# QuickTime™ Conferencing SDK Human Interface Guidelines

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# QuickTime Conferencing Overview

## Introduction

In order to make media conferencing intuitive, consistent, and easy to use, applications on the Macintosh and other platforms should have a consistent human interface.

This document describes human interface guidelines for use with QuickTime Conferencing. The first two sections, the **Stream Controller Component** and **Using QTC with PowerTalk,** describe standard human interface elements provided by QuickTime Conferencing, for applications offering video-telephone functionality and audio / video broadcast and reception,

The next section, **Miscellaneous**, describes future components which are planned to be included in later versions of the QuickTime Conferencing "toolbox," such as data sharing & collaborative features. This section also includes a limited description of features which are not components, but may require human interface support.

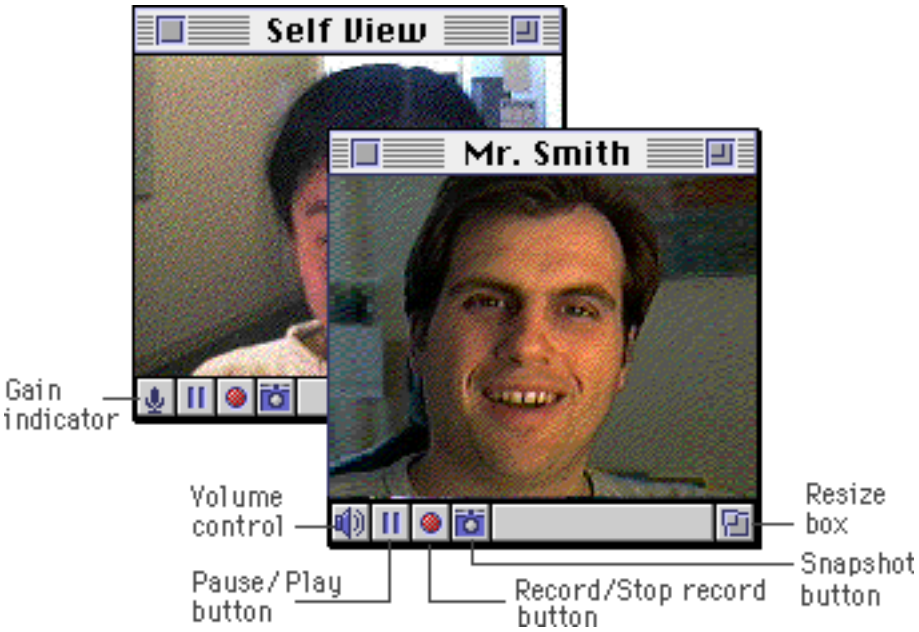
The fourth section, **Issues and Problems**, describe known human interface problems and issues.

For more Human Interface reference, please examine the QT Conferencing sample application, Apple Media Conference, as well as the QuickTime and PowerTalk Human Interface Guidelines.

# The Stream Controller Component

The stream controller component provided with QuickTime Conferencing by Apple provides control elements for data associated with a specific audio / video stream. These controls include regulating sound, pausing / resuming the connection, recording a connection, taking a snapshot, and resizing the image. Depending on the application, all, none or several of the controls can be used by a developer. Developers may also add a limited number of controllers to the standard controls. Figure 1 shows the controls supported by Apple's stream controller component.

**Figure 1** The standard stream controller




The stream controller presented by Apple's stream controller component contains a number of individual controls, as shown in Figure 1. These controls include:

- **Volume control.** This control allows the user to adjust the sound volume of an incoming stream (from the remote machine).

  Holding down the mouse button while the cursor is on this control causes the controller to display a slider that allows the user to change the sound volume of the connection. As the user adjusts the volume using the slider, the icon on the volume control button changes according to the amount of audio energy. For example, if the user sets the slider to it's lowest level, the icon displays a speaker with no sound waves.

  Setting the volume slider to its lowest level will mute the sound. Option-clicking on the volume slider will cause the audio to become instantly muted.

  If no sound is sent by the remote user, the volume control button is not visible.

- **Audio level indicator & gain control.** This control indicates the live audio level of a connection by animating the microphone icon. Sound waves appear around the microphone to indicate the audio level. A red line appears when the audio level is too high or is "clipping."

  When users click on this button a slider appears. This lets the user manually adjust the microphone gain of the outgoing stream from that controller. Some audio input devices use do not provide the ability to adjust the input gain. In that case, the audio level indicator does not act as a button, but only an indicator of audio level.

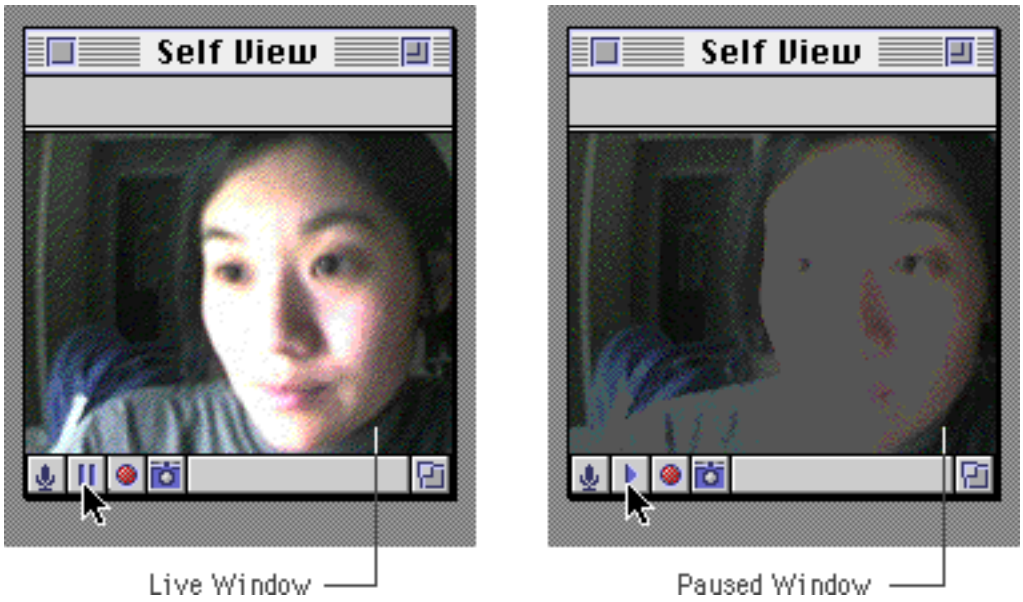
  If the user is sending no audio, the audio level indicator will not be visible. If the audio is silent, but is active, the gain button will display an microphone with "no sound waves."

- **Pause/play button.** This control lets the user pause and resume play of the connection. No audio or video data will be transmitted to the remote machine while the pause button is depressed.

  Clicking the pause button causes the connection to pause. The stream controller component then changes the pause button to a play button. While paused, the audio / video is "frozen." Clicking on the play button resumes the display and sending of live audio / video.

  If a connection is open and the user clicks on the pause button in the self view window, the user stops sending live audio and video, and continues displaying the received live audio / video data in the remote windows. Clicking on the pause button of a remote window does not affect the actual sending or not sending of remotely sent data, but pauses only the local display of the audio / video signal.

**Figure 2** Live / Paused Windows




Note: Additional human interface elements are suggested to help the users more clearly know when a window is paused. We recommend "graying out" the video window while paused. Figure 2 shows the a live vs. paused video window using this mechanism.

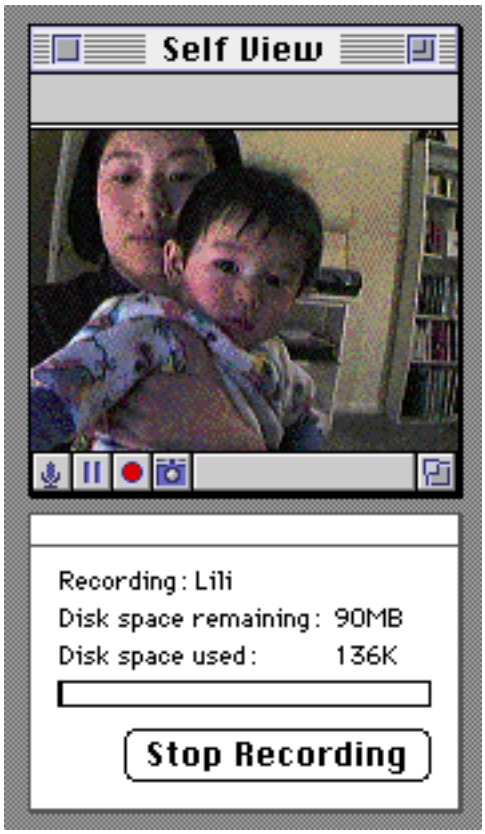
- **A record button.** The record button lets the user record the audio / video displayed in either the remote or self view windows

  Clicking on the record button starts recording. While recording, the button flashes. Clicking on the flashing button stops recording and saves the movie to disk as a QuickTime movie. A user cannot stop a recording once permission has been granted, but can stop sending live audio / video by clicking the pause button.

  Note: Additional human interface elements are suggested to let users "approve" or "refuse" remote recording. We recommend adding preferences, asking the user to choose between "do not allow any remote recording", "require permission before remote recording", and "allow all remote recording." If users do not allow any recording, no record button should appear on the Remote Windows.

Additional human interface elements are also suggested to help the users more clearly know when they are recording. We recommend letting the user choose a file name and location for the saved movie via a dialog box, either before the recording has begun, or after it has completed. Also, a window noting remaining disk space may be displayed while recording. Figure 3 shows the live recording with record information window. (see the sample application Apple Media Conference for an example)

**Figure 3** Live recording with Record Info window




- **Snapshot or "copy" button.** This control allows the user to quickly capture a "live" image. Clicking on the snapshot button briefly changes the camera icon to a "flashing camera" icon, and captures the live image.

Note: If a shared window is available in the application, it is suggested the developer display the image in the shared window. This lets the end user immediately view the snapshot. Additional human interface elements are suggested to help the users more clearly know when a snapshot has been taken. We recommend a "camera click" or "snapshot" sound also be played.

- **Resize box.** The resize box lets the user change the size of the controller before or during a conversation. Applications should generally resize the window in response to resizing the controller.

  Resizing the self view window during a connection changes the size of the video sent, and therefore may change the size of the window on the remote side. Resizing a remote window during a connection affects only the local machine.

  If the user resizes the controller so that there is not enough space to display all the individual control elements, the stream controller component eliminates elements from the display.

- **Additional buttons.** The entire controller or any of the individual buttons can be eliminated by the developer. In addition, developers may add up to four custom buttons in the controller. When adding buttons, developers should consider the effect of the added buttons on the overall controller. During limited user tests, we found that users are confused by a large number of buttons, and therefore tend to ignored unclear buttons. Additionally, developers should make sure the graphic design of additional buttons do not duplicate or closely resemble the design of the standard buttons.

- **Future versions of the Controller.** It is recommended that developers follow the Human Interface "notes" described in this sections. In future versions we plan on making much of the behavior associated with the button part of the controller itself. (For example, the window will automatically turn gray when the pause button presses, and the snapshot button will automatically make a "clicking" sound when the snapshot button is pressed, etc.)

Note: This document assumes the reader is familiar with QuickTime services, and the QuickTime controller. For further information on QuickTime, please refer to the QuickTime Human Interface Guidelines.

# Using QTC with PowerTalk

## About QuickTime Conferencing & PowerTalk Services

PowerTalk system software provides a variety of services that are well suited for QuickTime Conferencing. The PowerTalk services used by QuickTime Conferencing are the following four items:

- PowerTalk Information Cards
- PowerTalk Catalogs
- PowerTalk Mailbox
- PowerTalk Key Chain

This document assumes the reader is familiar with System 7 Pro, System 7.5 and PowerTalk services. For further information on System 7 Pro or System 7.5, please refer to the PowerTalk User's Guide and PowerTalk Human Interface Guidelines.

## Information Cards

An information card represents a Finder object that contains catalog information. For QuickTime Conferencing, there is a QT Conferencing card that holds service type, connection type, and network-specific information needed to establish a connection. This information is stored in the QT Conferencing card and is extracted by the QuickTime Conferencing browser when the user initiates a call.

In order to be able to create QT Conferencing cards, the QuickTime Conferencing Template system extension must be in the System Folder at startup. This template is automatically added to the System folder by the QuickTime Conferencing installer.

## Stand Alone QT Conferencing Cards

There are several ways to create a QT Conferencing card. The first, and easiest, is with the help of the QuickTime Conferencing Browser component used by QuickTime Conferencing enabled applications. Once in the application's PowerTalk browser, select the party for whom you wish to create a card. Then use the browser's "Add" button to create a QT Conferencing card, stored in the preferred Personal Catalog.

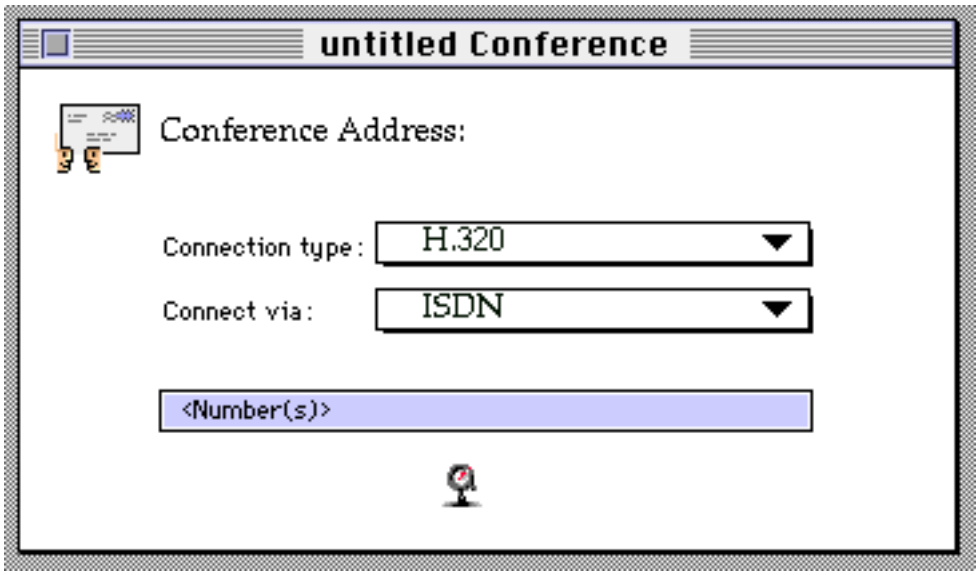
**Figure 1** Adding QT Conferencing cards via a PowerTalk Browser


If you open the card from the Finder, you will note that all the information required by QuickTime Conferencing to make a connection has already been entered.

Stand alone address cards can also be created from the Catalogs menu item. This menu appears whenever a PowerTalk catalog is opened. To create a stand alone address card from the catalog menu, the user can select either “QTC Broadcast” or “QTC Conference” (or any other available service type) from the Catalogs menu.

All stand alone address cards will automatically be filtered by the QTC PowerTalk browser. For example, if the user selects “broadcast” from within the application, the browser will not display the stand alone cards of service types other than “broadcast.”

**Figure 2** Inside a configured QT Conferencing Address card

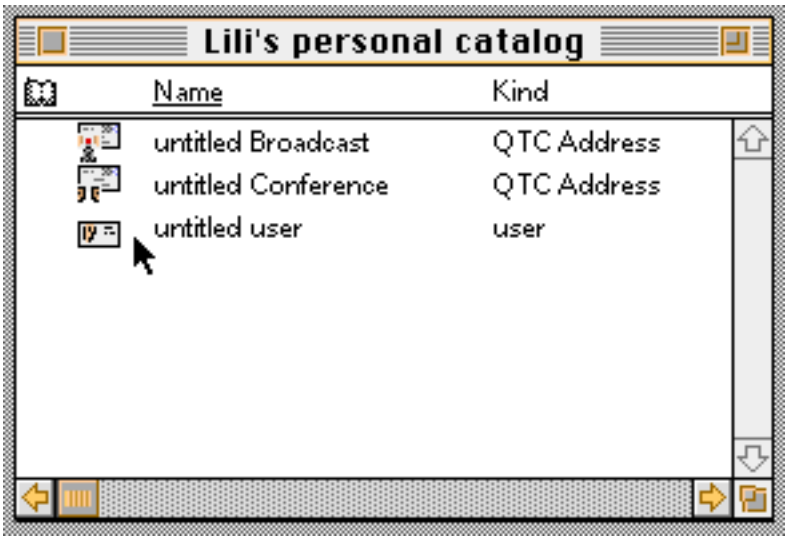



## QT Conferencing Cards within a User Card

QT Conferencing addresses can also reside within a PowerTalk user card. To create a new user card, the user can access the Catalog menu which appears whenever a PowerTalk catalog is open.

For example, open the Personal Catalog and select "New User" from the Catalogs menu. This will create a new "untitled user" card.

**Figure 3** An untitled user card inside the Personal Catalog




To add a new QTC address within a user card, open the user card to the QT Conferencing Address page and click on the “Add” button.

**Figure 4** A user card opened to the QT Conferencing page

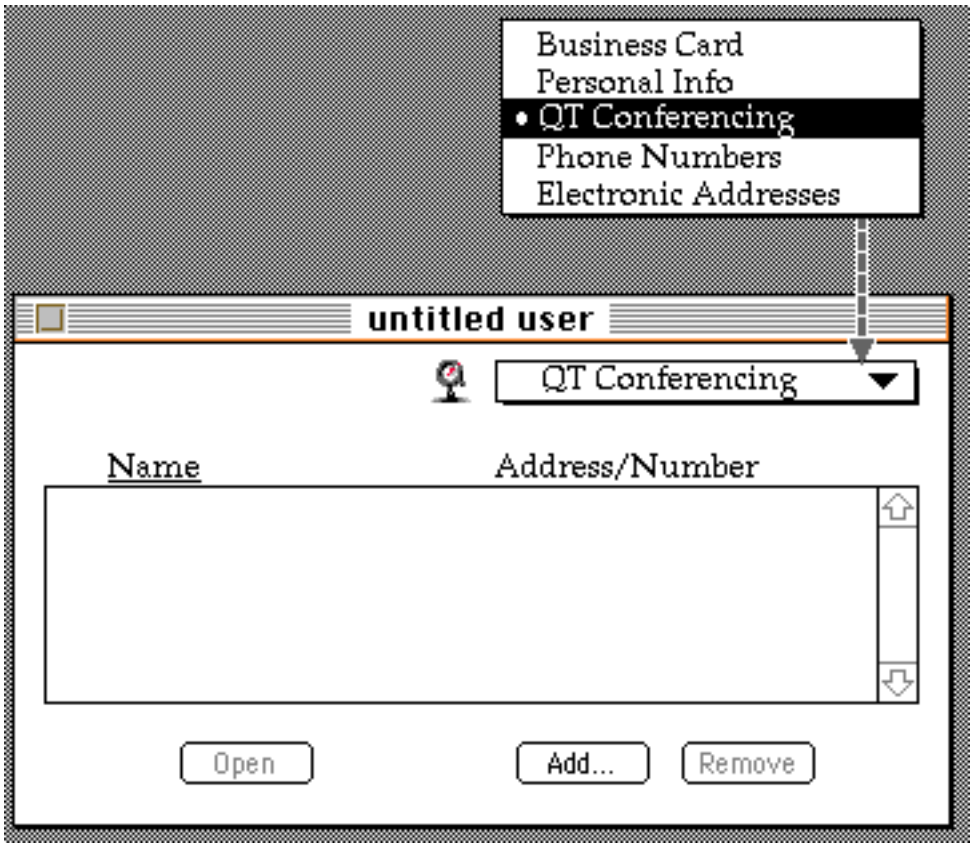
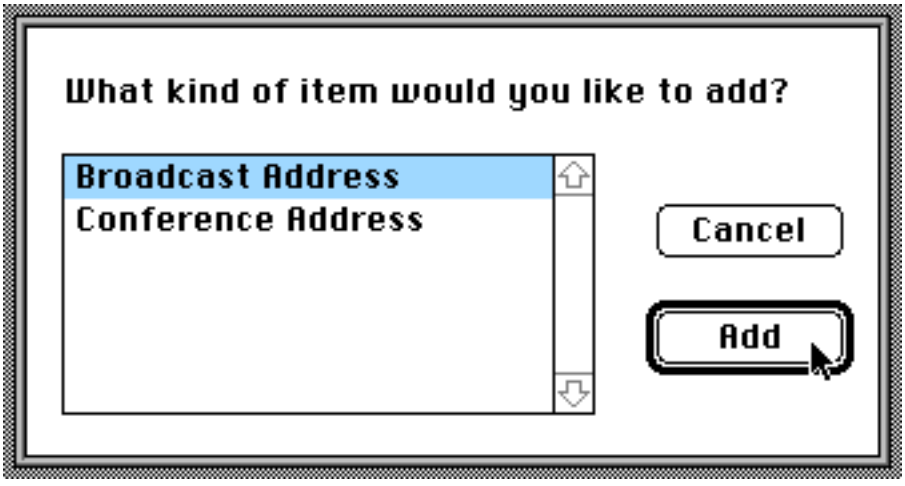


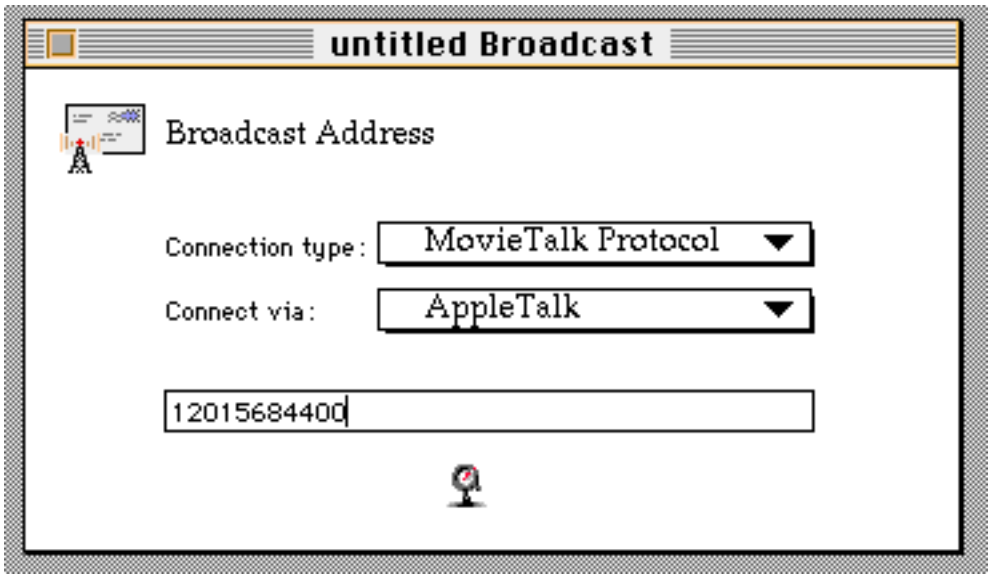

**Figure 5** Creating a QT Broadcast card within the QT Conferencing page




Depending on the services types available on the user's machine, items will be provided in the "Add button" dialog.

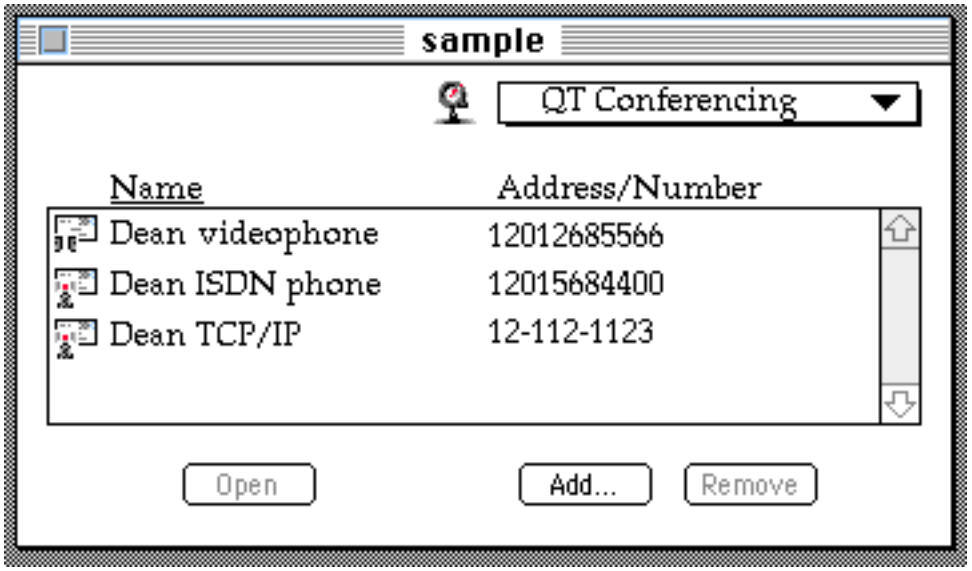
Likewise, connections and network types available on the user's machine will appear on the address card via pop-up menus. (See Figure 6) These pop up menus will automatically provide the user with a selection of allowable configurations. The user must also type in a telephone number or a network address. Closing the card saves the information.

**Figure 6** A new QT Broadcast Address card




When you close the “untitled Broadcast” address card, you will see it listed in the QT Conferencing page.

**Figure 7** A list of QT Conferencing cards within user a card




It is possible to change the name of the "untitled user" card without affecting the internal information used by QuickTime Conferencing. However, note that re-naming a QT Conferencing card is not recommended.

Double clicking on the name, or clicking on the "Open" button, opens the appropriate QT Conferencing card. In addition, it is possible to drag a QT Conferencing card into or out of a user card. Dragging a QT Conferencing card out of a user card's QT Conferencing page will create a stand-alone QT Conferencing card with a single address.

## Catalogs

Catalogs are convenient places to organize and store information cards. There are several catalogs and related services supported by PowerTalk and used by QuickTime Conferencing. These are: 1) AppleTalk Catalog, 2) Personal Catalog(s), 3) Other PowerShare Catalog(s), and 4) the Find in Catalog desk accessory. All catalog services are equally accessible and modifiable through both the Finder and the QuickTime Conferencing Browser component.


The AppleTalk Catalog gives the user direct access to QuickTime Conferencing entities that are available on the network. Via the QuickTime Conferencing Browser component, a user is capable of dynamically searching the network for a QuickTime Conferencing service, adding the service to a Personal Catalog, or to simply request a connection with the selected service.


The preferred Personal Catalog, which is typically accessible through the Apple Menu, plays a very important role in the PowerTalk Browser component. For example, the preferred Personal Catalog is the default catalog that is opened by the Browser component. This is the "address book" for QuickTime Conferencing applications. Any QuickTime Conferencing information card that is placed in the preferred Personal Catalog via the Finder will also appear when the Browser component is used. In a similar manner, a QuickTime Conferencing information card that is placed in the preferred Personal Catalog via the Browser component will also appear when the Finder is used.


In addition to the Personal and AppleTalk Catalogs, the QuickTime Conferencing Browser component can use any catalog published by a PowerShare server or alternate catalog. Just as with the AppleTalk Catalog, the user is capable of searching for QuickTime Conferencing services, adding the registered service to the Personal Catalog, or simply requesting a connection onto that service though the Browser component.


While in the Finder, it is possible to search for user information cards via the "Find in Catalog" typically located in the Apple Menu. The user can specify what catalog(s) to search, and for specific user names.

## Mailbox

The PowerTalk Mailbox, located on the desktop, is the place where all correspondence that is sent and received is located. With the assistance of user information cards, the Mailbox enables users to exchange QuickTime Conferencing information cards effortlessly. For example, a user drags a QuickTime Conferencing card onto a user card in order to send the QuickTime Conferencing card to another person. On the receiving end, cards that arrive in the PowerTalk Mailbox are simply dragged onto the Personal Catalog, where they become part of the address book available to the Browser component and end user.

### PowerTalk Key Chain

The PowerTalk Browser component offers security services with the aid of the PowerTalk Key Chain. When the application invokes the PowerTalk Browser, the component checks to see if the

Key Chain is unlocked. If the Key Chain is locked, the Browser component requests that the user enter a valid password before the Browser is made available to the user. This prevents from unauthorized access to QuickTime Conferencing services.

# Miscellaneous

## Global Controls

In addition to the stream controller, which controls features of a group of related streams, QuickTime Conferencing provides various "global" controls. Global controls for sound, pause, and / or record, affecting all audio / video streams or the entire conversation are also supported by QuickTime Conferencing.

**Sound:** Sound volume of a live QuickTime Conferencing conversation can be raised or lowered in various ways. The user can access the system volume in the sound control panel, access system volume using hard buttons on some monitors and keyboards. It is recommended not to add additional "global" sound controls in an application, unless the user will need to frequently adjust the volume of a conversation.

**Pause:** The user may want to pause (hold) the entire conversation, as opposed to pausing only one speaker. We recommend adding global pause controls in the application and adding additional human interface features (see pause button under the controller section) to indicate the connection is "On Hold." Note: If the user "puts the application in the background" the connection is not paused, and the audio / video continues to be sent by both sides of the conversation. This is particularly important for multi-party conferencing.

**Record:** The user can record the audio / video of all sides of a conversation using a global record (the video windows will be organized and recorded with combined audio and video into one QuickTime movie). We recommend adding global record features, and adding additional human interface elements (see record button under the controller sections) to indicate a live recording.

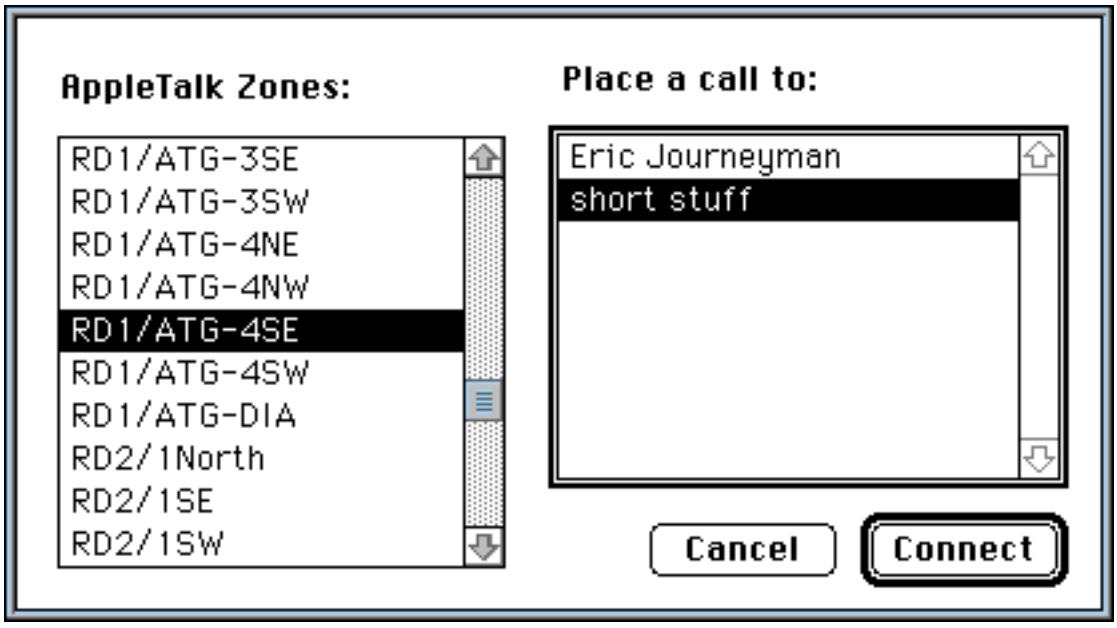
## Non-PowerTalk Browsers

PowerTalk usage is optional. Without PowerTalk users do not have access to various PowerTalk features, including the business cards, address book features, and modeless browser. Nevertheless, QuickTime Conferencing provides modal AppleTalk, TCP / IP, and ISDN browsers. Note: PowerTalk users may have access to the non-PowerTalk browsers. It is suggested to display the non-PowerTalk browsers when a user Option-clicks on a menu item when attempting a connection.

### Chooser Browser

A Chooser browser has been provided for non-PowerTalk users who wish to connect via AppleTalk. Like the Chooser, this browser is dynamic. Only "live" users with the software up and running, and connected to the AppleTalk network will be displayed in the dialog. Once selecting a zone to find a party to connect to, and choosing the party in the desired AppleTalk zone, the user can click the "Connect" button to place a call (or to tune in to a broadcast.).

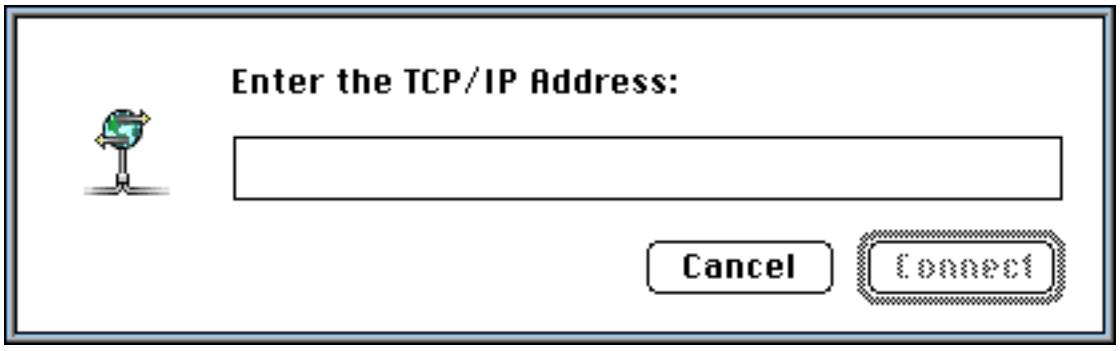
**Figure 8** Chooser Browser




## TCP/IP Browser

A TCP/IP browser has been provided for non-PowerTalk users who wish to connect via TCP/IP. After typing in the TCP/IP address, the user can click the "Connect" button to place a call (or to tune in to a broadcast).

**Figure 8** TCP/IP Browser

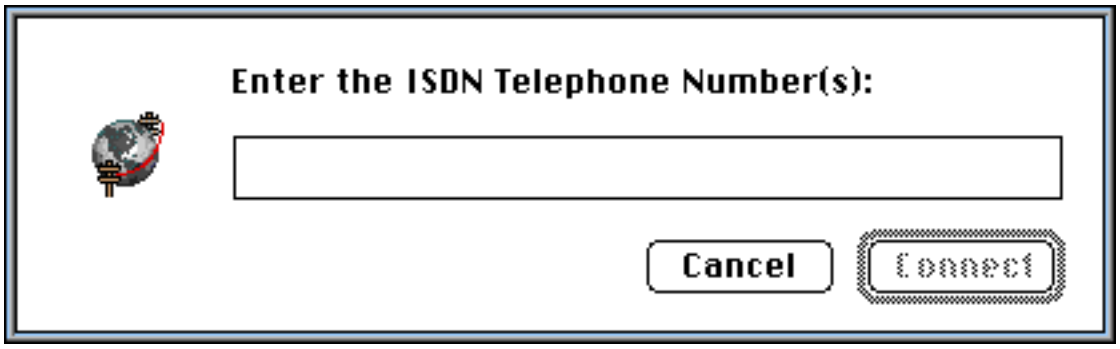



## ISDN Browser

An ISDN browser is available for non-PowerTalk users who wish to connect via ISDN. After typing in the ISDN number(s), the user can click the "Connect" button to place a call (or to tune in to a broadcast).

Note: This browser requires the user to type in numbers in a specific format. If the user has 2 SPIDs (numbers) the user must separate the numbers with an "&".

**Figure 9** ISDN Browser




# Issues and Problems

The following list includes some of the known issues with QuickTime Conferencing and problems that users may encounter:

1. The installation of a QuickTime Conferencing application requires an end user's understanding of various control panels, including the following: network, sharing setup (user name), sound input, monitors, etc. Managing the complex configuration of networks, video and sound needs to be made easier for the end user.

2. In order for a user to make a QuickTime Conferencing connection, both the caller and the person called must have the application running and the QuickTime Conferencing extension installed in their machine.

3. PowerTalk usage is optional. Without PowerTalk users do not have access to various PowerTalk features, including the business cards and modeless browser.

4. Currently the QTC PowerTalk browser does not include a "Type-in." Adding a new "type in" address from within the application is not possible in this version.

5. The echo reduction controls are not as robust as the might be. The echo reduction algorithms and controls will continue to be improved.

6. Network bandwidth consumption and performance vary, depending on your network, your computer, and the particulars of your conversation. Network resource consumption used for a QuickTime Conferencing connection cannot currently be generalized., although the bandwidth is currently limited to be less than or equal to 800 kbits / sec of a transmission.

7. ISDN installation and configuration varies dramatically, depending on the local telephone service provider and can be quite frustrating for users. ISDN costs, installation times, and availability greatly vary. ISDN configuration and management need to be improved.

8. The ISDN non-PowerTalk browser requires users to type in the ISDN SPIDs (numbers) in a specific format. The user must separate the numbers with an "&" in some countries, and not in others.

9. Only limited user studies have been done for broadcasting via QuickTime Conferencing. More work in this area is needed.

10. Currently some of the desired behaviors associated with buttons in the controller are not "part" of the QTC controller, so developers must implement the behaviors on their own.

(Example: When pressing the pause button, the paused window does not automatically “gray out.” It is up to the developer to implement this effect.) We plan on Standardizing the behavior of the controller buttons in future versions of QTC.

We are very interested in your questions, comments, and problems, as we are already researching new “critical” features, additions, and changes for future versions. Please send your ideas and AppleLink: MOVIETALK. Thank you

# Document Version

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# Credits

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# Important Note

The content of this document is of a preliminary nature, and is subject to change without notice.