3-3 to determine the correct setting for your connection.

Other Ways of Increasing Performance

Adjusting the compression, transmission, and reception options in Enhanced CU-SeeMe are some of the ways you can tailor your session for better performance.

Each window you have open on your screen requires memory. The more memory Enhanced CU-SeeMe has available, the more efficiently it will run. If you find that Enhanced CU-SeeMe is somewhat sluggish, try closing some of the windows that are open. Note that video windows take up the most memory. Open video windows also use bandwidth, which can cause sluggish performance.

Tuning Your Video Performance

You may wish to adjust your settings to improve the video image you transmit. Many of the default video settings in Enhanced CU-SeeMe can be changed using the Preferences dialog box.

To change a video preference setting:

1. Select Preferences from the Edit menu or click on the Preferences icon in your local video window.
2. Select the Video preferences group by clicking on the Video tab (Windows) or selecting the Audio/Video group name from the pop-up menu (Macintosh).
3. **For Windows:** Click on the Configure button.
For Macintosh: Click on the Set button. The Compression Settings window will appear. Now click on the Options button.
4. The Configure dialog box will appear, as shown in Figure 3-1.

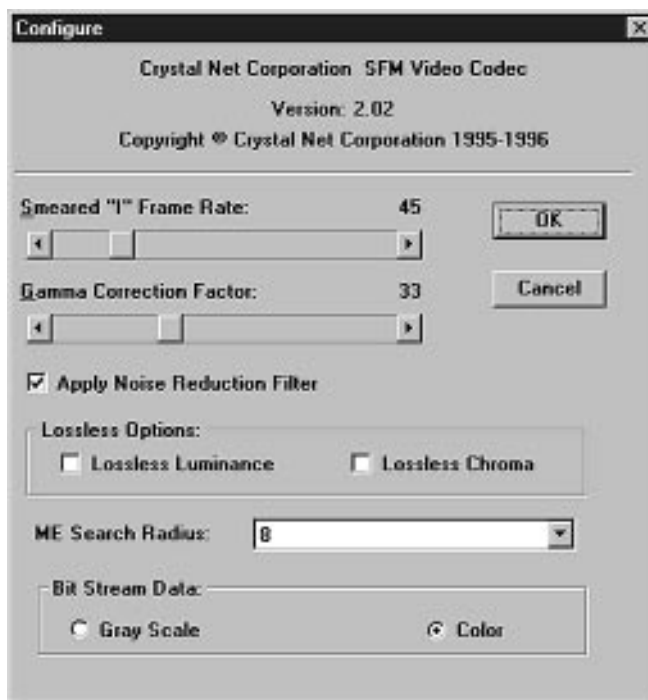


Figure 3-1. Configure Dialog Box

Configuring the WhitePine Color Video Codec

Use the Configure Dialog box (see Figure 3-1) to configure the WhitePine Color video codec. A codec is software that compresses and decompresses your video (or audio) data so that it can transmit more easily across phone lines or a network. The specific features of the WhitePine Color codec are described below. If you wish to change the appearance of the video you send, a good general rule is to modify the values of the codec in this dialog and see how those changes affect the performance of your remote video when you connect to Self.

Smeared “I” Frame Rate

Your video data is transmitted as a series of frames, which are updated continuously. In order to get the smoothest possible video with the least amount of data loss, the video codec looks at the changes from one video frame to the next, compresses this changed data, and then adds this data to the previous frame. The result is that the video image you transmit is updated as you move in front of your camera. Unfortunately, there is usually some unavoidable loss of data as your video image is sent across a network. To compensate for this loss and to make sure unwanted “noise” won't build up on the connection, a full frame (containing ten times more data than a typical frame which only includes the changes since the previous frame) is periodically distributed (or “smeared”) over a number of frames. This number of frames is specified by the Smeared “I” Frame Rate. The Smeared “I” Frame Rate determines the timing of this insertion. A lower number means that this full frame is inserted more often.

The default Smeared “I” Frame Rate is 45, which takes into account the amount of noise on a typical Internet connection. For connections over a LAN, where there is much less noise, the rate of insertion can be increased, which means changing the setting to a lower number.

Gamma Correction Factor

The Gamma Correction Factor is similar to the brightness control on a television set. On the Gamma Correction Factor scale, the higher the number, the brighter the picture.

The default setting is 33, which means there is no Gamma Correction. The Gamma Correction affects only the video windows that you see on your computer monitor. It does not affect the video that you transmit to others.

Apply Noise Reduction Filter

The hardware components of some low-end cameras generate a lot of static noise, which is difficult to compress. When the Apply Noise Reduction Filter box is checked, an extra operation is added in which noise is filtered before going through the codec (COmpression-DECompression) process. The result is a picture that is received with less noise. The picture will also use less bandwidth if the noise is filtered out. Note that this filter will only affect how other users see your video image. Using this filter uses some CPU power from your computer, but it can be helpful to clean up the image sent by your camera.

Lossless Options

The term lossless means a perfect replication of a picture so that the picture, after it has been compressed and decompressed, is exactly the same as it was before entering this process. That is, no quality is lost in the picture.

There are three lossless options:

- ◆ Luminance - preserves brightness and contrast
- ◆ Chrominance - preserves color
- ◆ Quality - preserves clarity (no blurring)

Note that the Quality option is found on the Video preferences tab on a Windows computer, and on the Compression Settings window on the Macintosh. If you aren't sure how to find these windows, see "To change a video preference setting:" on page 3-11.

You can transmit in high quality lossless mode by checking these options and setting Quality to 100%. Check Lossless Luminance to transmit lossless grayscale; check both Lossless Luminance and Lossless Chroma for color.

Achieving this high quality mode is expensive in terms of the amount of bandwidth used. A perfect picture replication is possible, but it can reduce your frame rate. The default for both options is to be turned off.

ME Search Radius

Use the ME (Motion Estimator) Search Radius to establish the neighborhood in which the WhitePine Color codec's Motion Estimator compares motion between one video frame and the next. The Motion Estimator looks in a search radius (or neighborhood) of X pixels of the video subject, where X is the number of pixels entered in the ME Search Radius box. The default is 8 pixels.

If there is going to be a lot of motion in your video, a wider radius means a smoother picture. This uses less bandwidth, however, it can be expensive in terms of the amount of CPU used.

Bit Stream Data

The default transmission mode for the WhitePine Color codec is, appropriately, color. You can, however, choose to use the WhitePine Color codec but transmit in gray images by clicking on the Gray Scale radio button in this dialog box. Typically, removing the color information from the bit stream in this way results in a 10%-20% reduction in the bandwidth requirements.

Arranging Windows



Cascade video windows



Tile video windows

With the audio, chat, participant and video windows displayed, your desktop may appear cluttered at times. Enhanced CU-SeeMe helps you to organize these windows by letting you show all video windows, close all video windows, and even save window positions so your choice of locations can be restored each time you use Enhanced CU-SeeMe.

To arrange video windows:

1. Select Cascade Video Windows from the Windows menu to stack the windows on top of each other, starting in the upper left corner of your display. (You can also click the Cascade Video Windows icon on the main button bar in Windows.)
2. Select Tile Video Windows from the Windows menu to arrange the windows in a grid, starting at the upper left corner of your display. (You can also click the Tile Video Windows icon on the main button bar in Windows.)

To toggle the video window size:

Click the Zoom button on the Video window to make the window small (160x120) or large (320x240).

To save window positions:

1. Select Preferences from the Edit menu or click the Preferences icon in your local video window.
2. Click the General tab (Windows) or select General from the Group pop-up menu (Macintosh).
3. Select the Save Windows Positions on Exit option. Click OK.

To open specific windows or bring them to the front:

- ◆ Select Participants, Audio, or Local Video from the Windows menu.
- ◆ Click on a participant from the participant list.

To display or close all remote video windows on your desktop:

- ◆ Select Show All or Close All from the Windows menu.
- ◆ Select Close All Except Front to close all windows in the background. To redisplay them, choose Show All.

Note: Show All only displays the number of video windows specified in the Conferencing Preferences (default is 8).

To display a single participant's window:

Click the participant's name from the list of hidden users in the Participants window.

To limit the number of windows that appear on your desktop:

1. Select Preferences from the Edit menu or click the Preferences icon in your local video window.
2. Click the Conferencing tab (Windows) or select Conferencing from the Group pop-up menu (Macintosh).
3. Select the number of windows in the Maximum Video Windows box by clicking the arrows.



What Else Can You Do?



What's In This Chapter

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| Adding Overlay Text to Your Local Video Window | 4-2 |
| Using the Chat Window | 4-5 |
| Using the Listener | 4-10 |
| Setting Up the Phone Book | 4-13 |
| Setting Up Enhanced CU-SeeMe on a Web Page | 4-16 |
| Changing Preferences | 4-20 |
| Using the WhitePineBoard | 4-25 |

Adding Overlay Text to Your Local Video Window

When you are sending video, you may want other users to see additional information such as your location, your company name, or a brief greeting. You can easily do this by overlaying a text message on your video window, as shown in Figure 4-1.



Figure 4-1. Video Window Overlay Text

To add overlay text to your video window:

1. Click on your local video window to select it as the active window.
2. Begin typing text. Your message will appear in your video window.
3. With your local video window active, press Enter to remove the overlay text when you no longer want it to appear.

Enhanced CU-SeeMe users who see your video window will also see your overlay text message. Continue with the following sections to learn how you can modify the appearance of your overlay text.

Modifying Your Overlay Text

As a default, the overlay text is displayed in the system font, however, you can change the font type and size (Windows only). You can also have your overlay message appear at the top or bottom of your video window.

Your overlay text message may contain as many as 256 characters, although if you type a long message, it will not all fit in your window. To show your entire message, you can have your overlay text scroll across your screen from right to left. You can also choose to have your overlay text remain fixed in one location on your video window.

To change the overlay text font (Windows only):

1. Press the F8 key to display the Font dialog box, as shown in Figure 4-2.
2. Select the font settings you want for your overlay text. Click OK.

The overlay text will now appear in the font you selected.

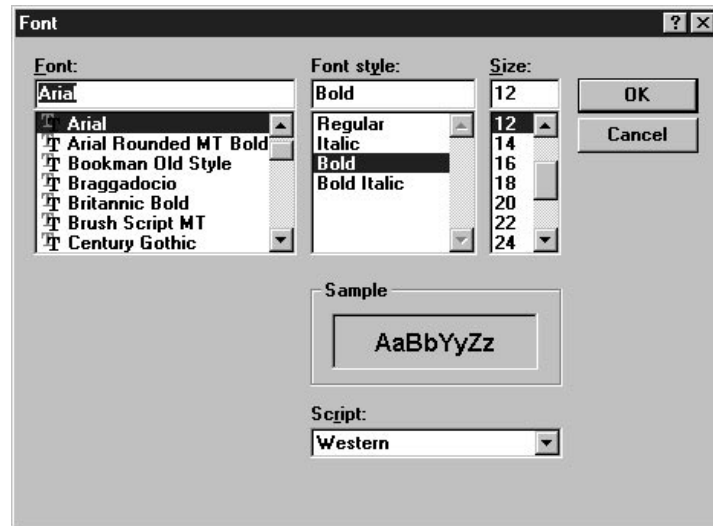






Figure 4-2. Overlay Text Font Dialog Box

Moving Overlay Text Within Your Video Window

By default, your overlay text will appear at the bottom of your video window. You can choose to move it to the top of your video window, or have it scroll across the screen. To do this, use the arrow keys and function keys on your keyboard. Refer to Table 4-1 to find out how to move your overlay text.

Table 4-1 . Moving Overlay Text

| Press this key | To do this |
|---|--|
|  | Move the overlay text to the top of the video window. |
|  | Move the overlay text to the bottom of the video window. |
|  | Scroll the overlay text from right to left across the video window. Press the arrow again to increase the speed of the scrolling text (Macintosh only). |
|  | Stop scrolling the overlay text. Also used to decrease the speed of the scrolling text (Macintosh only). |
| F6 | Increase the speed of the scrolling text (Windows only). |
| F7 | Decrease the speed of the scrolling text (Windows only). |

Using the Chat Window

For true videoconferencing, you'll want to use video and audio. However, you can also use the Chat Window to type messages to other participants. This is especially helpful if either you or the remote user with whom you wish to conference don't each have a camera or microphone, or if your bandwidth connection is too limited to carry audio.

To use the Chat Window:

1. Choose Chat from the Conference menu (or click the Chat icon on the main button bar in Windows). The Chat Window appears, as shown in Figure 4-3.

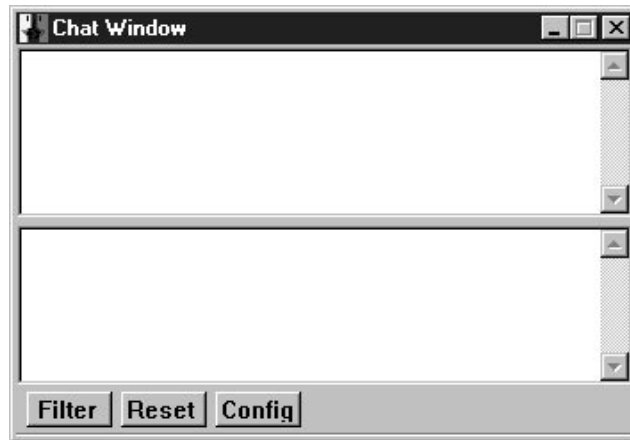


Figure 4-3. Chat Window

2. Type a message in the lower portion of the Chat Window and press the Enter key to send your message. Your message now appears in the top portion of the window with your name, as it appears in the title bar of your local video window. Anyone who has a Chat Window open will see your message. Figure 4-4 shows an example of how a "chat" conversation appears in the window.

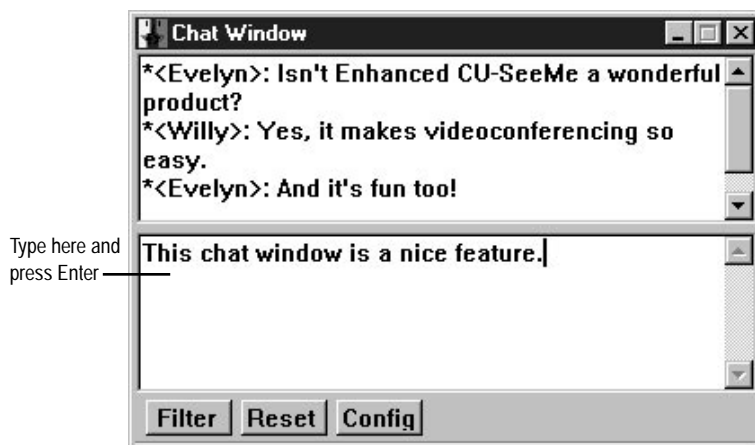


Figure 4-4. Example of Using the Chat Window

You can modify the appearance and use of the Chat Window. Continue with the following sections to learn more about the Chat Window features.

Filtering Other Participants

There are times when you may not want to see all the conversations happening in the Chat Window. It may be useful to prevent text from certain people from appearing in your Chat Window.

To filter text in the Chat Window:

1. In the Chat Window, double-click the name of the user you want to filter out. The Chat Window Filter dialog box appears, as shown in Figure 4-5.



Figure 4-5. Chat Window Filter Dialog Box

2. Select the Filtered checkbox and click OK.
3. Click Filter at the bottom of the Chat Window to start filtering the text. Text from the user you filtered will not appear in your window.
4. To stop filtering text, click Filter again. The Filter button toggles filtering on and off.
5. Click Reset to clear all names from the filter.

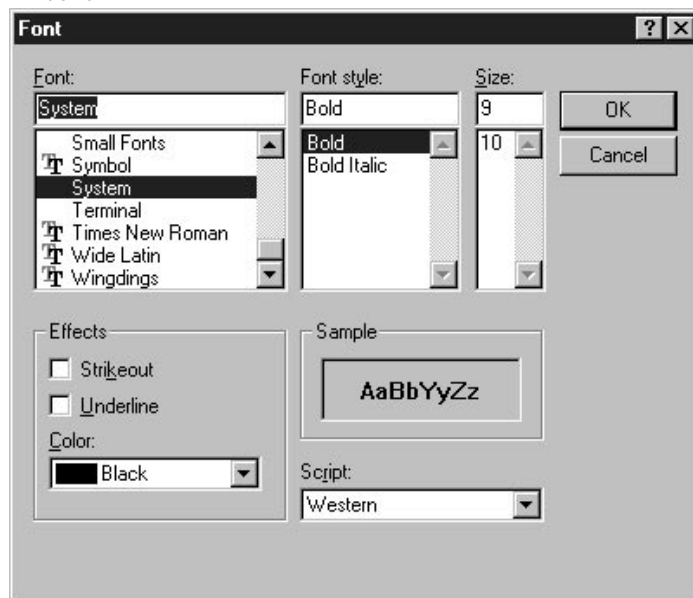
Setting Font and Font Size

As a default, the Chat Window uses the system font to display the text in the Chat Window. You can change the font type and size using the Configuration feature.

To change the text appearance:

1. Click Config at the bottom of the Chat Window. The Chat Window Font (Windows) or Font/Size (Macintosh) dialog box appears, as shown in Figure 4-6.

Windows



Macintosh

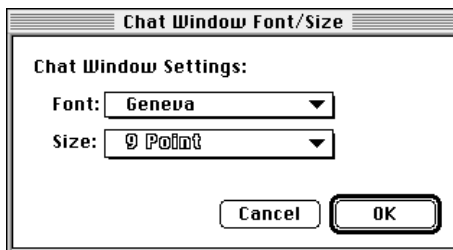


Figure 4-6. Chat Window Font Dialog Box

2. Select the font settings you want to display in the Chat Window. Click OK.

All text in the Chat Window changes to the font you selected.

Resizing the Chat Window

You can resize the Chat Window to display more text, as shown in Figure 4-7.

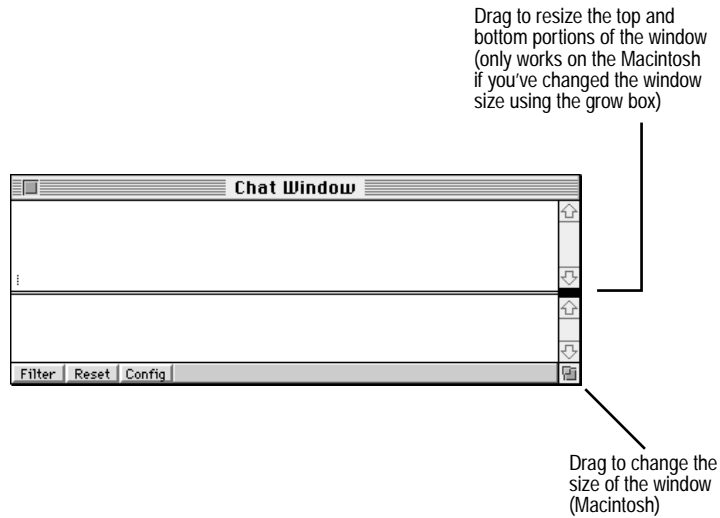


Figure 4-7. Chat Window Controls

Using the Listener

Communicating with other users over the Internet using Enhanced CU-SeeMe may become as commonplace as using the telephone. However, it may not be practical to leave Enhanced CU-SeeMe running at all times because of its use of your system resources. To make sure you don't miss an incoming call, you can run the Listener to alert you of an incoming call by:

- ◆ Displaying an alert message
- ◆ Playing a system sound
- ◆ Flashing an icon in the menu bar (Macintosh only)

The Listener is an application built into Enhanced CU-SeeMe. It can let you know if someone is trying to call your computer, even when you are already connected to a conference or another call.

The Listener can also be running on your computer when you are not using Enhanced CU-SeeMe. It will listen for anyone who may try to connect to your computer and it will notify you. You can accept or deny the connection. If you accept the connection, the Listener automatically starts up Enhanced CU-SeeMe so you can begin conferencing with the caller.

To set up the Listener:

1. Double-click the Listener icon in the Enhanced CU-SeeMe folder. The first time you run the Listener, the Preferences dialog box appears (Macintosh only), as shown in Figure 4-8.

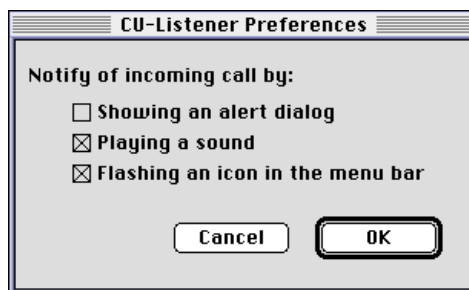


Figure 4-8. Selecting the Alert Method for Incoming Calls

2. Select a method to alert you of an incoming call. You can change the alert method later by selecting Preferences from the Edit menu or clicking the Preferences icon in your local video window. If you are setting the preferences from within the Enhanced CU-SeeMe application, click the Listener tab (Windows) or select Listener from the Group pop-up (Macintosh).
3. Keep the Listener running in the background while you do your work.

To answer an incoming call:

1. The Connection Request window, shown in Figure 4-9, appears when another user is requesting a connection to your computer. Make the Listener application active by clicking the window.

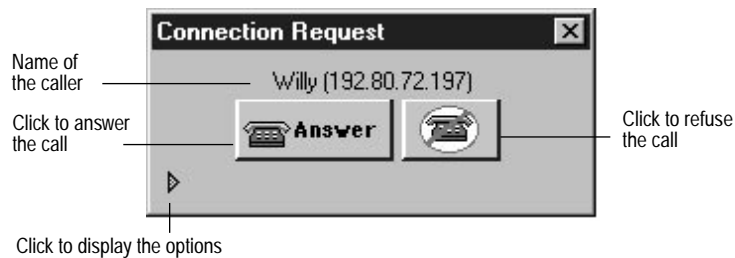


Figure 4-9. Connection Request Window

- The default is to send and receive video and audio when answering the call. To change the video and audio options, click the down arrow to display the options, as shown in Figure 4-10.

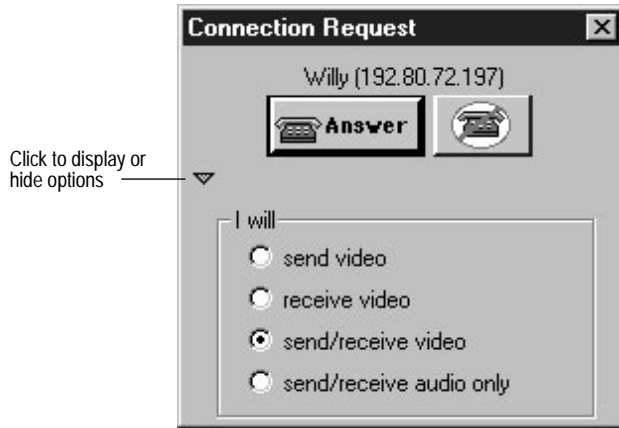


Figure 4-10. Selecting Video and Audio Options

If any of these options appear grayed out, this indicates that either you or the caller do not have video or audio capability, therefore you may want to use the Chat Window, or the WhitePineBoard for two-way communication. See “Using the Chat Window” on page 4-5.

- Click Answer. If the button is dimmed, this indicates that you already have a connection open. Choose Hang Up from the Conference menu (or click the Hang Up button on the main button bar in Windows) to close the existing connection.

If you choose to refuse the call, or you exit Enhanced CU-SeeMe before responding to the incoming call, the Listener application will notify the caller by displaying a Connection Refused message on the caller’s display.

Setting Up the Phone Book

After using Enhanced CU-SeeMe to contact individuals or join conferences, you may wish to create a list of addresses for calls you frequently make using Enhanced CU-SeeMe. The Enhanced CU-SeeMe Phone Book provides a means of storing these addresses with nicknames that you can choose. For example, you can store the IP address of an individual user or the IP address of a reflector and assign it a nickname.

Using the phone book, you can:

- ◆ Add nicknames to the Call submenu in the Conference menu
- ◆ Make calls directly
- ◆ Add, delete, change addresses and nicknames

The phone book dialog box is shown in Figure 4-11.

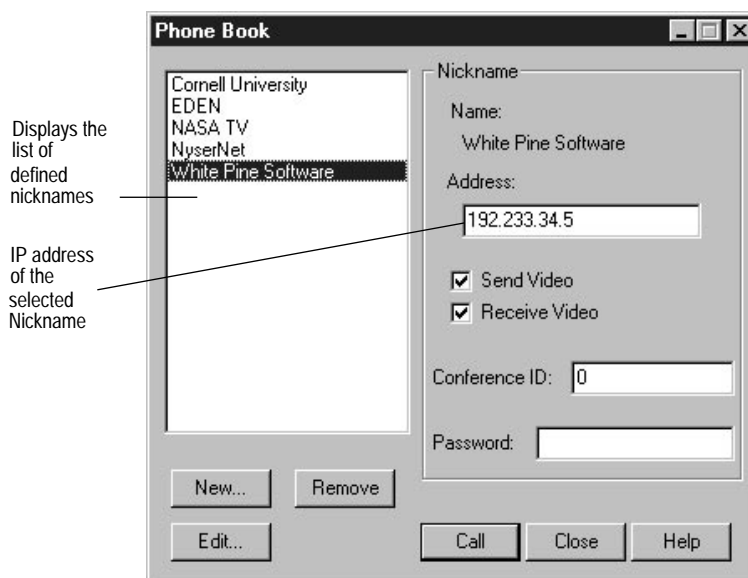


Figure 4-11. Phone Book Dialog Box

To add names to the phone book:

1. Select Phone Book from the Conference menu (or click the Phone Book icon on the main button bar in Windows).
2. Click New to create a new entry.
3. Complete the Nickname dialog box as shown in Figure 4-12.

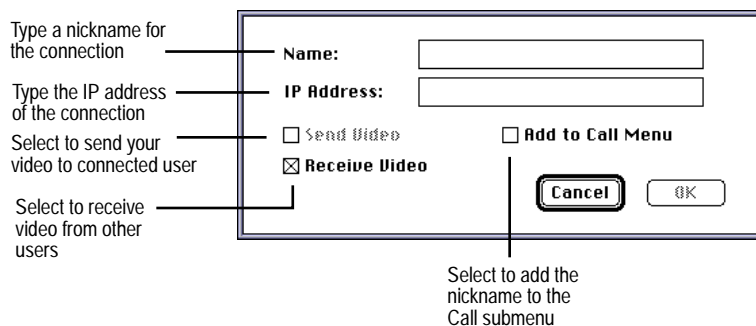


Figure 4-12. Creating a Nickname

4. Click OK to add the nickname to the phone book.
5. Click Close in the Phone Book dialog box (Windows) or select Save from the File menu (Macintosh) to save changes to the phone book or click the close box and select Save in the dialog box (Macintosh).

To change a phone book entry:

1. Select Phone Book from the Conference menu (or click the Phone Book icon on the main button bar in Windows).
2. Select a name from the list of nicknames.
3. Click Edit.
4. Change the values as desired. Click OK.
5. Click Close in the Phone Book dialog box (Windows) or select Save from the File menu to save changes to the phone book or click the close box and select Save in the dialog box (Macintosh).

To delete a phone book entry:

1. Select Phone Book from the Conference menu (or click the Phone Book icon on the main button bar in Windows).
2. Select the entry to delete from the list of nicknames and click Remove.

Note for Macintosh Only: You can select multiple names using Command or Shift to select more than one name.

3. Click Close in the Phone Book dialog box (Windows) or select Save from the File menu to save changes to the phone book or click the close box and select Save in the dialog box (Macintosh).

To make a call using the phone book:

1. Select Phone Book from the Conference menu (or click the Phone Book icon on the main button bar in Windows).
2. Select the name of the person or conference to which you want to you connect.
3. Specify the conference ID for the conference you want to join. Most conferences use the default 0. If a private conference has been set up, obtain the conference ID from the *Conference Administrator*. When you save a conference in the Phone Book, the conference ID is also saved.
4. Click Call.

Enhanced CU-SeeMe attempts to make a connection to the conference you specified. If the connection is successful, the person or conference you connected to appears in a remote video window(s).

Setting Up Enhanced CU-SeeMe on a Web Page

Enhanced CU-SeeMe can be launched directly from a Web browser. By setting up Enhanced CU-SeeMe for access from a Web page, you can access additional information that wouldn't be feasible if you were to use Enhanced CU-SeeMe by itself. For example, you may want to set up a camera to display a classroom. Although this could be done using Enhanced CU-SeeMe by itself, you could provide additional materials to viewers, such as text and graphics, by placing this material on a Web page.

Setting up Enhanced CU-SeeMe for access from a web page requires:

- ◆ Web Page Creation - create a Web page that points to a file used to launch an Enhanced CU-SeeMe conference
- ◆ Web Site Administration - configure an http daemon on a web server
- ◆ End User Configuration - configure a web browser to launch Enhanced CU-SeeMe

Creating the File that Launches a Conference

To launch Enhanced CU-SeeMe from a web page you need to create a web page with a hot link to a file that defines the IP address and *Conference ID* of the reflector to which you want to connect. Place this file, with the other html files, on the UNIX host.

To create the file:

Create a file with a .cu or .csm extension which contains the following parameters, each on its own line:

```
ip_address  
  
conference_id  
  
file_options
```

where:

ip_address is IP address of the reflector or Enhanced CU-SeeMe host that you would like to connect to using Enhanced CU-SeeMe.

conference_id is the conference ID used by the reflector.

file_options are the optional configuration items found in the Enhanced CU-SeeMe preferences file. These settings override the defaults in your preferences file.

An example of this file is shown below (note that you must include the section headers), for a file named whitpine.cu, which is used to launch a connection to a reflector on a computer with an IP address of 192.233.34.5.

```
filename: whitpine.cu
```

```
192.233.34.5
```

```
0
```

```
[Settings]
```

```
Max Windows=n      n is the number of video windows you
                    want visible on the screen
```

```
[Flow Control]
```

```
MaxCap=n           n is the maximum sending rate
```

```
MinCap=n           n is the minimum sending rate
```

```
UseFlowControl=    Yes to enable flow control
```

```
No to disable
```

```
[Connect Options]
```

```
IWillSendVideo=    Yes to send video
```

```
No to send none
```

```
IWillRecvVideo=    Yes to receive video
```

```
No to receive none
```

```
IWillSendAudio=    Yes to send audio
```

```
No to send none
```

```
IWillRecvAudio=    Yes to receive audio
```

```
No to receive none
```

Configuring a Web Server

When a Web browser downloads a .cu or .csm file, the http daemon in the Web server needs to inform the browser that the file it is sending is an x-cuseeme file.

To set up your web server:

1. Edit the mime.types file typically located in the /http/conf/ directory (the http configuration directory) to include the following line:

```
application/x-cuseeme cu csm
```

This tells the http daemon that if it receives a file with either the .cu or .csm extension, it is type x-cuseeme.

2. Restart the http daemon.

Configuring a Web Browser

Your browser must know how to launch Enhanced CU-SeeMe when it receives the Enhanced CU-SeeMe file described in the previous section. Your browser may prompt you to launch Enhanced CU-SeeMe, or you may set up your browser to automatically launch the Enhanced CU-SeeMe application when it detects the x-cuseeme type.

To set up your browser to automatically launch Enhanced CU-SeeMe:

1. Locate the dialog box to add new file types in your browser, typically in a preferences dialog box. For example, in Netscape™, select General Preferences (Windows) or Preferences (Macintosh) from the Options menu, then select Helper Applications.
2. Click the Create New Type button (Windows) or New button (Macintosh).
3. Specify the Mime type: application
4. Specify the Mime subtype: x-cuseeme

5. Specify the file extensions: cu, csm
6. Specify Enhanced CU-SeeMe as the application.

Note for Windows: Make sure Enhanced CU-SeeMe is in your path, or specify the full pathname for the cuseeme executable.

7. Set the action to launch the application.

Changing Preferences

Many of the default settings in Enhanced CU-SeeMe can be changed through the Preferences dialog box.

To change a preference setting:

1. Select Preferences from the Edit menu or click on the Preferences icon in your local video window.
2. Select a Preferences group by clicking on a tab (Windows) or selecting the group name from the pop-up menu (Macintosh). Note that on the Macintosh, the Audio and Video preference groups are combined into one Audio/Video group. In Windows, Audio and Video are on two separate tabs.
3. Refer to Table 4-2 to find out what settings can be changed in the General Preferences dialog box.
4. Refer to Table 4-3 to find out what settings can be changed in the Conferencing Preferences dialog box.
5. Refer to Table 4-4 to find out what settings can be changed in the Communications Preferences dialog box.
6. Refer to Table 4-5 to find out what settings can be changed in the Audio Preferences dialog box. Note that on the Macintosh, this is combined with the Video preference group.
7. Refer to Table 4-6 to find out what settings can be changed in the Video Preferences dialog box. Note that on the Macintosh, this is combined with the Audio preference group.
8. Refer to Table 4-7 to find out what settings can be changed in the Listener Preferences dialog box.

Table 4-2 . Changing General Preference Settings

| Change this setting | To do this |
|--|---|
| Show toolbar/Show status bar in video windows | Hide/show toolbar and status bar in all video windows |
| Show toolbar/Show status bar in main window (Windows only) | Hide/show toolbar and status bar in all video windows |
| Buttons “click” when pressed | Start/stop the click sound when selecting buttons |
| Save window positions on exit | Save/don't save window positions |
| Separate visible/hidden users (Macintosh only) | Separate/don't separate visible and hidden users in the participants list |
| Window sizing: Automatic grow downward, Automatic grow upward (Macintosh only) | Select how the participants window acts when new participants appear |
| Tile/cascade small video windows (Macintosh only) | Make all video windows small/large when tiling/cascading |
| Auto-tile remote video windows (Windows only) | Override saved window positions and tiles the windows |

Table 4-3 . Changing Conferencing Preference Settings

| Change this setting | To do this |
|--|--|
| Title | Change title of your video window |
| Open and close video windows automatically | Stop/start video windows from automatically opening and closing when a new video connection is available |
| Click when participants join | Stop/start the click sound when a new participant joins the conference |
| Maximum video windows | Limit the number of video windows that appear on your desktop to no more than eight |

Table 4-4 . Changing Communications Preference Settings

| Change this setting | To do this |
|--|---|
| Transmission rate - Maximum | Set the maximum rate at which you send audio and video |
| Transmission rate - Minimum | Set the minimum rate at which you send audio and video |
| Transmission rate - Maximum without audio (Macintosh only) | Set the maximum rate for video only |
| Reception rate - Maximum | Set the maximum rate at which you receive audio and video |
| Reception rate - Minimum | Set the minimum rate at which you receive audio and video |

Table 4-5 . Changing Audio Preference Settings

| Change this setting | To do this |
|------------------------------------|----------------------------|
| Audio compression codec | Select audio codec |
| Recording device (Windows only) | Select sound input device |
| Playback device (Windows only) | Select sound output device |

Table 4-6 . Changing Video Preference Settings

| Change this setting | To do this |
|---|--|
| Video compression codec | Select video codec |
| Invert image (Windows only) | Flip the image vertically |
| Invert gray table (Windows only) | Reverse dark and light pixels (turn negative image to positive image) |
| Quality (Windows only) | Adjust color quality and brightness/contrast |
| Video capture device (Windows only) | Select video capture device |
| Digitizer selection (Macintosh only) | Select video card or driver |
| Digitizer settings (Macintosh only) | Change the settings for the video card |
| Resolution (Macintosh only) | Select standard or high resolution |

Table 4-7 . Changing Listener Preference Settings

| Change this setting | To do this |
|--|---|
| Enable listener notification: On/Off | On = Notify you of an incoming call at all times (whether or not you are currently connected) Off = Incoming calls are automatically accepted if you are not currently connected; If you are connected, incoming calls are automatically refused |
| Notification method: Flash window, Play a sound (Windows only) | Signal for incoming calls for the Listener |
| Notification method: Display an alert, Play a sound, Flash the menu bar icon (Macintosh only) | Signal for incoming calls for the Listener |
| Confirm launch of Listener at quit (Macintosh only) | Turn off/on alert when Listener is starting up after quitting |

Using the WhitePineBoard

Using the WhitePineBoard, you can share drawings and documents with other participants in a videoconference. You can use a WhitePineBoard document to create graphics using the WhitePineBoard tools or to import documents from a presentation, word processing, spreadsheet, or graphic applications. WhitePineBoard tools allow dynamic editing of graphics during the conference session.

When you are connected with another person using WhitePineBoard, documents you create, open or import are automatically displayed on other computers. Other users can easily mark up, print and save documents from their own computers.

This section provides a brief overview of how to use the WhitePineBoard application. Refer to the WhitePineBoard User Manual, available as an online document in Adobe Acrobat Reader format, for more information.

Starting the WhitePineBoard

The WhitePineBoard is a separate application accessed from Enhanced CU-SeeMe. Since the WhitePineBoard uses Enhanced CU-SeeMe for communications, it is only available when Enhanced CU-SeeMe is running.

To start the WhitePineBoard:

1. Select WhitePineBoard from the Conference menu (or click the WhitePineBoard icon on the main button bar in Windows).

To create a new document, choose New from the File menu. A blank WhitePineBoard appears on your computer and all others connected to WhitePineBoard, as shown in Figure 4-13.



Figure 4-13. WhitePineBoard Window

2. To import an existing document, choose Open from the File menu and select the document you want to open.

WhitePineBoard supports the following document formats:

- ◆ Windows: BMP, EPS, GIF, PCX, PICT, TGA, TXT, TIF, and WMF.
- ◆ Macintosh: PICT, PICT2, Text, and Scrapbook files.

3. Instruct other conference participants to start up WhitePineBoard.

Alert messages appear on the participants screens. The WhitePineBoard originator receives a message stating who is connecting to the conference. The other participants receive a message specifying the name of the document originator.
4. Edit the WhitePineBoard document. From the WhitePineBoard tool bar, select the pencil to draw freehand, the text tool (letter A) to type text, the hand to point at objects, or the pointer to select objects.

You can print this document or close it for later use.

Sharing a Document with Other Users

Once a document has been created or imported, you are ready to begin reviewing it with the other users. With an open connection, the document appears on all computers simultaneously. As you view the document, scroll through it, and mark it up, all windows change appropriately.

You can unlink your document, temporarily disabling view updates from the other windows. When you are unlinked, scrolling, zooming, and switching documents on your computer does not affect the windows of the other users. Documents continue to be updated on all connected computers even though you are unlinked.

To unlink your view of the document:

1. Select Link View from the Collaborate menu.

The checkmark disappears from the menu and the View Status icon in the upper-right corner changes to a closed eye.

2. To re-establish the link, select Link View again.

The checkmark reappears to the right of the Link View command and the View Status icon changes to an open eye.

Saving a Document

You can save a document any time during a WhitePineBoard session for use in another application or for use with the WhitePineBoard later.

Important:

If you opened a document created with another application, be sure to give it a new name to avoid overwriting the original.

To save a document:

Choose Save from the File menu. WhitePineBoard remembers who made each comment within the saved document.

Printing a Document

You can print a document and its comments at any time during the session.

To print a document:

1. Choose Print from the File menu.

The Print dialog box appears.

2. Select the appropriate choices in the dialog box.
3. Click OK to print your document. (Windows)

Click Print to print your document.(Macintosh)

After You're Done

After you've finished working on a document, close the document, disconnect from the other users, and quit WhitePineBoard.

To complete a WhitePineBoard session:

1. Make sure you've saved your document if desired.
2. To close the document, choose Close from the File menu.
3. To disconnect from other users, choose Disconnect from the Collaborate menu.
4. To quit WhitePineBoard, choose Exit or Quit from the File menu.

Setting Conference Preferences

When you first use WhitePineBoard, default settings are used for your connection name, the pointer, and the pointer color.

To change the preferences:

1. Choose Preferences from the Edit menu.
2. To change the pointer shape, select a new pointer from the Pointer pop-up menu.
3. To change the pointer color, select a new color from the Color pop-up menu.
4. To admit users to a conference without requiring authorization, unselect the Ask Before Admitting New Users option.
5. Click OK to close the Preferences dialog box.

The changes take effect the next time you start WhitePineBoard.



New Features for Version 2.1 for Windows



What's In This Chapter

| | |
|-----------------------------------|------|
| New Audio Features | 5-2 |
| New Multicast Conference Features | 5-8 |
| Locating Other Users Online | 5-17 |
| Tuning Your Video Performance | 5-21 |

New Audio Features

Enhanced CU-SeeMe has new audio features for more flexibility and improved performance.

Audio Modes

You can transmit audio in your choice of two modes:

- ◆ Push To Talk mode - You only transmit audio when a button is pressed.
- ◆ Hands Free mode - You transmit audio continuously. Everything you say is transmitted.

If your PC sound card supports full-duplex audio, you can use Hands Free mode, which lets you talk while listening (similar to a telephone). If your audio sound card supports half-duplex audio, you can still use Hands Free mode, but you cannot talk and listen at the same time (that is, you can only receive audio when you are not talking).

Audio Window

The audio window allows you to control the sounds coming in and going out of your computer. You can open the audio window by selecting Audio from the Window menu, or clicking on the Audio icon in the main window toolbar. Using the audio window, shown in Figure 5-1, you can:

- ◆ Turn your speakers and microphone on and off
- ◆ Select whether you wish to push a button to talk (transmitting audio on demand) or have your audio transmitted continuously (Hands Free mode)
- ◆ Filter incoming noise when receiving audio and background noise when transmitting audio

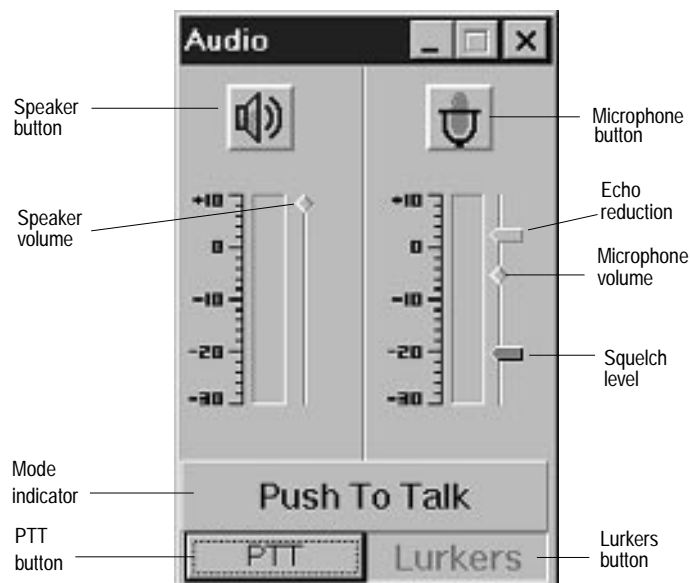


Figure 5-1. Audio Window

The components of the Audio Window are described as follows:

- ◆ Speaker button - Click this button to turn your speakers on or off.
- ◆ Microphone button - Click this button to turn your microphone on or off.
- ◆ Speaker volume - Slide this control up or down to adjust the volume of your speaker.
- ◆ Microphone volume - Slide this control up or down to adjust the volume of your microphone.
- ◆ Squelch level - The squelch level slider is only shown when you are in Hands Free mode. Slide this control up or down to adjust the squelch level. This control sets the minimum level for any sound; that is, any sound below this minimum volume level will not be transmitted. This can be useful when there is background noise in your environment. You can adjust the squelch level so that the background noise is not transmitted.

Note:

You can also use the microphone and speaker icons in the Participants List and the Remote Video Windows to turn on/off audio send and receive.

- ◆ Echo Reduction - The echo reduction slider is only shown when you are in Hands Free mode. If you are receiving audio and sending audio simultaneously, the echo reduction control can prevent your microphone from sending the sound that is coming from your speakers. Raising the echo reduction slider will raise the minimum level of sound that you will transmit. Echo reduction will also eliminate feedback, which can occur if your microphone is placed near your speakers.
- ◆ Mode indicator - When you are in Push To Talk mode, the indicator reads “Push To Talk.” In this mode, when you want to talk, you must click and hold on the mode indicator. It then reads “Transmitting.” If you are in Hands Free mode, the mode indicator reads “Hands Free.” In this mode, you can talk freely, without clicking on any buttons or indicator, similar to using a speakerphone. When you are actually sending audio (that is your voice goes above the squelch or echo reduction level), then the mode indicator reads “Transmitting.” This tells you that your audio signal is actually being transmitted to other users.
- ◆ PTT button - Click this button to switch between Push To Talk mode and Hands Free mode. The letters PTT appear in red on the button when you are in Push To Talk mode.
- ◆ Lurkers button - Click this button to turn on or off your ability to hear lurkers. When the word Lurkers appears in red on the button, it indicates that you are able to hear lurkers.

Audio Preferences

Enhanced CU-SeeMe allows you to fine-tune your software to get the best audio performance. You can modify audio settings using the Audio Preferences dialog box.

To change an audio preference setting:

1. Select Preferences from the Edit menu or click on the Preferences icon in your local video window.
2. Select the Audio Preferences group, shown in Figure 5-2, by clicking on the Audio tab.

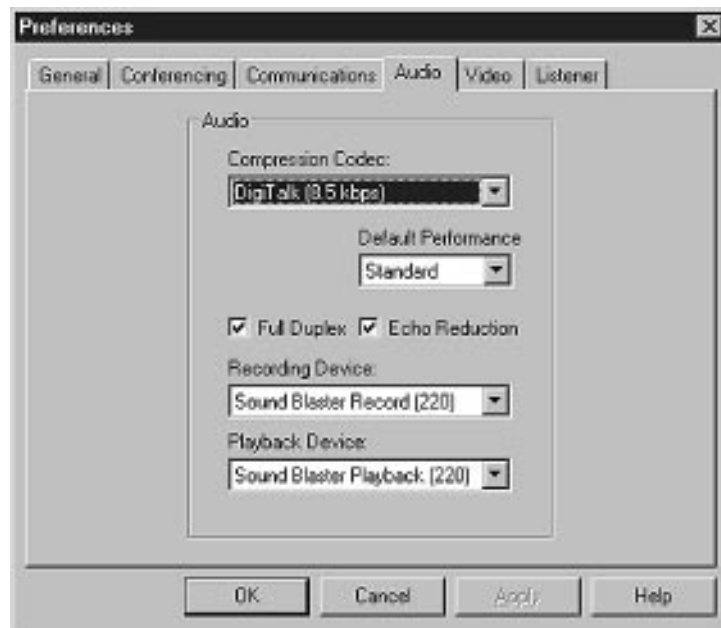


Figure 5-2. Audio Preferences

Note:

Voxware and DigiTalk audio codecs are not available on Macintosh or in the Cornell freeware version of CU-SeeMe. If you use the Voxware or DigiTalk audio codecs, Macintosh users and Cornell freeware users will not hear your audio.

3. Select a Compression Codec. The Compression Codec shown in Figure 5-2 is DigiTalk (8.5 kbps). If you choose a codec with a rate of 2.4 or 8.5 kbps, your audio will only be compatible with other users of Enhanced CU-SeeMe. Users of the Cornell freeware CU-SeeMe will not hear your audio. If you choose a codec with a rate of 16 or 32 kbps, your audio will be heard by users of the Cornell freeware as well as users of Enhanced CU-SeeMe.

However, using a lower rate, such as 2.4 or 8.5 kbps, uses less bandwidth and therefore may give better performance. If compatibility with the Cornell freeware is not a requirement for you, then you should always use the 2.4 or 8.5 kbps codecs. If you are operating over a LAN or WAN, you should try the 8.5 kbps codec first, as this will likely give you the best audio performance. If you are transmitting over a modem, you should try the 2.4 kbps codec first.

4. Select a Default Performance setting. If you are using a low-bandwidth audio codec, specifically the Voxware and DigiTalk codecs, you can choose between the Standard audio setting and the High audio setting. The Standard setting is recommended. It provides improved audio when you are conferencing with other users of Enhanced CU-SeeMe Version 2.1. The High setting provides further audio improvements, but it causes a 2 to 4 second delay in your audio; that is, others will hear you 2 to 4 seconds after you speak.

When you are sending audio in a point-to-point connection, Enhanced CU-SeeMe will automatically select the best possible audio performance setting.

5. If the audio card in your computer is full-duplex, select the Full Duplex checkbox. If you don't know whether your audio card is full-duplex, consult the manufacturer's documentation.
6. If the Echo Reduction checkbox is selected, then the echo reduction slider will be added to the Audio Window (shown in Figure 5-1). Echo reduction can be used to eliminate feedback, which can occur if your microphone is placed near your speakers. If you are receiving audio and sending audio simultaneously, the echo reduction control can prevent your microphone from sending the sound that is coming from your speakers.

7. Select the Recording Device and the Playback Device. Usually, your computer will automatically select the appropriate devices for your sound card. If you are unsure about the correct devices, consult your sound card documentation.
8. Click OK to confirm your current settings.

New Multicast Conference Features

Important Note:

Multicast is a relatively new technology. Many network interface cards, TCP/IP stacks, routers, and Internet Service Providers do NOT yet support multicast conferences. Multicast features may not work for many modem users. Please consult your hardware supplier and Internet Service Provider to find out if they support multicast conferencing.

Enhanced CU-SeeMe allows you to conference with multiple users (Windows users only at this time) in a *multicast* conference. In a multicast conference, you send a stream of video, audio, and conference control data over a network to many users simultaneously. Joining a multicast conference is similar to connecting to a Reflector. You must have Version 2.1 (or later) of Enhanced CU-SeeMe for Windows to participate in a multicast conference.

Once the multicast conference has been set up (See “To create a multicast conference:” on page 5-11) the conference creator initiates the first call to a participant using the Call button in the Phone Book dialog box. Any user can join the multicast conference by connecting to the conference using the Join Conference dialog box. Users can also join by connecting to any participant that has already joined the conference. The participants list will not display any participants until a user (in addition to the conference creator) connects to the IP address of the multicast conference.

Enhanced CU-SeeMe multicast conferences are “loosely coupled” which means that participants can join the multicast, or disconnect from the multicast at will. Even the creator of the conference can disconnect and the conference will continue to exist as long as more than one user is still connected to this multicast. When all participants disconnect from the multicast conference, then that conference will no longer exist.

Multicast is a special TCP/IP protocol for sending data over an IP network from a single source to many recipients. This requires a TCP/IP stack that supports multicast. The Microsoft VxD TCP/IP stack, which is included with the Windows 95 and Windows NT operating systems, supports multicast. The Microsoft TCP/IP stack is available for Windows 95 and is included in Windows for Workgroups (3.11). For more information on compatible TCP/IP stacks, see the Enhanced CU-SeeMe Release Notes, which is an online document that was installed with your software.

Because multicast is a relatively new TCP/IP protocol, not all routers, bridges, and gateways support multicast. Therefore you may not be able to multicast over the Internet or over your LAN or WAN. Many modem users may find that they are not able to join or create multicast conferences. If you want to use multicast over your corporate LAN or WAN, check with your Systems Administrator first.

Your ability to participate in a multicast conference also depends on the network interface card (commonly called a NIC, or an Ethernet card) installed in your computer. For more information on compatible network interface cards, see the Enhanced CU-SeeMe Release Notes, which is an online document that was installed with your software.

There are two types of multicast conferences:

- ◆ Group Conference - This is an interactive conference where all users who are connected can send and receive audio and video, and can use the other features of Enhanced CU-SeeMe, such as the Chat Window and the WhitePineBoard.
- ◆ Broadcast - This is a one-way conference where only the conference creator can send out video and audio. Others who are connected can see and hear the “broadcasted” audio and video, but they cannot send audio and video.

Multicast conferences have no limit to the number of participants that can join. However, due to bandwidth considerations, a multicast group (interactive) conference should generally not exceed 100 participants. Note that the Participant List can display no more than 32 names at a time, regardless of how many people are actually connected to a multicast. A multicast broadcast conference (one-way) has no limitations as to the number of participants. Multicast broadcast conferences will not have a Participant List. However the conference creator can see how many participants are viewing the broadcast.

Before you can create or join a multicast conference, you must be sure that your computer is set to enable a multicast.

To enable a multicast conference:

1. Select Preferences from the Edit menu or click on the Preferences icon in your local video window.
2. Select the Communications preferences group, shown in Figure 5-3, by clicking on the Communications tab.

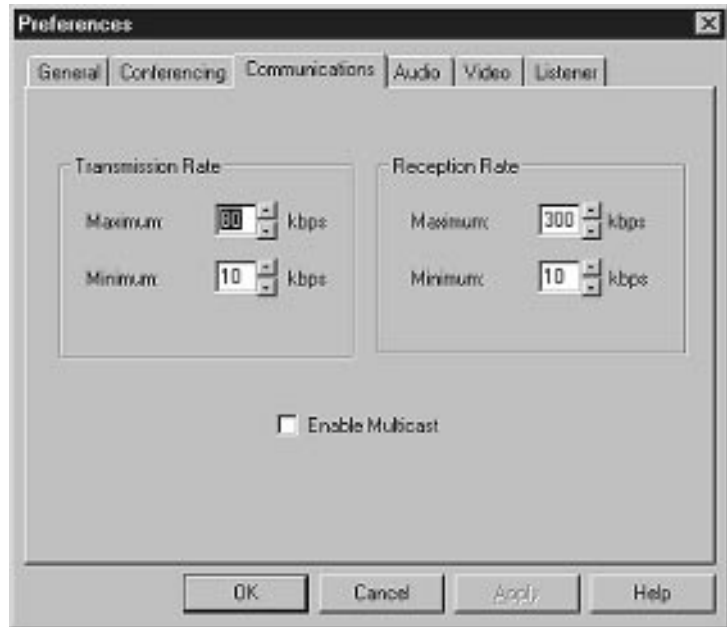


Figure 5-3. Communications Preferences Group

3. Click in the Enable Multicast checkbox to turn this feature on. The default setting is to have Enable Multicast turned off. You must check this box to create or join a multicast conference. When you click on this checkbox, your software will then automatically check to see if a TCP/IP stack with multicast support is installed in your computer. If this stack is found, then this box will remain checked. If an appropriate TCP/IP stack is not found, this box will be empty and you will not have the option of creating or joining a multicast conference.

To create a multicast conference:

1. Make sure that multicast is enabled on your computer (See “To enable a multicast conference:” on page 5-10).
2. Select Create Multicast Conference from the Conference menu. This opens the Create Multicast Conference dialog box, shown in Figure 5-4.



Figure 5-4. Create Multicast Conference Dialog Box

3. Enter a name for your conference in the Conference Name text box. The name cannot exceed 31 characters.
4. Select an area from the Area drop-down list box. You can select one of five areas. These areas determine how far your multicast will reach.
 - ◆ **Subnet** - Stay within your local area network (LAN). Your multicast will not go through routers.
 - ◆ **Site** - Stay within your Wide Area Network (WAN). For example, your multicast may stay within your corporate network. This will work only if your WAN has multicast routers.
 - ◆ **Region** - Extend to the Internet for a defined Time to Live (TTL) as defined in the Advanced settings dialog box. Your multicast will be limited to a defined area on the Internet.

Note:

Before selecting Region, Continent, or World as your multicast conference area, contact your network manager to ask whether you have the appropriate Internet access.

- ◆ **Continent** - Extend to the Internet for an extended Time to Live (TTL) as defined in the Advanced settings dialog box. Your multicast will be limited to a defined area on the Internet. A Continent will have a greater Time to Live value than a Region.
 - ◆ **World** - Extend to the widest range for a defined Time to Live (TTL) as defined in the Advanced settings dialog box. Your multicast will be capable of extending globally.
5. Enter a description for your conference in the Description text box. This is optional. The description cannot exceed 255 characters. As you type, your text will scroll in the text box.
 6. Select the conference type.
 - ◆ **Group Conference** - This is an interactive conference where all users who are connected can participate equally.
 - ◆ **Broadcast** - This is a one-way conference where you can send out video and audio. Users who are connected can see and hear you, but they cannot send data.
 7. Add contact information so that other users can contact you for more information about your multicast. This information is optional and can include the following:
 - ◆ **URL** - You can enter a URL for a Web site that could include information about your multicast conference. Participants who join this conference can then automatically open their Web browsers to get this information.
 - ◆ **Email Address** - Include your Email address if you want people to contact you via Email.
 - ◆ **Phone Number** - Include your phone number if you want people to contact you via the telephone. Remember to include your complete phone number because participants in your conference could be located anywhere in the world.

For most users, these settings are all that you will need to set up a multicast conference. For more advanced users, Enhanced CU-SeeMe offers the option of further customizing the parameters of the multicast conference.

To enter advanced settings for a multicast conference:

1. Click on the More button in the Create Multicast Conference dialog box (see Figure 5-4). This expands the dialog box to offer further customizing options, shown in Figure 5-5. To shrink the dialog box back to its original size, click on the Less button.

The image shows a 'Create Conference' dialog box with the following fields and options:

- Conference Name:** The Shifters
- Area:** Subnet
- Description:** Live on the Internet - Worldwide broadcast of the Shifters
- Conference Type:**
 - ☐ Group Conference
 - ☒ Broadcast
- Contact Information:**
 - URL:** http://www.shiflers.com
 - Email Address:** shiflers@theblues.com
 - Phone Number:** 800-YOU-SHIFT
- Conference Password:** (empty)
- Conference ID:** 23305
- Area (TTL):** 1
- Audio/Control Multicast Address:**
 - ☒ Use Default Settings
 - ☒ All video streaming on this address
 - Audio/Control IP Address:** 224.1.1.2
 - Port:** 27648
 - Video IP Address:** 224.3.1.1
 - Port:** 57648

Buttons: Start, Cancel, Help, << Less

Figure 5-5. Advanced Multicast Conference Settings

2. Enter a conference password in the Conference Password text box. This is optional. If you enter a password, then other users must type this password in order to connect to your multicast conference. Passwords are case-sensitive and the password cannot exceed 31 alphanumeric characters.
3. Enter a conference ID in the Conference ID text box. This is optional. If you enter a conference ID, then other users must type this ID in order to participate in your multicast conference.

Note:

Before modifying the TTL value, contact your network manager to ask whether you have the appropriate multicast router support.

4. Enter a Time to Live (TTL) value. The TTL determines how far your multicast conference will be transmitted on subnets. The TTL value defines the number of routers through which your signal will pass. The maximum TTL value is 225, meaning that your signal will pass through 225 routers. (Note: Subnets can be accessed only if the routers connecting the subnets support IP multicast.) This number is automatically assigned to your area, however you can modify it.
5. In the Audio/Control Multicast Address portion of the dialog box, find the checkbox titled Use Default Settings. By default, this is checked. If you uncheck this box, you will see additional text boxes which may be filled in. These are described in the following steps.
6. Find the checkbox titled All Video Streams On This Address. By default, this is checked. This means that every video user connected to your multicast conference will send video data on the same video IP address. This is required for most TCP/IP stacks and network interface cards.
7. Assign a Video IP Address. This IP address and port are automatically assigned once your multicast conference begins, however you can modify it if you unchecked the box titled Use Default Settings.
8. Assign an Audio/Control IP Address. This IP address and port are also automatically assigned once your multicast conference begins, however you can modify it if you unchecked the box titled Use Default Settings.
9. Assign a Port number. You can have multiple ports within an IP address. The default Port number for Enhanced CU-SeeMe is automatically assigned. You will probably not want to change this value unless you know a specific multicast port number that you want to use.

Congratulations! You are now connected to a multicast IP address. You can get the conference underway by calling a participant using the Call button in the Phone Book dialog box.

Any user can join your multicast conference by connecting to the conference using the Join Conference dialog box (See “To join a multicast conference:” on page 5-15), or by connecting to any participant that has already joined the conference. The participants list will display all participants that are connected to the IP address of the multicast conference (up to a maximum of 32 users).

To join a multicast conference:

1. Make sure that multicast is enabled on your computer (See “To enable a multicast conference:” on page 5-10).
2. Select Join Multicast Conference from the Conference menu. This opens the Join Multicast Conference dialog box, shown in Figure 5-6.

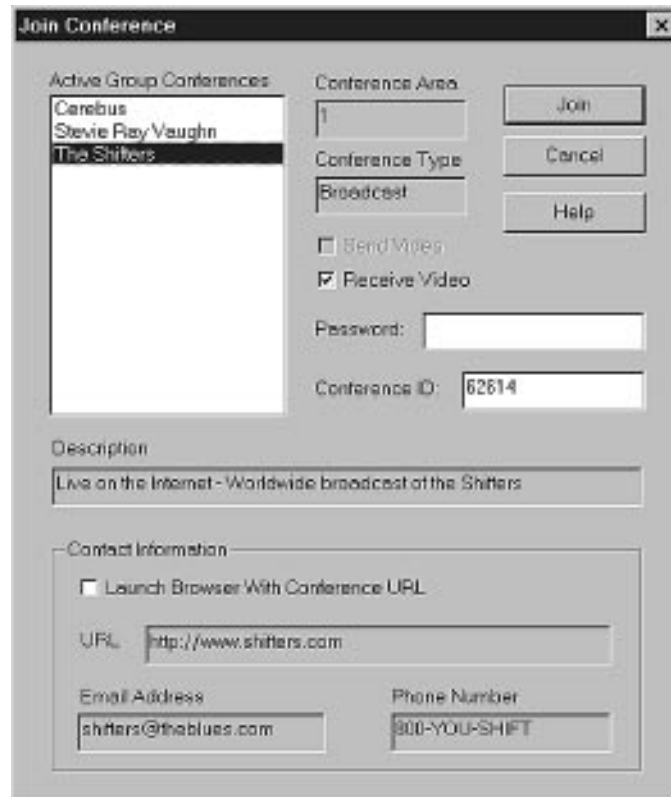


Figure 5-6. Join Conference Dialog Box

3. Select a conference from the list in the Active Group Conferences box.

4. When you select a conference from the list provided, you will see the information about that conference in the following text boxes:
 - ◆ Conference Area - Subnet, Site, Region, Continent, or Unrestricted
 - ◆ Conference Type - Group or Broadcast
 - ◆ Description - Information provided by the creator of the conference
5. Using the checkboxes, select whether you want to Send Video and Receive Video in this multicast conference. By default, these are both checked.
6. If the conference is password protected, you will be prompted to enter the password in the Conference Password text box.
7. If the conference creator provided additional contact information, you will see this in the lower portion of this dialog box. If there is a URL associated with this conference, then you can automatically launch your Web browser and connect to that URL by checking the box titled Launch Browser with Conference URL. This URL may be used to provide information about the multicast conference.
8. Click on Join to join the multicast conference.

Congratulations! You have now joined a multicast conference. This multicast conference should appear the same as a conference on a Reflector. You can use all the same features, such as the chat window, participant list, and WhitePineBoard.

Locating Other Users Online

There are many users of Enhanced CU-SeeMe around the world. You may want to find out who they are and how to contact them. White Pine has made this easy. White Pine has collaborated with Four11 Corporation to provide a Web-based directory services which will enable you to easily find other users of Enhanced CU-SeeMe, see if they are online, and make a direct videoconference connection to them.

When you installed Enhanced CU-SeeMe on your computer, you were presented with an opportunity to register yourself in the directory services. If you chose this registration option, you are now listed in this directory and other users will be able to see when you are online using Enhanced CU-SeeMe. They can then choose to call you directly. You will also be able to locate other registered users.

Many Internet users have an Internet Service Provider, or an online service, that assigns them a new IP address each time they connect to the Internet. This has made it difficult for users to call each other directly. It is like having a new phone number assigned to you each time you pick up your phone. The Web-based directory services solves this problem by automatically registering your current IP address the moment you go online, making it easy for people to locate each other online.

For your convenience, you can access the directory services in either of the following ways:

- ◆ Double-click on the Four11 icon in the CU-SeeMe program group.
- ◆ Click the Directory Services button in the Phone Book, as shown in Figure 5-7.



Figure 5-7. Phone Book

Either of these methods will launch your default Web browser (if one is installed) and connect you to the directory services search page. You can then enter the name of the person you want to look up, and click on the Search button. You can also choose to leave all the fields blank and click on the Search button for a list of registered CU-SeeMe users.

Registering Yourself in Directory Services

All users of Enhanced CU-SeeMe, Windows and Macintosh users alike, can register themselves in the Web-based directory service, enabling other users to locate them online. However, only users of Enhanced CU-SeeMe Version 2.1 for Windows can currently connect directly to the Web-based directory service from their Enhanced CU-SeeMe application, and can launch Enhanced CU-SeeMe from the directory. Macintosh users can look forward to these features in a future release.

You can register in any of the following ways:

- ◆ Choose the registration option when you install Enhanced CU-SeeMe on your computer.
- ◆ Double-Click on the Registration icon in the CU-SeeMe program group.
- ◆ Go directly to Four11's home page on the Web at:
<http://www.four11.com/>

You can use the Web-based directory service to search for other users of Enhanced CU-SeeMe. Then you can find out whether or not they are currently online, and you can automatically launch a connection to them. Even if you are not registered, you can still search for other users. When you do register, you allow other people to find you, check whether or not you are online, and let them connect directly to you.

Configuring Your Web Browser

If you want to use the directory service to directly connect to another user, you will need to tell your Web browser how to launch Enhanced CU-SeeMe. To do this, you need to define the Enhanced CU-SeeMe application as a helper application in your Web browser.

To set up your browser to automatically launch Enhanced CU-SeeMe:

1. Locate the dialog box that allows you to add new file types in your browser, typically in a preferences dialog box. For example, in Netscape™, choose General Preferences (Windows) or Preferences (Macintosh) from the Options menu, then select Helper Applications. In Microsoft Internet Explorer, Choose Options from the View menu, then select the File Types tab.
2. Click the Create New Type button (Windows) or New button (Macintosh).
3. Specify the Mime type: application
4. Specify the Mime subtype: x-cuseeme

5. Specify the file extensions: cu, csm
6. Specify Enhanced CU-SeeMe as the application.
7. In Windows you need to make sure Enhanced CU-SeeMe is in your path, or specify the full pathname for the cuseeme executable file.
8. Set the action to launch the application in Netscape, or open the application in Internet Explorer.

Tuning Your Video Performance

You may wish to adjust your settings to improve the video image you transmit. Many of the default video settings in Enhanced CU-SeeMe can be changed using the Preferences dialog box.

To change a video preference setting:

1. Select Preferences from the Edit menu or click on the Preferences icon in your local video window.
2. Select the Video preferences group by clicking on the Video tab (Windows) or selecting the Audio/Video group name from the pop-up menu (Macintosh).

Configuring the WhitePine Color Video Codec

If you have selected the WhitePine Color video codec from the Video preference group, click on the Configure button to make additional adjustments. The Configure dialog box will appear, as shown in Figure 5-8.

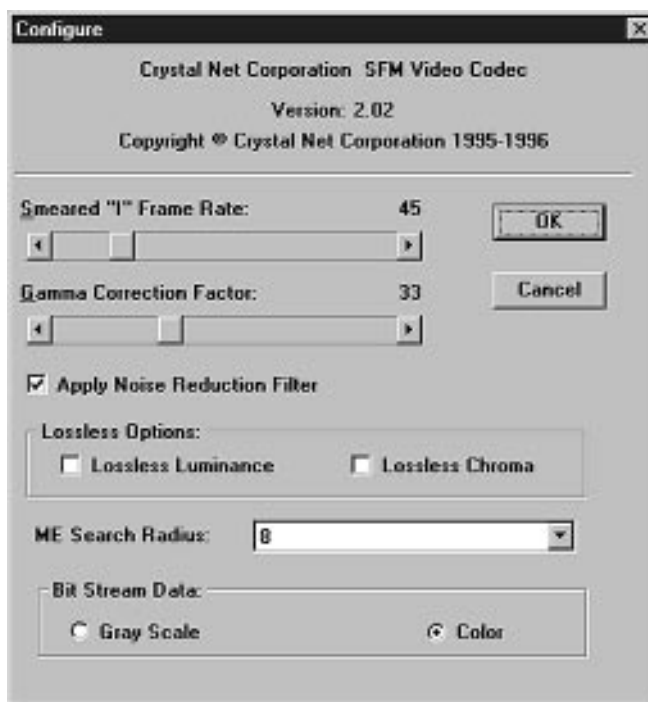


Figure 5-8. Configure Dialog Box

Use this dialog box to configure the WhitePine Color codec. A codec is software that compresses and decompresses your video (or audio) data so that it can transmit more easily across phone lines or a network. The specific features of the WhitePine Color codec are described below. If you wish to change the appearance of the video you send, a good general rule is to modify the values of the codec in this dialog and see how those changes affect the performance of your remote video when you connect to Self.

Smeared “I” Frame Rate

Your video data is transmitted as a series of frames, which are updated continuously. In order to get the smoothest possible video with the least amount of data loss, the video codec looks at the changes from one video frame to the next, compresses this changed data, and then adds this data to the previous frame. The result is that the video image you transmit is updated as you move in front of your camera. Unfortunately, there is usually some unavoidable loss of data as your video image is sent across a network. To compensate for this loss and to make sure unwanted “noise” won't build up on the connection, a full frame (containing ten times more data than a typical frame which only includes the changes since the previous frame) is periodically distributed (or “smeared”) over a number of frames. This number of frames is specified by the Smeared “I” Frame Rate. The Smeared “I” Frame Rate determines the timing of this insertion. A lower number means that this full frame is inserted more often.

The default Smeared “I” Frame Rate is 45, which takes into account the amount of noise on a typical Internet connection. For connections over a LAN, where there is much less noise, the rate of insertion can be increased, which means changing the setting to a lower number.

Gamma Correction Factor

The Gamma Correction Factor is similar to the brightness control on a television set. On the Gamma Correction Factor scale, the higher the number, the brighter the picture.

The default setting is 33, which means there is no Gamma Correction. The Gamma Correction affects only the video windows that you see on your computer monitor. It does not affect the video that you transmit to others.

Apply Noise Reduction Filter

The hardware components of some low-end cameras generate a lot of static noise, which is difficult to compress. When the Apply Noise Reduction Filter box is checked, an extra operation is added in which noise is filtered before going through the codec (COMpression-DECompression) process. The result is a picture that is received with less noise. The picture will also use less bandwidth if the noise is filtered out. Note that this filter will only affect how other users see your video image. Using this filter uses some CPU power from your computer, but it can be helpful to clean up the image sent by your camera.

Lossless Options

The term lossless means a perfect replication of a picture so that the picture, after it has been compressed and decompressed, is exactly the same as it was before entering this process. That is, no quality is lost in the picture.

There are three lossless options:

- ◆ Luminance - preserves brightness and contrast
- ◆ Chrominance - preserves color
- ◆ Quality - preserves clarity (no blurring)

You can transmit in high quality lossless mode by checking these options and setting Quality to 100% (on the Video preferences tab). Check Lossless Luminance to transmit lossless grayscale; check both Lossless Luminance and Lossless Chroma for color.

Achieving this high quality mode is expensive in terms of the amount of bandwidth used. A perfect picture replication is possible, but it can reduce your frame rate. The default for both options is to be turned off.

ME Search Radius

Use the ME (Motion Estimator) Search Radius to establish the neighborhood in which the WhitePine Color codec's Motion Estimator compares motion between one video frame and the next. The Motion Estimator looks in a search radius (or neighborhood) of X pixels of the video subject, where X is the number of pixels entered in the ME Search Radius box. The default is 8 pixels.

If there is going to be a lot of motion in your video, a wider radius means a smoother picture. This uses less bandwidth, however, it can be expensive in terms of the amount of CPU used.

Bit Stream Data

The default transmission mode for the WhitePine Color codec is, appropriately, color. You can, however, choose to use the WhitePine Color codec but transmit in gray images by clicking on the Gray Scale radio button in this dialog box. Typically, removing the color information from the bit stream in this way results in a 10%-20% reduction in the bandwidth requirements.



Technical Support



Appendix

What's In This Appendix

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| Before Contacting Technical Support | A-4 |
| Contacting White Pine Software | A-8 |

Frequently Asked Questions

White Pine maintains a list of Frequently Asked Questions (commonly referred to as FAQs) on the World Wide Web.

To reach the White Pine FAQ Web page, use the following URL:

<http://www.cu-seeme.com>

Technical Support Policy

White Pine Software provides telephone support to all Registered users after registering the product. Only purchased copies of the product can be registered, meaning that you can not register any of the freeware versions available through Cornell University.

You can contact technical support using the conventional methods listed in “Contacting White Pine Software” on page A-8 or you can get technical support through the White Pine Software Web pages.

World Wide Web Technical Support

The White Pine Software World Wide Web pages offer a variety of information about our company, our products, and demo versions of our released software, in addition to technical support.

The Technical Support pages offer online registration, technical support through an interactive form, and a list of Frequently Asked Questions about using Enhanced CU-SeeMe on both the Windows and Macintosh platforms.

To reach the White Pine Software technical support’s Web page, use the following URL:

<http://www.cu-seeme.com>

E-Mail Support

The White Pine Software technical support staff also answers questions through e-mail. It is important that you provide all the information listed in “Before Contacting Technical Support” on page A-4, in addition to the following information:

- ◆ your name
- ◆ company name
- ◆ phone number

This information is necessary for contacting you directly, if required.

Before Contacting Technical Support

White Pine Software provides technical support to registered users. Return your user registration card promptly or register Enhanced CU-SeeMe using on-line registration (see “World Wide Web Technical Support” on page A-3). Product registration guarantees you new product notification and product upgrades.

To get your problems solved as quickly as possible, the technical support staff requires as much pertinent information as possible. If you can supply us with this information at the time of your call, we can understand and resolve your problem much faster. You should have this information ready and be at your computer when you call for technical support and be ready to reproduce the problem while talking to a technical support staff member.

Please fill out the following information before calling:

Serial #: _____

Product: _____

Version: _____

Date Purchased: _____

Original Purchaser: _____

PC Configuration

Make and Model: _____

DOS Type and Version: _____

Microsoft Windows Version: _____

Disk Space: _____

Memory (RAM): _____

Video Card Manufacturer and Model: _____

Video Capture Card Manufacturer and Model: _____

Sound Card Manufacturer and Model: _____

Camera Manufacturer and Model: _____

Microphone Manufacturer and Model: _____

Contents of the following files:

- ◆ Network configuration files, if applicable
(for example, TCP.CFG or NET.CFG)
- ◆ WIN.INI
- ◆ SYSTEM.INI
- ◆ CUSEEME.INI
- ◆ AUTOEXEC.BAT
- ◆ CONFIG.SYS

Macintosh Configuration

Model: _____

System Version: _____

Finder Version: _____

Memory (RAM): _____

AV Card: _____

VRam: _____

Camera Manufacturer and Model: _____

Microphone Manufacturer and Model: _____

Digitizer Manufacturer and Model: _____

Communications Configuration

Internet Connection:

Ethernet: _____ ISDN: _____ Modem: _____

Modem Manufacturer and Model: _____

Model of your Ethernet board: _____

Network drivers and other communication software installed on your system:

TCP/IP Driver: _____

Dial-up (if using a modem) PPP/SLIP: _____

Open Transport version (Macintosh): _____

Internet Service Provider (ISP): _____

Contacting White Pine Software

While our Technical Support staff often takes calls immediately, there are times when a representative may be unavailable. If your problem can not be resolved during your initial call, the issue will be discussed with our product specialists and engineering staff and the representative will contact you to keep you informed of the status of the situation.

Support Phone

603-594-2804

8:00 am - 8:00 pm EST

408-446-9203

8:00 am - 8:00 pm PST (available after 10/7/96)

Fax

603-886-9051

Internet

E-Mail: support@cu-seeme.com

WWW: <http://www.cu-seeme.com>

Sales Hot Line

For more information about all White Pine Software products, please contact the White Pine Software sales department. Demos and product information are also available on the World Wide Web.

U.S. E-Mail: info@wpine.com

U.S. Phone: 1-800-241-PINE (7463)

Europe E-Mail: euro_info@wpine.com

Europe Phone: +33 93 24 76 00

WWW: <http://www.cu-seeme.com>

Glossary



Audio Window

The window that allows you to manage sound coming into and going out of your system.

Bandwidth

The capacity a connection has to send information. It is usually measured in bits per second (bps).

Broadcast

The transmission of the same data to a selected group of destinations.

Browser

A software program that allows a user to access resources on the Internet.

Chat Window

A feature of Enhanced CU-SeeMe that allows users to converse using text messages.

Codec

COmpressor/DECompressor; Hardware or software that compresses audio and video data.

Conference Administrator

The person responsible for setting up and monitoring the reflector.

Conference ID

A number between 1 and 32768 that is provided to attendees of a private conference session. This ID number is needed to log into your server.

| | |
|----------------------------------|---|
| Data Compression | A technique that systems use to save bandwidth by eliminating empty fields, gap redundancies, and unnecessary data to reduce the size and length of the records being sent. |
| Enhanced CU-SeeMe | Desktop video/audio conferencing software for both Macintosh and Windows computers. |
| Full-Duplex | Allows both parties to send and receive audio at the same time. This only affects the receiver. |
| Half-Duplex | Allows only one person to talk at a time. This affects the receiver only. |
| Internet | A global network that uses the TCP/IP protocol. |
| Internet Service Provider | A company that provides a connection to the Internet for a fee. |
| IP Address | The unique numeric address for every computer that is connected to the Internet. It has four sections separated by a dot, for example, 100.1.1.1. An IP address can be dynamic and is often provided by Internet service providers. |
| IP Name | The unique name for every computer that is connected to the Internet. |
| ISDN | Integrated Services Digital Network; A high bandwidth network used to move large amounts of data over phone lines. |
| kbps | kilobits per second |
| Listener | An Enhanced CU-SeeMe feature that alerts you to an incoming call. |
| Local Area Network (LAN) | A network made up of two or more computers connected together. They are usually within the same building or within a very short distance (a mile or less) to each other. |
| Local Video Window | The window containing your video that appears when you start up Enhanced CU-SeeMe. |
| Message of the Day (MOTD) | A dialog box that appears when users access Enhanced CU-SeeMe. It can provide information about the reflector, current and upcoming broadcasts, etc. |

| | |
|----------------------------------|--|
| Multicast | The ability to send one stream of video data and one stream of audio data over a network, and many users can simultaneously connect to and receive these streams of data without the use of a Reflector. |
| Netiquette | Network etiquette; Using “good netiquette” allows faster and better conferences. |
| Participant List | A window containing the list of visible users, hidden users, and lurkers connected to a conference. |
| Phone Book | An Enhanced CU-SeeMe feature that works just like a hard copy phone/address book. It allows you to keep track of nicknames and IP addresses. |
| Point-to-Point Connection | A connection between two users without the use of a reflector. |
| PPP | Point-to-Point Protocol; A protocol that allows a computer to make a TCP/IP connection using a telephone line and a modem. |
| Protocol | Allows programs on different computers to communicate. |
| Reflector | A UNIX or Windows-based software program that allows multiple users to view and send video and audio streams. |
| Remote Video Window | The window that contains the video sent by another participant in the conference. |
| Router | A computer system or software package that connects two or more networks. Routers look at the destination addresses of the IP packets and forward them to the correct address. |
| SLIP | Serial Line Interface Protocol; A protocol that allows a computer to make a TCP/IP connection to the Internet using a telephone line and a modem. |
| TCP/IP | Transmission Control Protocol/Internet Protocol; The protocol that defines the Internet. |
| Time-to-Live | TTL - A value used by routers that is decremented as it is passed from router to router. |
| URL | Uniform Resource Locator - An “address” used to locate information on the Internet. |

| | |
|--------------------------------|---|
| Videoconferencing | Software and hardware that allows users to see and hear each other using their computer systems. |
| WhitePineBoard | A feature of Enhanced CU-SeeMe that allows users to view, create and/or share the same document at the same time. |
| Wide Area Network (WAN) | A large network made of connected LANsw. |

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