

# ShowMe™ TV™ User's Guide

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THE NETWORK IS THE COMPUTER™

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# Preface

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This manual describes how to install and use ShowMe™ TV™ system with your Sun Workstation™. It is intended for users who want to broadcast and view prerecorded and live video programs over a network.

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## How This Book Is Organized

Chapter 1 describes the ShowMe TV product.

Chapter 2 shows you how to receive and record audio and video broadcasts from ShowMe TV Transmitters on your network.

Chapter 3 describes how to set up, start, and manage broadcasts to the ShowMe TV Receivers on your network.

Chapter 4 describes how to use the ShowMe TV Address Book.

Chapter 5 contains audio, video, and file format information.

Chapter 6 contains technical information.

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# Using UNIX Commands

This document may not contain information on basic UNIX<sup>®</sup> commands and procedures such as shutting down the system, booting the system, and configuring devices.

See one or more of the following for this information:

- *Solaris 2.x Handbook for SMCC Peripherals*
- AnswerBook<sup>™</sup> on-line documentation for the Solaris<sup>™</sup> 2.x software environment
- Other software documentation that you received with your system

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# Typographic Conventions

TABLE P-1 Typographic Conventions

Typeface or Symbol	Meaning	Examples
AaBbCc123	The names of commands, files, and directories; on-screen computer output.	Edit your <code>.login</code> file. Use <code>ls -a</code> to list all files. % You have mail.
AaBbCc123	What you type, when contrasted with on-screen computer output.	% <b>su</b> Password:
AaBbCc123	Book titles, new words or terms, words to be emphasized. Command-line variable; replace with a real name or value.	Read Chapter 6 in the <i>User's Guide</i> . These are called <i>class</i> options. You <i>must</i> be <code>root</code> to do this. To delete a file, type <code>rm filename</code> .

---

# Shell Prompts

**TABLE P-2** Shell Prompts

Shell	Prompt
C shell	<i>machine_name%</i>
C shell superuser	<i>machine_name#</i>
Bourne shell and Korn shell	\$
Bourne shell and Korn shell superuser	#

---

## Related Documentation

The following documents contain topics that relate to the information in this manual.

Application	Title	Part Number
SunVideo™ Plus for PCI	<i>SunVideo Plus for PCI User's Guide</i>	805-2682
SunVideo	<i>SunVideo User's Guide</i>	802-1318

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## Sending Your Comments on ShowMe TV

If you have comments about ShowMe TV, or if you would like more information, you can use the Comment window to send email to Sun Microsystems.

- 1. Choose Help ► Comment from any Help menu on a ShowMe TV window or on the main ShowMe TV Transmitter window.**
- 2. Type your comments into the comment area of the window.**
- 3. Make sure the System information box is selected.**

When the System information box is checked, information about your system and operating environment is displayed. If the box is not checked, the statement `No system information will be sent` is displayed. Unless you have a specific reason not to, please include the system information.

- 4. Click Send.**

# Introduction to ShowMe TV

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ShowMe TV is a television system for local- and wide-area networks. You can use it to view and broadcast live or prerecorded video programs on your network. You can use it broadcast and view training courses, lectures, corporate messages, and to monitor important news events.

ShowMe TV consists of ShowMe TV Receiver, ShowMe TV Transmitter, and ShowMe TV Address Book.

---

## ShowMe TV Receiver

ShowMe TV Receiver is essentially a TV on your workstation. But it also lets you record broadcasts to a file and set up a viewing schedule to automatically watch or record upcoming programs.

The ShowMe TV Receiver features include:

- A Watch menu for choosing listed programs
- A Program Information window
- The ability to view multiple ShowMe TV Receivers at once
- Audio controls
- Playback and editing controls
- Controls for viewing from SunVideo (Plus)
- Zoom controls
- Quick Record
- Timers for automatically recording or watching upcoming programs
- Color controls
- A message area

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## ShowMe TV Transmitter

The ShowMe TV Transmitter sends video and its accompanying audio from your workstation to the network connected to your workstation. You can broadcast video from any source that you can plug into your SunVideo card—a video camera, a VCR, a laser disk player, a tuner, a satellite feed. You can also broadcast audio-only sources such as a CD player or your SunMicrophone™, even if you do not have a SunVideo card. Further, you can broadcast prerecorded video and audio from a file on disk or CD.

Your broadcasts go to network users that you select, or, if you choose, to all users on your local area network or networks connected to it. You define your transmitter broadcast range when you set up a broadcast.

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## ShowMe TV Address Book

The ShowMe TV Address Book contains the network addresses of people and groups you usually work with or broadcast to. It enables you to send closed broadcasts (broadcasts that go to only a specified list of people).

---

## Online Help

You can read information about ShowMe TV online. You can access help from the Help menu on each of the ShowMe TV main windows or from Help buttons located on most dialog windows.



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# Installation Information

Refer to your ShowMe TV product release information for software installation instructions.

## Installation Requirements

To install ShowMe TV, you must have the following hardware and software configuration:

- A SPARC™ system running Solaris 2.5 or higher operating environment
- Approximately 20 to 25 Mbytes of available disk space
- OpenWindows™ or CDE window environment

## Installation Directories

By default, ShowMe TV is installed in the `/opt/SUNWsmtv` directory.

---

**Note** – While you may choose any directory with enough free disk space, you must install all ShowMe applications under the same directory.

---

**TABLE 1-1** ShowMe TV Directories

Directory	Description
<code>bin</code>	Contains links to the scripts and binaries which are meant to be executed by the user.
<code>help</code>	Contains binaries and some files for the online help.
<code>utilities</code>	Contains the Address Book and <code>Registry_svc</code> (a program named by ShowMe TV).
<code>ShowMeTV</code>	Contains the scripts, binaries, and other files for the Receiver and the Transmitter.
<code>lib</code>	Contains libraries used by ShowMe TV, as well as message files.
<code>app-defaults</code>	Contains application defaults for the online help system.

## XIL Runtime Libraries

Make sure you have the appropriate XIL Runtime libraries installed on your system. XIL1.2 supports the Solaris 2.5 and 2.5.1 operating environment; XIL1.3 supports the Solaris 2.6 operating environment; and XIL1.4 supports the Solaris 7 operating environment. Contact your system administrator for more information.

---

**Note** – If you are using SunVideo™ or SunVideo Plus, make sure the software is properly installed. Refer to SunVideo (Plus) documentation or your system administrator.

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## SunVideo

To broadcast from video devices, you need to install a SunVideo or SunVideo Plus for PCI card on any machine that is running ShowMe TV Transmitter. You also need to connect the video sources from which the SunVideo (Plus) card will be broadcasting. To install the SunVideo card, refer to the user's guide delivered with your SunVideo or SunVideo Plus card for complete hardware installation procedures.

---

**Note** – With ShowMe TV, you do not need a SunVideo card to view broadcasts or play files; you can still broadcast from audio-only devices or from a video file. But if you have a SunVideo card installed, you can use ShowMe TV to view and record directly off of the SunVideo card; you can broadcast from sources which are connected to your SunVideo (Plus) card.

---

## Audio Device Setup

If your system uses anything other than `/dev/audio` for audio input/output, set the environment variable `AUDIODEV` to point to the alternative audio device. For example, if the device installed on your system is `/dev/myaudio` (with the corresponding `/dev/myaudioctl`), set `AUDIODEV` to `/dev/myaudio`.

Most users will never need to set `AUDIODEV` themselves.

## Using ShowMe TV Receiver

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ShowMe TV Receiver enables you to receive and record audio and video broadcasts from ShowMe TV Transmitters on your network. These broadcasts could be a live talk from the broadcaster's desktop, a rebroadcast of a TV channel coming in through an antenna or cable, a videotape in the broadcaster's VCR, a satellite feed, or a broadcast of a ShowMe TV file.

This chapter is organized as follows:

- ShowMe TV Receiver Basics
- Watching a Program
- Recording a Program
- Setting the Timer to Watch or Record a Program
- Using ShowMe TV Files
- Troubleshooting

---

### ShowMe TV Receiver Basics

This section contains the following topics:

- To Start ShowMe TV Receiver
- ShowMe TV Terminology
- ShowMe TV Receiver Menus
- To Change ShowMe TV Default Properties
- To Exit ShowMe TV Receiver

## ▼ To Start ShowMe TV Receiver

Type the following at your system prompt:

```
% showmetv
```

The ShowMe TV Receiver is displayed.

To view optional command-line arguments and descriptions, type:

```
% showmetv -help
```

---

**Note** – If you have difficulty running ShowMe TV, contact your system administrator and find out where it is installed. The default location is `/opt/SUNWsmtv/bin/showmetv`

---

## ShowMe TV Terminology

TABLE 2-1 ShowMe TV Terminology

Term	Description
Program	An audio and/or visual show sent by another computer user (broadcaster) across your network. Audio and video data for a program can come from the following sources: video camera, VCR, TV or radio tuner, cable TV broadcast, pre-recorded movie, or an audio-only file.
Broadcast	An audio and/or video program sent from a ShowMe Transmitter to a TV receiver.
Broadcaster	The person sending a broadcast program across the computer network.
ShowMe TV Transmitter	The part of ShowMe TV that enables the broadcaster to send programs across the network. ShowMe TV Transmitter is much like a television station.
ShowMe TV Receiver	The ShowMe TV window you use to watch a broadcast. You can have several open at once.

**TABLE 2-1** ShowMe TV Terminology (*Continued*)

Term	Description
Picture-in-Picture	A small window within a ShowMe TV window that you use to watch a program other than the one in the main display area.
Timer	A feature of the Program Information window that automatically records or displays a program at a time you specify.
Snap	This snaps a still picture of the running broadcast. Also called snapshot.
SunVideo	This enables you to view directly from the SunVideo board. Whatever video is being fed to the SunVideo board appears in the TV window.

## ShowMe TV Receiver Menus

The ShowMe TV Receiver has four menus on the menu bar: TV, Watch, PiP, and Help.

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**Note** – On menu selections containing optional keystroke shortcuts, use **◆+ *keystroke*** if you are in the CDE environment; use **Alt+ *keystroke*** if in OpenWindows.

---

## TV Menu

**TABLE 2-2** TV Menu Item Descriptions

Menu Item	Description
Properties	Use to set audio, color, and other default settings.
Load movie	Use to load a ShowMe TV file for watching and editing. See Using ShowMe TV Files.
Save movie as	Use to rename and copy the ShowMe TV file you are currently editing.
Picture statistics	Use to view audio and video formats and the data rate of the program running in ShowMe TV.

**TABLE 2-2** TV Menu Item Descriptions *(Continued)*

<b>Menu Item</b>	<b>Description</b>
Program info	Use to see a schedule of current and upcoming programs, set timers to record or display programs, and get detailed information about any program.
Start new TV	Starts another ShowMe TV window that you can use to watch additional programs or files. See <i>To Watch Several Programs or Files Simultaneously</i> .
Exit this TV	Closes the ShowMe TV window you are working in.
Exit all TVs	When you have more than one ShowMe TV running, this closes all the ShowMe TV windows on your desktop.

## Watch Menu

This menu lists the current and scheduled broadcasts available to you, as well as the names of ShowMe TV files that you have recently opened. The Watch menu items are divided into the following categories:

- Programs
- Movie files
- SunVideo

New programs added by a transmitter are automatically listed in the Watch menu.

**TABLE 2-3** Watch Menu Item Descriptions

<b>Menu Item</b>	<b>Description</b>
Programs	Select any program in this list to watch. Programs listed are either broadcasting or have been scheduled by a ShowMe Transmitter.
Files	Select any file to watch. The ten files you have most recently opened during current ShowMe TV session are listed. See <i>Using ShowMe TV Files</i> .
SunVideo	Views video selections running on your system SunVideo (Plus) card. See <i>To Use SunVideo</i> .
Tune out	Stops broadcasting to your TV. You can also stop a broadcast by clicking the program name in the menu.

## PiP Menu

The PiP menu is available only after you activate the PiP feature by clicking the PiP button in the lower right corner of the ShowMe TV window.

Like the Watch menu, the PiP menu lists the currently running or scheduled broadcasts. Unlike the Watch menu, it does not list previously opened files. See [To Use Picture-in-Picture \(PiP\)](#).

## Help Menu

Information on Help menu items is available through the Online Help system. To access Help information,

- **Choose Help ► Online Help from the window menu bar.**

## Program Title, Channel Selection, and Messages

The area under the ShowMe TV Receiver menu bar identifies the program or file you are currently watching and gives other status information. Messages from ShowMe TV broadcasters are placed in the line underneath the channel select arrows and program name.

## ▼ To Change ShowMe TV Default Properties

1. Choose TV ► Properties.
2. Set the properties you want.
3. Click OK to save the properties, or click Cancel to revert to the last saved properties.

TABLE 2-4 ShowMe TV Properties Window Descriptions

Window Item	Description
Audio output	Select audio from your systems speaker, headphone, or from a line-out source.
MPEG audio quality	Active only when playing back MPEG1 or MPEG2 files.
Brightness	Use to increase or decrease the brightness of the video image.
Viewing image	Use to select either color or grayscale. Viewing images in grayscale helps reduce the chance of colors flashing on your screen.
Number of colors	On 8-bit graphic cards, many applications could exhibit color flashing. Use this parameter to prevent or to stop color flash. This feature enables you to change the number of colors (or grays) that ShowMe TV uses to display video images on your screen. The more colors used, the greater the likelihood of color flash occurring. You can select from one of the following: Low = 54 colors or 32 shades of gray Medium = 112 colors or 64 shades of gray High = 200 colors, or 128 shades of gray
Your name and email address	Type the name you want the broadcaster to see (such as a nickname). Your name, email address, user name, and host name are sent to broadcasters so that they can contact you when you are watching their program. For best results, type your full email address.  Note that since your user name and host name are always sent to broadcasters, you cannot watch a program anonymously, even if you leave the name and email fields blank.
Date format	Select the date format you prefer: <i>mm/dd/yyyy</i> , where February 11, 1999 would be 02/11/1999. <i>dd/mm/yyyy</i> , where 11 February 1999 would be 11/02/1999. ShowMe TV and ShowMe TV Transmitter use dates for setting record timers, watch timers, and for displaying program information.



## ▼ To Exit ShowMe TV Receiver

- **Choose TV ► Exit this TV to exit only the ShowMe TV window you are currently watching.**  
or
- **Choose TV ► Exit all TVs to exit all of the ShowMe TV windows running on your desktop.**

---

**Note** – If you have unexpired watch or record timers when you exit, ShowMe TV prompts you and gives you the choice of running ShowMe TV in the background until the timer expires (its stop time is reached).

ShowMe TV does not remember the timers you have set and will not reinstate them the next time you run ShowMe TV.

---

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**Note** – Watch timers and record timers will not activate when ShowMe TV is not running (if you select Exit all TVs). A ShowMe TV window must be running (either as an open window, an icon, or in the background) in order for the timers to work.

---

---

## Watching a Program

This section contains the following topics:

- To Watch a Program
- To Use SunVideo
- To Obtain Information About a Program
- To Watch Several Programs or Files Simultaneously
- To Send Mail to the Broadcaster
- To Use Picture-in-Picture (PiP)
- To Take a Snapshot

## ▼ To Watch a Program

- **Select a program from the Watch menu.**

---

**Note** – To leave the ShowMe TV window open without a program playing, click the name of the program in the programs list, or choose Watch ► Tune out.

---

---

**Note** – When you minimize the ShowMe TV window, the audio continues playing unless it is muted. If you mute the audio by deselecting the speaker button, the audio remains muted when you minimize the window.

---

If you select a program in the Watch menu that is not yet broadcasting, you will be tuned in when that program begins. You can also set ShowMe TV to automatically tune in to a scheduled program by setting a Watch timer. See Setting the Timer to Watch or Record a Program.

## ▼ To Use SunVideo

### 1. Choose Watch ► SunVideo.

The ShowMe TV window displays a SunVideo (Plus) source program. The SunVideo control and slider panel is also displayed.

### 2. Click Settings.

Use the Device Settings panel to change video card ports, compression type, audio input and quality, and so on.

**TABLE 2-5** SunVideo Device Settings

Parameter	Description
Video input	Select Ports 1 or 2 for radio tuners and VCRs, camcorders, video disc players, a satellite feed, or video camera. The RCA-type ports are labeled as Port 1 and Port 2 in the SunVideo Settings Window. There is no difference between Port 1 and Port 2; both ports accept composite video signals. Use S-Video for video units that transmit S-Video signals for a sharper image.
Compression	Select either CellB, H.261, or JPEG. CellB gives reasonable quality with relatively low demand on your CPU. JPEG gives higher quality but requires more processing power to decode. JPEG supports only medium picture resolution, whereas CellB supports all three (low, medium, high) resolutions. As in JPEG and CellB cases, H.261 rate of compression also depends on the characteristics of the image sequence. In general, H.261 codec achieves better compression rates on video sequences with little movement on the image scene. You can change H.261 compression rate by setting the desired Encoding Bit Rate.
Compression quality (JPEG only)	Fine tune the picture quality for JPEG.
Picture resolution (CellB and H.261 only)	Choose the number of pixels in the frame delivered to the system by the SunVideo card.
Audio input	Select either microphone or line-in depending on the audio input source you are using.
Audio quality	Select the quality of audio. Note that the higher qualities generate significantly more data. This is something for you to consider if you plan on recording the video and audio to disk.
Audio input level	Adjust the volume of the audio.

## Listening to Audio-Only Programs

It is possible to have audio-only broadcasts in ShowMe TV. When you choose an audio-only program from the Watch menu, the ShowMe TV window is reduced to save space on your screen. The video controls are inactive (dim) to show they cannot be selected for this broadcast.

---

**Note** – When you minimize the ShowMe TV window, the audio continues playing unless it is muted. If you mute the audio by deselecting the speaker button, the audio remains muted when you minimize the window.

---

## ▼ To Obtain Information About a Program

1. Click **TV ► Program info**.
2. Select the program you want to learn about from the list.
3. Click **Start new TV** to create a new ShowMe TV window tuned to the program you selected.

TABLE 2-6 Program Information Window Descriptions

Item	Description
Program list	The date, time, and name of available programs, and whether you have a timer set to record or watch the program (indicated by the letters R or W to the left of the program entry).
Record and watch timers	See Setting the Timer to Watch or Record a Program.
Unset timer button	Unsets the timer for the currently selected program.
Program window sizing	Adjust the relative sizes of the Program description and Program list window panes by moving the Window pane size control up or down.
Description	The broadcaster's description of the program currently selected in the Programs list.
Broadcaster's address	The broadcaster's network email address. See To Send Mail to the Broadcaster for a description of using the Send mail button.
Send mail	To send email to the person who is or will be broadcasting a particular program.
Audio address	Address of audio broadcast.
Video address	Address of video broadcast.
Program dates and times	Start and end date and time of the program.
Audience	The number of users (including you) watching the program.
Audio and video format	See Chapter 5.
Motion speed	The number of times per second that the image is updated by ShowMe TV Transmitter.

**TABLE 2-6** Program Information Window Descriptions (*Continued*)

Item	Description
Picture resolution	The size of the image being broadcast by ShowMe Transmitter.
Network demand	The number of kilobits per second required by ShowMe TV Transmitter for the program broadcast.
Start new TV	Starts another ShowMe TV Receiver tuned to the program that is currently selected in the Program list.

## ▼ To Send Mail to the Broadcaster

1. **Select a program from the Program Information window.**
2. **Click Send mail.**
3. **Click in the Message area and type your message.**
4. **Click Deliver.**

You can also use the Send mail to broadcaster command in the Help menu.

## ▼ To Watch Several Programs or Files Simultaneously

1. **Choose TV ► Start new TV, or click Start new TV on the Program Information window.**
2. **In the new window, select the program you want to watch from the Watch menu, or select Load movie.**

---

**Note** – All receiver windows share the single speaker or headphone. Once you have several receiver windows open, you can select which program you want to hear. Do this by muting the window which “has” the audio device, and then clicking the speaker button on the window with the program you want to hear.

---

## ▼ To Use Picture-in-Picture (PiP)

1. **Click PiP at the bottom of the TV receiver window.**

2. **Click the now activated PiP menu and select a program.**

You can move the PiP window around within the display area by holding the left mouse button down over the PiP window and dragging.

3. **Click Swap to switch the program in the main window with the program in the PiP window.**

---

**Note** – When you Snap a TV window with PiP running, the PiP window is ignored and does not appear in the snapshot. The Snap feature only takes a snapshot of the program in the main TV window.

---

---

**Note** – If you are watching a *file* in the main window, the Swap button is disabled; you cannot watch a file in the PiP window.

---

## ▼ To Take a Snapshot

1. **Click Snap on the TV main window.**

2. **Save or print the picture.**

■ To save the picture as a Sun rasterfile:

a. **Click Save as.**

The Save window is displayed.

b. **Type a file name for the picture and click Save.**

■ To send the picture to a printer or PostScript file:

a. **Click Print.**

The Print window is displayed.

■ To print to a printer:

i. **Type the printer name.**

ii. **Select the Orientation of the page: portrait or landscape.**

iii. **Click the Print button to print the image using the currently displayed settings.**

■ To print to a PostScript file:

i. **Select Postscript File.**

ii. **Specify a file name in the File Name field.**

This sends the output to a file on disk rather than to a printer.

3. **Click Close to exit the Snap window.**

---

## Recording a Program

ShowMe TV can record only one file at a time, regardless of the number of ShowMe TV windows open. Recording always overwrites the complete contents of the file if you select an existing file as the destination of the recording. While recording, ShowMe TV displays the elapsed time in seconds.

This section contains the following topics:

- To Quick Record a Program
- To Select a Recording Format
- To Record Audio Only

You can also record using Record timers. See [Setting the Timer to Watch or Record a Program](#).

---

**Note** – You can record only one program at a time. There is only one ShowMe TV recorder regardless of how many ShowMe TV Receiver windows you have open. If you change programs while recording, recording stops when the new program is displayed in the ShowMe TV Receiver.

---

---

**Note** – If your system administrator has disabled the Recording feature of ShowMe TV, you will not be able to use Record timers or Quick Record. However, if ShowMe TV files are available on your network, you will still be able to watch them. See [Using ShowMe TV Files](#).

---

Your system administrator may have limited the size of files you can record.

## ▼ To Quick Record a Program

You can begin recording a ShowMe TV program at any time using Quick Record.

1. **Click REC on the ShowMe TV Receiver.**
2. **Type the requested information and selections.**

---

**Note** – See Storing ShowMe TV Files for file size limitations.

---

## ▼ To Select a Recording Format

1. **Click Record on the ShowMe TV window.**
2. **Click Format.**
3. **Select a file format for recording.**

See Chapter 5 for file format information.

## ▼ To Record Audio Only

Not all ShowMe TV programs contain a video portion. When you record audio-only programs, the Record selector of the Record window is automatically set to Audio Only.

- **Choose an audio-only format prior to recording the broadcast.**



---

# Setting the Timer to Watch or Record a Program

## ▼ To Set the Watch Timer

1. **Choose TV ► Program info.**
2. **Select the program you want to watch.**
3. **Click Watch.**
4. **Type a time for ShowMe TV to tune into the program.**

By default, the timer is set to display the program at its scheduled start time. If the program is continuous, the default watch time is five minutes from the current time.

5. **Click OK to activate the timer.**

On the Program Information window, the program you selected is now marked with the letter W to indicate that the program is scheduled to be watched.

---

**Note** – You do not need to set a Watch timer for the program currently selected in the Watch menu of a ShowMe TV window. ShowMe TV will automatically begin displaying that program in the receiver when it starts.

---

## ▼ To Set the Record Timer

1. **Choose TV ► Program info.**
2. **Select the program you want to record.**
3. **Click Record.**
4. **Click Files to select a file.**
5. **Enter a maximum file size for the recording.**  
See Storing ShowMe TV Files for file size information.
6. **Enter a time for ShowMe TV to record the program.**
7. **Enter a time for ShowMe TV to stop recording the program.**

## 8. Click OK to set the timer.

The program you selected is now marked with the letter R in the Program Information window to indicate that it is scheduled to be recorded.

A ShowMe TV Receiver opens when the ShowMe TV begins recording the program.

---

**Note** – If you enter start or end times that conflict with another record timer, ShowMe TV prompts you to change the start or end time of one of the conflicting record timers.

---

---

# Using ShowMe TV Files

This section contains the following topics:

- Storing ShowMe TV Files
- Sharing ShowMe TV Files
- To Watch a ShowMe TV File
- To Edit a ShowMe TV File

You can use ShowMe TV to watch, save, and edit files recorded by ShowMe TV, or any other program capable of producing QuickTime or AVI movies. If no ShowMe TV files are available to you, you can create one by recording a program (see Recording a Program).

ShowMe TV movie files can be identified by extensions: `.mov`, or `.avi`. For example, `videoclip.mov` and `movie.avi`. For audio files, extensions are `audio.au` and `audio.wav`.

# Storing ShowMe TV Files

ShowMe TV files can be quite large. Therefore, you need to consider the amount of disk space a recording will require. To estimate the required file size of a program you plan to record, compare the program information from the Program Information window with the following information:

**TABLE 2-7** Average ShowMe TV File Size (in megabytes per minute)

Average Motion Speed (in frames per second)	Resolution of the Broadcast Image		
	Low	Medium	High
1-5	0.5	2.0	8.0
6-10	1.0	4.0	16.0
11-15	1.5	6.0	24.0
16-20	2.0	8.0	32.0
21-25	2.5	10.0	40.0
26-30	3.0	12.0	48.0

# Sharing ShowMe TV Files

Since ShowMe TV files are typically large, you should not send them over email. To share a ShowMe TV file with others, consider these options:

- You can substantially reduce the size of a file by deleting segments of the file; see [To Edit a ShowMe TV File](#).
- You can record to a local disk to reduce network traffic.
- You can set ShowMe TV to automatically stop recording a program when the file reaches a certain size. This size has a default, which you can set, or can be selected at the time you record a program or set a record timer. To learn about setting the size for a particular recording, see the next sections [Recording a Program](#) and [Setting the Timer to Watch or Record a Program](#).

## ▼ To Watch a ShowMe TV File

1. **Choose TV ► Load movie.**
2. **Select the program you want to watch and click OK.**

---

**Note** – Once you have opened a file, the file name will also appear in the Watch menu. You can switch between the ten most recent files you have opened by selecting them from the Watch menu.

---

3. **Click Play to play the file from the beginning.**
4. **Use the slider to jump to a particular part of the file when you are playing or have paused.**
  - a. **To step forward or backward through the file one second at a time, click on the slider region on either side of the slide elevator.**

You can do this while the file is playing.
  - b. **Click either button at the end of the slider to jump to the beginning or end of the file.**
5. **Click Pause to stop or pause the file.**
6. **Select either the file you are viewing, another file, or a program from the Watch menu to close the file.**

## ▼ To Edit a ShowMe TV File

You can delete segments of a file you open in ShowMe TV. You can do this to shorten the file length and decrease the amount of disk space it requires.

1. **Choose TV ► Load movie.**
2. **Select the file you want to edit and click OK.**
3. **Click Edit.**

The editing controls are displayed at the bottom of the window.

---

# Troubleshooting

TABLE 2-8 ShowMe TV Receiver Troubleshooting

Problem	Possible Cause/Solution
Color flash	<p>On an 8-bit color machine, ShowMe TV shares a color palette with the other applications on the desktop. There are 256 color entries available on an 8-bit machine, and all of the applications running on the desktop compete for these entries. When all of the colors have been used up—the workstation color palette is full—the desktop applications create their own color palettes. Once they do this, you see color flash. When you move your pointer into a window with its own color palette, all the other colors on the desktop change. When you move your pointer out of that window, its colors also change.</p> <p>The ShowMe TV applications have been designed to reduce the possibility of color flash occurring on your system. All of the icons and buttons presented in ShowMe TV windows use a palette of 16 colors. The Motif window manager also allocates nine colors to display the default ShowMe TV window colors (this includes highlight colors for widgets), resulting in a total of 25 colors used. However, ShowMe TV also allocates colors for the video display area. The number of colors allocated is governed by the “Number of colors used” field of the Properties window. The settings are as follows: Low (54 colors), Medium (112 colors), and High (200 colors). If you are experiencing color flashing when moving the pointer in and out of ShowMe TV windows, try using a lower setting.</p>
Movie file is not played back by ShowMe TV or played incorrectly	<p>Movie format might be unsupported by ShowMe TV. For a list of supported formats, see Chapter 5.</p>
Timer failed to record or watch the broadcast	<p>ShowMe TV was not running when the timers were to expire. In order for a timer to work properly, at least one ShowMe TV window must be running either as a full window or an icon, or you must have requested ShowMe TV to run in the background when you exited. See Troubleshooting for more information about running ShowMe TV in the background.</p> <p>The ShowMe Transmitter terminated prior to the timer’s expiration.</p>

**TABLE 2-8** ShowMe TV Receiver Troubleshooting (Continued)

Problem	Possible Cause/Solution
Audio and video not synchronized	<p>Sometimes the audio and video of a broadcast get out of synchronization. A person's voice will not match their mouth motions in the video. ShowMe TV tries to monitor and correct this as the program runs, but sometimes it is not successful. If this is the case, do the following:</p> <ul style="list-style-type: none"> <li>- Temporarily switch to another program, then switch back to the program you were watching.</li> <li>- Toggle the mute button.</li> <li>- Check the value of the synchronization threshold in the <code>.showme-defaults</code> file in your home directory. The synchronization threshold should be about 250000 milliseconds.</li> </ul>
No picture	<p>Check the brightness slider on the Properties window and ensure that it is not too low. If network traffic is very high, you will see images but the frame rate may be very slow.</p>
TV is wrong color when using <code>mwm</code>	<p>Make sure that <code>mwm</code> is installing the proper colormap. Your <code>mwm</code> colormap focus policy should be set in your <code>.Xdefaults</code> file:</p> <pre>Mwm*colormapFocusPolicy: pointer</pre>
Error messages File <code>filename</code> is not in any of the readable formats	<p>The file is corrupted or recorded in a format not supported by ShowMe TV. For the list of supported file formats see Chapter 5.</p>
No audio device is found, or another process might be using the audio device right now.	<p>Check if the audio device name is different from the default <code>/dev/audio</code>. If so, set the environment variable <code>AUDIODEV</code> to the full pathname of your audio device. For example, if the device installed on your system is <code>/dev/myaudio</code> (with the corresponding <code>/dev/myaudioc1</code>), set <code>AUDIODEV</code> to <code>/dev/myaudio</code>.</p>

## Using ShowMe TV Transmitter

---

ShowMe TV Transmitter is like a television station. It broadcasts video programs to the network. From the ShowMe TV Transmitter, *broadcasts* (also called programs) are sent to workstations on your network running ShowMe TV. These broadcasts can be a commercial television channel coming in through a cable or antenna, a live talk to or from your desktop, a video tape in a VCR, a satellite feed, or a broadcast of a ShowMe TV movie file. ShowMe TV Transmitter also sends out advertisements of your broadcasts so that viewers know what programs will be available for watching and recording.

This chapter is organized as follows:

- ShowMe TV Transmitter Basics
- Creating a New Broadcast
- Broadcasting
- Broadcasting a ShowMe TV File
- ShowMe TV Transmitter Daemon
- Troubleshooting

---

# ShowMe TV Transmitter Basics

This section contains the following topics:

- To Start ShowMe TV Transmitter
- ShowMe TV Transmitter Terminology
- Broadcast Status Area
- Program List
- Controlling the Current Broadcast
- To Set ShowMe TV Transmitter Properties

In order to use the ShowMe TV Transmitter to broadcast anything other than a ShowMe TV movie file, you must have a SunVideo (Plus) card and a source for video and audio installed at your workstation.

## ▼ To Start ShowMe TV Transmitter

1. Type the following at your system prompt:

```
hostname% showmetvt
```

---

**Note** – If ShowMe TV Receiver is not already running on your workstation, you need to start it now to watch the broadcast that you are creating (see To Start ShowMe TV Receiver). Also, you can use the Preview window (see To Preview a Broadcast), or start a ShowMe TV receiver from the Transmitter menu.

---

To view optional command-line arguments and descriptions, type:

```
% showmetvt -help
```

If you have difficulty running the ShowMe TV Transmitter, contact your system administrator and find out where it is installed. The default installation location is `/opt/SUNWsmtv/bin/showmetvt`.



# ShowMe TV Transmitter Terminology

TABLE 3-1 ShowMe TV Transmitter Basic Terminology

<b>Term</b>	<b>Description</b>
Program	An audio/visual broadcast sent by another computer user (Broadcaster) across your network. This could be a live presentation, videotape, television via cable, satellite, or antenna, or audio only.
Broadcast	Audio and video program sent from a ShowMe TV Transmitter to a receiver.
Transmitter	ShowMe TV Transmitter (this application), the application the broadcaster uses to send programs across the network.
VCR	A video cassette recorder attached to the transmitting workstation SunVideo card.
On the Air	The ShowMe TV Transmitter is currently broadcasting a program to the network.
Off the Air	The ShowMe TV Transmitter is not currently broadcasting a program to the network.
Audience	The users on the network who are watching a ShowMe TV broadcast or waiting for one to start.
Motion speed	The rate at which ShowMe TV Transmitter sends full screens of video to the network. Each full screen is called a frame, and the rate is quoted in units of frames per second.
Picture resolution	The number of pixels used to display the video.
Statistics	Information gathered from the ShowMe TV Transmitter and the ShowMe TVs tuned in to a broadcast. This information is the number and names of users watching a broadcast, the motion speed and picture resolution, and the rate at which the broadcast is travelling through the network.
Preview	Viewing a scheduled program before or while it is broadcast to the network by the ShowMe TV Transmitter.

# ShowMe TV Transmitter Menus

ShowMe TV Transmitter menu bar has two menus: Transmitter and Help.

---

**Note** – On menu selections containing optional keystroke shortcuts, use **◆+ *keystroke*** if you are in the CDE environment; use **Alt+ *keystroke*** if in OpenWindows.

---

## Transmitter Menu

TABLE 3-2 Transmitter Menu

Menu item	Description
Properties	Opens the Properties window. See To Set ShowMe TV Transmitter Properties.
Preview broadcast	Opens a special ShowMe TV Preview window that enables you to view a broadcast before or while it is transmitted.
Start ShowMe TV	Starts ShowMe TV if it is not already running on your workstation.
Statistics	Opens the Statistics window, which lists the users watching the current broadcast and gives other useful information.
Address book	Opens your address book.
Exit	Quits ShowMe TV Transmitter.

## Help Menu

Information on Help menu items is available through the Online Help system. To access Help information,

- **Choose Help ► Online Help from the window menu bar.**

## Broadcast Status Area

At the top of the ShowMe TV Transmitter window, under the menu bar, is the broadcast status area. This area is updated continuously to give you the current status of the ShowMe TV Transmitter. It tells you whether you are now broadcasting and, if you are, the time remaining for the current program. If you are not broadcasting, it gives the time to the next scheduled broadcast.

# Program List

The ShowMe TV Transmitter program list shows the current and upcoming broadcasts for this transmitter. It gives their start date and time and the program title. As you schedule new broadcasts they are automatically added to the list. When a broadcast ends or you remove it, it is removed from the list.

Use the broadcast setup buttons under the program list to add, change, or remove programs from the broadcast schedule and the program list. Click the New broadcast and Change broadcast buttons to set up or modify program settings. These are described in [Creating a New Broadcast](#) and [To Configure Broadcast Information](#).

## Controlling the Current Broadcast

The ShowMe TV Transmitter Off the air and On the air buttons enable you to stop a broadcast while it is running, or starts it before its scheduled time. See [To Go Off the Air](#) for a description of this button; see [To Go On the Air](#) for a description of this button.

The Message box and Send button enables you to compose and send a short message to all users watching the current program or, if you are not currently broadcasting, to users waiting for the next one. See [To Send a Message to the Entire Audience](#).

## ▼ To Set ShowMe TV Transmitter Properties

Before starting or scheduling a broadcast, use the ShowMe TV Transmitter Properties window to set some of the long term information used and broadcast by the Transmitter.

1. **Click Transmitter ► Properties.**
2. **Type the appropriate information.**

TABLE 3-3 ShowMe TV Transmitter Properties

Item	Description
Broadcasts are by	Type your full name. Your name is associated with your broadcasts and appears in ShowMe TV in the Program Information window. If you do not provide a name, ShowMe TV Transmitter sends your username and hostname.

**TABLE 3-3** ShowMe TV Transmitter Properties *(Continued)*

<b>Item</b>	<b>Description</b>
Email contact	Type your email address. Your email address is included in your broadcasts so that receivers can send you email during the broadcast by using the Send Mail to Broadcaster feature of ShowMe TV.
Broadcasts should	Use this setting to tell ShowMe TV Transmitter whether you want broadcasts to begin without confirmation. Select "Prompt before beginning" to have ShowMe TV Transmitter prompt before starting a broadcast. Select "Begin automatically" to have ShowMe TV Transmitter use the start time that you specified on the Configure Broadcast Information window and to automatically begin the broadcast.
Show dates as	ShowMe TV Transmitter uses the date format that you specify either here in the Properties window or in ShowMe TV. If you would like to use a different date format than the one currently selected, select the date format you prefer. You can select between two formats: mm/dd/yyyy, where February 11, 1999 would be 02/11/1999. dd/mm/yyyy, where 11 February 1999 would be 11/02/1999.
Ok	Click Ok to close Properties and save your changes. Click Cancel to dismiss this session and restore your original properties.

---

# Creating a New Broadcast

This section contains the following topics:

- To Configure Broadcast Information
- To Configure Audio and Video Information
- To Configure Audience Information
- To Configure Network Information
- To Change the Configuration Defaults
- To Preview a Broadcast

You can use the defaults that ShowMe TV Transmitter has set for the broadcast, but you should check the information to see that it is correct.

## ▼ To Configure Broadcast Information

### 1. Click **New broadcast**.

The New Broadcast window is displayed showing the Configure Broadcast Information window.

### 2. Type the **broadcast name and description**.

### 3. Set the **Begin Date and Time**.

You can click the Now button to enter the current time. The default is for the broadcast to begin 10 minutes from the current time.

### 4. Set the **End Date and Time**.

By default, the end time is one hour from the default start time.

## Transmit Continuous Broadcasts.

Click the Continuous button (instead of setting an end time) to broadcast 24 hours a day. If in continuous broadcast, no other broadcasts are able to start from the same workstation until that broadcast has ended, even if you have Start Automatically selected on the Properties window.

## ▼ To Configure Audio and Video Information

### 1. Click **New broadcast**.

The New Broadcast window is displayed showing the Configure Broadcast Information window.

### 2. Click the **Configure Information** menu on the **New broadcast** window.

### 3. Choose **Audio and Video**.

## Broadcasting From Audio/Video Inputs or ShowMe TV File

The source of the broadcast can be a ShowMe TV file on disk or the SunVideo (Plus) card and Sun audio inputs of your workstation. In order to broadcast from inputs, you must have the appropriate hardware installed.

### 1. Connect your video source (camera, VCR, Sun Tuner, and so on) into the SunVideo card in your system.

### 2. Connect your audio source into the microphone or line-in jack.

### 3. Leave the default Audio/Video inputs selected.

## Switching Between Video Inputs

ShowMe TV Transmitter can broadcast from any of the video sources plugged into your workstation SunVideo (Plus) card. You can switch between the three input ports, labeled S-Video, Port 1, and Port 2 on the card backplate if you want to broadcast video from a VCR, camera, or other source. This control is not available in an audio-only broadcast or in a broadcast from a file.

To switch between video sources, select the setting that corresponds to the port you want to use. For example, if you want to switch to a VCR you have plugged into Port 1 on the SunVideo card, click Port 1.

If you click No video, you create an audio-only broadcast. Some of the other controls on the window then become inactive.

## Selecting Video Compression

ShowMe TV Transmitter supports three video compressions: CellB, JPEG and H.261. CellB provides reasonable image quality and compression, and is fairly efficient to decode so the CPU load on receiving workstation is reasonable. JPEG provides better image quality and a slightly better compression ratio than CellB, but it is more demanding on the CPU.

Use JPEG for its superior picture quality and lower bandwidth requirements. H.261 codec achieves better compression rates on video sequences with little movement on the image scene.

## Limiting Motion Speed

When you change your motion speed limit, you are changing the rate at which your image is broadcast.

---

**Note** – You will not notice a significant difference in the appearance of video images above 18 frames per second. However, the demand on the network significantly increases as you raise the motion speed limit. We suggest that you use no higher than 15 frames per second.

---

This control is not available in an Audio Only Broadcast or in a Broadcast From a File.

## Adjusting Compression Quality

If you select JPEG as the video compression, then this item is active. You can fine tune the compression image quality with this slider. A low number results in reduced image quality and correspondingly less bandwidth and CPU requirements to decode. A higher number improves quality but also increases bandwidth usage and CPU load.

Set this to 50. Setting much lower than 40 results in a significant loss in image quality; setting much higher than 60 does not improve image quality appreciably.

## Adjusting Picture Resolution

When you change the Picture transmit resolution, you are changing the size of the image that is sent. This control is not available in an Audio Only Broadcast or in a Broadcast From a File. There are three image sizes available:

- If you are sending an NTSC video source (primarily used in United States, Canada, Mexico, Japan, Peru) the sizes are 160x120 (low), 320x240 (medium), and 640x480 (high) pixels.
- If you are sending PAL (primarily used in U.K., Australia, China, Spain, Italy, Germany, India) the available sizes are: 192x144 (low), 384x288 (medium), and 768x576 (high) pixels.
- If you are sending H.261 encoded streams, the sizes will be 176x144 (low, or QCIF) or 352x288 (medium, or CIF). This is the case for both PAL and NTSC.

The selection of NTSC or PAL is done automatically by the SunVideo (Plus) card. Your awareness of which of these protocols is being used merely helps you interpret the precise resolution and the impact on file size.

Use low or medium resolution for faster performance.

---

**Note** – The larger the image you send, the greater your impact on the network. High resolution video requires *four times* as much data to be broadcast as medium resolution, and *sixteen times* as much data as low resolution. And although a high resolution image contains more image data, the image is not noticeably better quality than medium resolution.

---

## Switching Between Audio Inputs

Indicate the Audio input where you have connected your audio device.

## Selecting Audio Quality

ShowMe TV supports five audio quality settings. All but one are compressed. Depending on the source material, the audio compression used by ShowMe TV may introduce a slight fuzziness during quiet passages or dialog, but the higher quality compressed settings result in much greater dynamic range.

Use the menu to select the audio quality setting you want. The status line below the menu gives you information on what format is used, and the bandwidth (in thousands of bits per second) that the audio requires.



If your broadcast consists primarily of spoken word, or a large number of your viewers are using SPARCstation 1 or 2 class systems, consider using “Voice (uncompressed).” This provides telephone quality audio in a format compatible with older systems and the network bandwidth requirement is still reasonable.

If you want to minimize network bandwidth usage, use “Voice.” This requires half the bandwidth of uncompressed Voice.

If your broadcasts has more dynamic audio (music, action sequences, and so on) or you want the more “open” feel that increased dynamic range provides, choose Low, Medium or High quality.

Older Sun systems (SPARCstation 1, 2, IPC, IPX, and so on) only support uncompressed voice; therefore, Audio Quality is inactive on these systems.

---

**Note** – Viewers using older workstation can still watch broadcasts that use high quality audio because ShowMe TV converts the audio to the workstation native format before playing.

---

## Adjusting Audio Input Level

Use the Audio input level slider to adjust the broadcast volume. This control is not available in a broadcast from a File. You may need to readjust the audio level during the broadcast. Levels may also vary widely depending on your audio source.

- **Bring up the Preview window to monitor the sound, then adjust the Audio input level slider to the desired volume.**

## ▼ To Configure Audience Information

In configuring audience information, you determine who may watch your broadcast. You determine whether this is an open broadcast that anyone can watch or a closed broadcast with a restricted list of viewers.

1. **Click the Configure Information menu on the New broadcast window.**
2. **Choose Audience.**

## Choosing Open Broadcast or Closed Broadcast

The default is Open broadcast which enables anyone to watch the broadcast.

If you choose Closed broadcast, then your broadcast is available only to the people you specify in the Audience list who are within the broadcast range. Click “Show Address Book cards” to view the cards listed for closed broadcasts.

The users on your closed broadcast audience list see the broadcast advertised in the Watch menu and Program Information window of their ShowMe TV. They are able to watch it when the broadcast is on the air.

## Specifying Members of a Closed Broadcast

To specify the members of a closed broadcast: click in the Audience list text area and enter the network addresses of users permitted to watch.

The Audience list is available only if you have specified that you want a Closed Broadcast.

---

**Note** – Be certain of the correct spelling when you enter addresses in the form `user@hostname`. ShowMe TV Transmitter broadcasts to these addresses exactly as specified without verifying that they are valid addresses. If you misspell the address, you will not know that the intended viewer cannot watch the broadcast.

---

## ▼ To Configure Network Information

1. Click the **Configure Information** menu on the **New broadcast window**.
2. **Choose Network**.

## Choosing Multicast or UDP Broadcast

Use Multicast for all your broadcasts. This is the most efficient way to send video to the network.

---

**Note** – If you choose UDP broadcast, ShowMe TV Transmitter sends the broadcast to only your local area network.

---

## Choosing a TTL for Multicast

If you are unsure about picking the right multicast time to live (TTL) number, contact your system administrator.

1. **Click the broadcast range menu on the Configure Network Information window.**
2. **Choose the approximate broadcast range.**

ShowMe TV Transmitter creates an advertisement for the broadcast and begins sending it to each ShowMe TV.

TABLE 3-4 Approximate Broadcast Range Submenu

Menu Item	Description
Local	Restricts the broadcast to your own local area network. This control is not available for UDP broadcasts. The TTL number is 1.
Vicinity	Limits your broadcast to your floor or building. The TTL number is 4.
Site	Restricts the broadcast to the site. The TTL number is 32.
Region	Restricts the broadcast to the geographic region. The TTL number is 64.
Continent	Restricts the broadcast to the continent. The TTL number is 128.
Unrestricted	Sends the broadcast, unrestricted, onto the network. The TTL number is 255.

## ▼ To Change the Configuration Defaults

1. **Click the Configuration menu on the New broadcast window.**
2. **Open each of the Configure Information windows in turn and change to the values you want.**
3. **Type the changed values into each of the New Broadcast windows: Broadcast, Audio and Video, Audience, and Network.**
4. **Click Set defaults at the bottom of each window when you have completed changing the default settings.**

## ▼ To Preview a Broadcast

### 1. **Choose Transmitter ► Preview broadcast.**

The ShowMe TV Receiver is displayed.

---

**Note** – When you select the ShowMe TV Preview window for the next broadcast, it is not possible to preview other broadcasts.

---

- Check that the camera, tuner, or VCR is functioning.
  - Check to see that the audio is present and the levels are acceptable.
  - See whether the motion speed and resolution you have chosen is adequate.
- ### 2. **On the ShowMe TV Transmitter: Preview window, choose TV ► Controls.**
- ### 3. **Set properties for displaying the preview video.**

## Avoiding Audio Feedback While Previewing

When you are previewing your broadcast, you may experience feedback or echo in your audio. Feedback occurs when the audio output feeds back into your audio input (this happens if you are using a microphone and listening with a speaker). The easiest way to avoid feedback is to use headphones to listen to the audio or to turn down the output volume so that it is not picked up by a microphone.

## ▼ To Change the Broadcast

- ### 1. **In the ShowMe TV Transmitter main window, select the desired broadcast from the broadcast list.**
- ### 2. **Click Change broadcast.**
- ### 3. **Turn to the appropriate configuration page and make the necessary changes.**

---

# Broadcasting

ShowMe TV Transmitter always shows you the time to the next broadcast on the main window. When it is time for your broadcast to begin, ShowMe TV Transmitter does one of two things:

- If your ShowMe TV Transmitter Properties window indicates that the broadcast is set to “Begin automatically,” then ShowMe TV Transmitter automatically uses the broadcast configurations you have set and starts the broadcast.
- If your ShowMe TV Transmitter Properties window indicates that the broadcast is set to “Prompt before beginning,” then ShowMe TV Transmitter brings up the “Begin Broadcast” window informing you that it is time for your broadcast to begin.

## ▼ To Go On the Air

To begin your broadcast ahead of schedule, you can immediately place the broadcast on the air.

1. **On the ShowMe TV Transmitter, click On the air.**
2. **Using ShowMe TV, tune in to your broadcast.**

Your broadcast is displayed under the Watch menu.

## Controlling the Current Broadcast

Once you have started a broadcast, you may wish to interact with the audience. ShowMe TV Transmitter enables you to see who is watching your broadcast and to contact those viewers.

## ▼ To Use the Statistics Window

The Statistics window shows you the viewer name (as provided by the viewer), user name, and host name of each viewer of your broadcast.

- **On the ShowMe TV Transmitter, choose Transmitter ► Statistics.**

## ▼ To Send Mail to a Member of the Audience

1. **Select a name from the Statistics window audience list.**

2. **Click Send mail to selected.**

## ▼ To Send a Message to the Entire Audience

When you send a message to all audience members at once, the message is displayed at the top of the ShowMe TV Receiver and stays there until you stop watching the program or until you send a different message.

## Ending the Broadcast

ShowMe TV Transmitter always shows you the time to the end of your running broadcast on the main window. When it is time for your broadcast to end, ShowMe TV Transmitter automatically stops the broadcast and removes it from the list of broadcasts.

## ▼ To Go Off the Air

- **Click Off the air.**

This stops the broadcast but does not remove it from the broadcast list. Broadcasts are removed from the list only after the end time has expired or you select them from the Broadcast list and click Remove broadcast.

## ▼ To Remove a Broadcast

Normally broadcasts are removed from the Broadcast list after their end time has past. If you would like to manually remove a broadcast, either before it starts or while it is running, do the following:

1. **Select desired broadcast on the ShowMe TV Transmitter.**
2. **Click Remove broadcast.**

---

## Broadcasting a ShowMe TV File

You can broadcast a ShowMe TV file rather than broadcasting from a live audio or video source. (Chapter 5 contains a list of files that ShowMe TV supports.) The steps in setting up a broadcast of a file are just like those for setting up a normal broadcast. You need to do the following, however, in the Audio and Video Information window.

1. **Click New broadcast on the Transmitter.**

- 2. Choose Audio and Video.**
- 3. At the selection The broadcast will come from, click a ShowMe TV file.**
- 4. Type the full path name for the file you wish to broadcast.**
- 5. Click OK.**

If the Properties window indicates that broadcasts should start automatically, then ShowMe TV Transmitter automatically starts playing the ShowMe TV file for you when the broadcast begins.

If the Properties window indicates that broadcasts should prompt you before starting, then you are prompted to start the broadcast.

## Controlling the Broadcast of a ShowMe TV File

During the broadcast of a file, playback controls are displayed on the main window and on the Preview window.

Treat these controls as if they were on a VCR attached to your SunVideo (Plus) card. Simply pressing the Play button is not enough to put you on the air. The broadcast must begin first. Furthermore, if the broadcast is on the air and you stop playback of the file or forget to start playback, the broadcast sends no data to the audience.

If ShowMe TV Transmitter reaches the end of the file before the broadcast end time, it replays the file from the beginning. If you have configured the broadcast as a continuous broadcast, ShowMe TV Transmitter will replay the file indefinitely.

### ▼ To Broadcast Audio Only

- 1. Click New broadcast on the Transmitter.**
- 2. Choose Audio and Video.**
- 3. Click No video.**

This inactivates the video controls.

If you do not have a SunVideo (Plus) card installed in your workstation, the “No video” button is inactive. This indicates that you have no choice and can only live-broadcast audio-only programs.

---

# ShowMe TV Transmitter Daemon

Most of the work of ShowMe TV Transmitter is performed by `showmetvd`, the ShowMe TV Transmitter *daemon*. The daemon is responsible for running all broadcasts and starting and stopping them at their scheduled times. It also sends out the broadcast advertisements. The daemon must be running for broadcasts to be advertised and to occur. It is possible to have the daemon running after you exit the Transmitter program `showmetvt`. In order to have this happen, start `showmetvt` with the *-background* option. The broadcast will continue even though you exited `showmetvt`. If you start a new `showmetvt`, it will attach itself to the daemon `showmetvd`.

Once you invoke the background option, the daemon stops only when you reboot your workstation or explicitly kill it with the UNIX `kill` command.

If you want the daemon to start automatically whenever you log in to your workstation, and remain running until you reboot or explicitly kill it, add the following in your `.login`, `.cshrc` (or equivalent), or `.openwin-init` file:

```
/opt/SUNWsmtv/bin/showmetvd parameters &
```

Replace `/opt/SUNWsmtv` with the actual path if ShowMe TV is not installed in the default location.



---

# Troubleshooting

TABLE 3-5 Transmitter Troubleshooting

<b>Problem</b>	<b>Possible cause/solution</b>
Your broadcast is not reaching a particular TV receiver.	User you are sending broadcast to does not have ShowMe TV running. It is not tuned to your broadcast.  If it is a closed broadcast, check to see that the user address is in the audience list. Check that the user and host names are correct.  Verify that the user is connected to your network.
Your multicast broadcast is not reaching a particular TV receiver.	Check that the TTL number is not too low to reach the user network. See Choosing a TTL for Multicast.  Check that multicast is installed on the your machine.  Network multicast may not be enabled for all participants.
No video image for your broadcast	Check that a SunVideo (Plus) card is installed on your system.  Check that your SunCamera is properly connected and that the camera lens is not shut.  Another user may be using the SunVideo (Plus) card on your workstation.  Verify that the video input setting in your Transmitter Properties window matches the actual connection in your SunVideo (Plus) card. See Switching Between Video Inputs.  Network traffic may be very high, causing image movement to be very slow.  Check for sufficient lighting for the camera to video.
Error messages XIL error messages	Refer to an XIL manual for information.



## Using the ShowMe TV Address Book

---

The ShowMe TV Address Book helps you keep track of individuals by storing their home and work addresses, telephone numbers, login name and host name, conference addresses, and more.

This chapter is organized as follows:

- ShowMe TV Address Book Basics
- Using the Address Book
- Using Address Book Group Cards

---

# ShowMe TV Address Book Basics

## ▼ To Start ShowMe TV Address Book

- Type the following at your system prompt:

```
% showmetvab
```

or

- Choose **Transmitter > Address Book**.

## Address Book Menus

Address Book has four menus: File, Cards, Navigation, and Help.

- Choose **Help > Help from the Address Book menu bar** for menu item descriptions.

---

**Note** – On menu selections containing optional keystroke shortcuts, use Alt+ if you are in the CDE environment, ♦+ if in OpenWindows.

---

---

# Using the Address Book

This section contains the following topics:

- To Create an Address Book
- To Change Your Default Address Book
- To Create a New Card
- To Open an Address Book
- To Import Cards to Your Address Book
- To Export Cards to Other Address Book Users
- To Print Cards From Your Address Book
- To Duplicate a Card
- To Delete and Undelete a Card
- To Add and Remove Card Fields

## ▼ To Create an Address Book

When you first start Address Book, a new Address Book is created for you. However, you can create another new Address Book, as follows:

1. **In the Address Book, choose File ► New.**

---

**Note** – Since Address Book saves changes automatically, you need to give your Address Book a name right away. If you already have an Address Book open, the changes are automatically saved before creating a new Address Book.

---

2. **Type a unique name for your new Address Book.**

---

**Note** – You must attach the suffix `.ab` to the name you select. For example, to name your Address Book `JSBach`, you need to label it `JSBach.ab`.

---

## ▼ To Open an Address Book

1. **Choose File ► Open.**
2. **Select or type the file name of the Address Book you want to open.**
3. **Click Ok.**

---

**Note** – The current Address Book is saved before the new Address Book is opened.

---

## ▼ To Change Your Default Address Book

By default, Address Book loads .addresses from your home directory. To use a different default Address Book,

1. **Choose File ► Preferences.**
2. **In the Default Address Book field, enter the name of the Address Book file you want to load each time you start the Address Book.**
3. **Select the order in which you want to sort your cards.**
4. **Click Ok.**

## ▼ To Create a New Card

1. **Choose Cards►New card.**
2. **Type the applicable information into the blank card fields.**
3. **Click Apply to save your card.**

## ▼ To Edit a Card

1. **Click on the card in your Address Book card list that you want to edit.**
2. **Change the information in the card fields.**
3. **Click Apply.**

## ▼ To Import Cards to Your Address Book

1. **Choose File ► Import.**
2. **Type the file name, or click on the file name, of the Address Book that you want to import.**
3. **Click Ok.**

## ▼ To Export Cards to Other Address Book Users

1. **Choose File ► Export.**
2. **Specify the cards you want to export.**
  - Click “From all cards” to export your entire Address Book.
  - Click on one or more card names to highlight them for selective card export.

To deselect a card, click on it again.

3. **Click Ok.**
4. **Type a unique file name for your card.**

When you export cards, you are saving an Address Book database that other Address Book users can access.

5. **Click Ok.**

## ▼ To Print Cards From Your Address Book

Address Book enables you to print specific cards from your Address Book. You can choose from several formats to fit a particular layout. To print labels,

1. **Choose File ► Print.**
2. **Select the Printer destination: Printer or File.**
  - a. **To print to a printer, enter the printer name.**
  - b. **To print to a file, enter the file name.**

3. **Indicate whether you want to use manual feed.**
4. **Click on the names in the card list that you want to print.**
5. **Click Print format and choose a format.**

## ▼ To Duplicate a Card

1. **Select the card you want to duplicate from the Address Book card list.**
2. **Choose Cards ► Duplicate card.**
3. **Change the information in the card fields.**
4. **Click Apply to save your card.**

## ▼ To Delete and Undelete a Card

Once you delete a card from the Address Book card list, it is placed in an Undelete holder. During a session, you can access a deleted card from the Undelete holder and return it to your Address Book card list.

## ▼ To Delete a Card

1. **Click on the name in your Address Book card list that you want to delete.**

---

**Note** – Each time you close your Address Book, you cannot later retrieve any cards you have deleted during that session. That is, the card is lost from the Undelete holder when a session ends.

---

2. **Choose Cards ► Delete Card.**

## ▼ To Undelete a Card

1. **Choose Cards ► Undelete cards.**
2. **Click on the cards that you want to undelete.**
3. **Click Undelete.**



## ▼ To Add and Remove Card Fields

1. **Choose Cards ► Add fields to card.**

2. **Click on each of the fields you want to add to your current card.**

The list contains all of the available fields that are not already in your current card. To deselect fields, click on them a second time.

3. **Click Add fields.**

---

**Note** – You can remove any field on a card by removing all of the data in that field.

---

## ▼ To Find a Card

To find a card based on special criteria, you can use the Address Book main window Find controls. See online Help for menu item descriptions.

1. **Type the text you want to look for into the Find field.**

2. **Click the Any name menu to choose the fields you want to search.**

3. **Select a field that you want to locate.**

4. **Click Begins with.**

5. **Choose the search method that you want to use.**

---

**Note** – You can also use regular expressions in your searches. For example, if you type `w*` into the Find field, the Address Book searches for entries with words that start with the letter “w.”

---

6. **Click Find.**

All of the cards containing this text appear in the Card list.

---

**Note** – When you use Find to select particular cards in your Address Book (for example, all cards beginning with “Di”), the “Show all cards” button is activated.

---

7. **Click Show all cards to again list all entries in your Address Book.**

## Sorting the Address Book

You can sort the cards in your Address Book by toggling the “Sort by” control.

Selecting First sorts the cards alphabetically by first name. Selecting Last sorts the cards alphabetically by last name. Cards representing groups of people are sorted alphabetically with all of the other cards. A card representing a group is denoted by a bullet preceding the name of the card.

## Saving an Address Book

You never have to explicitly save your Address Book. The Address Book automatically saves your Address Book each time you do one of the following:

- Press the Apply button
- Flip to another card
- Create a new card
- Open a new Address Book
- Exit the Address Book

---

## Using Address Book Group Cards

### ▼ To Create or Add a Group Card

1. **Choose Cards > New group card, or click New group card on the Address Book.**
2. **Determine a name for the group and enter it into the Group name field.**
3. **Select the members from the list in the Groups window.**
4. **Click Ok.**

The group card is created and listed in your Address Book Card list with a bullet next to it.

### ▼ To Edit a Group Card

1. **Click on a group listed in your Address Book card list.**
2. **Click Edit Group on the group card.**

The Groups editing window is displayed with the names listed in all your group cards. The names in the selected group card are highlighted.

- 3. Click on the highlighted name to delete it from the list.**
- 4. Click on a name to add it to the group.**
- 5. Click Ok.**



## Audio, Video, and File Formats

---

ShowMe TV supports QuickTime, AVI, and MPEG-I/MPEG-2 movie files. It also supports Wave and Sun.au audio files. The degree of support depends on the particular characteristics of the file, and the operation you want to perform.

TABLE 5-1 Movie File Formats

<b>File format</b>	<b>Compression</b>	<b>File Playback</b>	<b>Record to File</b>	<b>Broadcast</b>
QuickTime, AVI	CellB	Yes	Yes	Yes
QuickTime, AVI	JPEG	Yes	Yes	Yes
QuickTime, AVI	H.261	Yes	Yes	Yes
QuickTime	Cinepak	Yes	No	No
QuickTime	RLE	Yes	No	No
MPEG-I	MPEG-I	Yes	No	No
MPEG-2	MPEG-2	Yes	No	No
Sun .au	Audio only	Yes	Yes	Yes
Wave	Audio only	Yes	Yes	Yes

**TABLE 5-2** Audio Formats

<b>Feature</b>	<b>Format Supported</b>
File Playback	8-bit u-law Mono, 8000 Hz 8-bit linear (signed) Mono/Stereo, 11127, 22254 Hz 8-bit linear (unsigned) Mono/Stereo, all sample rates 16-bit linear (signed) Mono/Stereo, all sample rates MPEG-I, -2 Layer-1, Layer-2 and Layer-3 16-bit IMA ADPCM/IMA4 Mono/Stereo, 8000, 11025, 22050, 44100 Hz
Direct Capture/record	8-bit u-law Mono, 8000 Hz 16-bit linear (signed) Mono, 11025, 22050, 44100 Hz
Broadcast	8-bit u-law Mono, 8000 Hz CSM, 8000 Hz, Mono IMA ADPCM/IMA4 Mono, 8000, 11025, 22050, 44100 Hz

**Note** – When playing audio data on the workstation audio device, ShowMe TV automatically converts the audio data to the closest format that the hardware supports. When broadcasting from a file, ShowMe TV Transmitter automatically converts the audio data to the closest format.

**TABLE 5-3** File Formatting Terms

<b>Term</b>	<b>Description</b>
AVI	A multimedia file format developed by Microsoft that supports synchronized audio and video. ShowMe TV supports only three of its compression schemes: CellB, JPEG, and H.261.
CellB	A video compression scheme developed by Sun Microsystems with a ratio of 10:1. It is based on intra-frame coding of 4 x 4 pixel "cells." The resulting image looks somewhat blocky. It uses relatively few CPU cycles to achieve a high compression ratio.

**TABLE 5-3** File Formatting Terms (*Continued*)

<b>Term</b>	<b>Description</b>
H.261	<p>The H.261 coding system is a video compression standard developed by the International Telegraph and Telephone Consultative Committee (now International Telecommunications Union [ITU]) for video teleconferencing applications using transmission over Integrated Services Digital Network (ISDN) lines. During its development, H.261 was called p x 64 (p times sixty four) coding in reference to the fact that ISDN provides channels in increments of 64 Kbits/s.</p> <p>The H.261 system is a hybrid intraframe/interframe method based upon DCT coding. The intraframe mode of H.261 is similar to the JPEG DCT scheme. The data rate of the coding algorithm was designed to be able to be set to between 64 Kbits/s and 2 Mbits/s. Developed with videoconferencing in mind, this encoding scheme is most effective in dealing with scenes where users are talking in front of a camera and most movement is concentrated in the heads and the shoulders. Once more quality critical or movement-intensive video data needs to be compressed and transmitted, H.261 may become inadequate.</p>
IMA ADPCM/IMA4	<p>An audio compression method defined by the Interactive Multimedia Association. It takes 16-bit linear samples and compresses them down to 4 bits.</p>
JPEG	<p>Originally developed by Joint Photographic Expert Group to compress still images, JPEG is also good at compressing video. It is a DCT-based compression scheme and gives much better image quality with a slightly better compression ratio than CellB. This is done at the expense of more CPU computations.</p>
Linear	<p>Linear Pulse Code Modulation (PCM). An uncompressed audio format in which sample values are directly proportional to the audio signal voltage. The samples are 8 or 16 bits and can either be represented as a signed or unsigned value. The 16-bit linear PCM is almost always signed.</p>
MPEG-1	<p>MPEG-1 is both a file format and an audio/video compression scheme. It was developed by the Motion Picture Expert Group and uses very sophisticated compression techniques. Based on DCT and inter-frame motion estimation, MPEG-1 provides high image quality with high (30:1) compression ratio. It is very CPU intensive to decode.</p>

**TABLE 5-3** File Formatting Terms (*Continued*)

<b>Term</b>	<b>Description</b>
MPEG-2	MPEG-2 was based on MPEG-1, but optimized for higher data rates, to deliver broadcast quality digitally encoded audio and video. As a result, the main applications for MPEG-2 are high definition television (HDTV), digital storage media, and DVD. Additional features implemented in the MPEG-2 specification include interlaced video formats, multiple picture aspect ratios (such as 4:3 and 16:9, as required by HDTV), multiple (up to five) channel audio, and so on. CPU requirements for MPEG-2 are even higher than those for MPEG-1.
QuickTime	A multimedia file format developed by Apple. Supports synchronized audio and video. Video is compressed by one of many compression schemes.
RLE	RLE (Run Length Encoding) is another image compression method most suitable for animated graphics. ShowMe TV supports the RLE specified in the Apple-QuickTime standard. It is a simple compression scheme based on a representation of repeating pixel values with specific byte codes. RLE is the least CPU intensive to decode and does not lose quality during compression. But for photorealistic images, the compression ratio is relatively small, and thus ineffective.
Sun .au	Sun Microsystems audio file format.
u-law	A standard for voice data (CCITT G.711) used by telephone companies in the US, Canada, and Japan. u-law is sampled at 8000 samples per second with 12 bits of precision. The data is then compressed to 8-bit samples. Audio quality is similar to that of the telephone.
Wave	An audio file format popular on PC's.



## Technical Topics

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This chapter contains ShowMe TV technical information. It is provided to help you understand, troubleshoot, and configure ShowMe TV. Contact your SunService™ representative for more information.

---

### Using Motif Applications (for OPEN LOOK Users)

If you are familiar with the Motif window manager (`mwm`) and have switched to using a Motif desktop, you should probably skip this section. However, if you are running OpenWindows and the OPEN LOOK window manager (`olwm`), then you should read further.

If you are using OPEN LOOK applications, you will notice that Motif applications like ShowMe TV behave somewhat differently. For more information, see the *Motif 1.2 User's Guide*.

---

# Customizing Motif Window Manager (for OPEN LOOK Users)

If you *have* recently switched from the OpenWindows window manager, `olwm`, to the Motif window manager, you may want to make some customizations to `mwm`. To do so, you can add the following lines to your `.mwmrc` file.

The following lines, added to your `.mwmrc` file, make the Sun keyboard Open and Front keys work correctly under `mwm`.

```
Keys DefaultKeyBindings
{
<Key>F15 window|icon f.raise_lower
<Key>F17 window f.minimize
<Key>F17 icon f.normalize
}
```

The following lines, when added to your `.mwmrc` file, make the three mouse buttons behave more as they do in OpenWindows. (For example, the right mouse button opens a menu.)

```
#
# Default Button bindings
#
Buttons DefaultButtonBindings
{
<Btn1Down> window|icon f.raise
<Btn2Down> icon f.raise
<Btn3Down> icon|title|frame|border f.post_wmenu
<Btn1Down> root f.menu RootMenu
<Btn2Down> root f.circle_up
<Btn3Down> root f.menu RootMenu
}
You must also add the following line to your .Xdefaults file:
Mwm*keyBindings: DefaultKeyBindings
Mwm*buttonBindings: DefaultButtonBindings
```

---

# Customizing ShowMe TV Window Colors (Xdefaults)

There are three colors used in ShowMe TV:

- *application color* is used on the main application window.
- *dialog color* (also known as the background color) is used on the main menu bar and on all dialog windows for that application.
- *foreground color* is the color used for the text.

To change the colors, you need to add the following lines to your `.Xdefaults` file, use the `xrdb -load ~/.Xdefaults` command to update your X resources, and restart ShowMe TV. Below is an example for choosing colors other than the default.

- Foreground is `#ffffffff` (white)
- Application color is `#666696969797` (green)
- Dialog color is `#67669935ab37` (blue)

To change the colors used by ShowMe TV, replace these values in your `.Xdefaults` file with your new color values.

```
*foreground: white
  *background: #67669935ab37
  *applicationWindow*background: #666696969797

ShowMeTV*foreground: white
ShowMeTV*background: #67669935ab37
ShowMeTV*applicationWindow*background: #666696969797

ShowMeAddressBook*foreground: white
ShowMeAddressBook*background: #67669935ab37
ShowMeAddressBook*applicationWindow*background: #666696969797
```

---

# ShowMe TV Configuration Files

ShowMe TV and ShowMe TV Transmitter refer to several configuration files when they start. Some give the default values to use for ShowMe TV properties and other user-level parameters. They are under your control. The other holds system-wide limits, restrictions, and parameters. It is managed by the system administrator.

## ShowMe TV Default File

The values you set in the ShowMe TV Properties window are stored in the file `.showme-defaults` in your home directory. This file is automatically created and filled with default values when you run ShowMe TV for the first time. Other information not directly modifiable from ShowMe TV windows is stored there also.

The default parameters for current and upcoming broadcast programs are in `.showmetv-programs-hostname`.

Open your own `.showme-defaults` file for examples of setting these entries.

**TABLE 6-1** `.showme-defaults` File

File item	Description
ShowMe.UserName	This shows the full name you entered in the Properties window. The default is taken from your UNIX password entry.
ShowMeTV.EmailAddr	Enter your email address. The default is <code>userid@host</code> .
ShowMeTV.DateFormat	Enter the date format is either <code>mmddyyyy</code> or <code>ddmmyyyy</code> .
ShowMeTV.AudioOutputSource	Enter the audio source. The audio source is either <code>Headphones</code> , <code>Speaker</code> , or <code>LineOut</code> .
ShowMeTV.OutputVolume	Enter the desired default speaker volume level. The values are an integer value between 0 and 100, inclusive.
ShowMeTV.ColorUsage	Enter the number of colors for video. The options are <code>Low</code> , <code>Medium</code> , or <code>High</code> .
ShowMeTV.Color	This is to select video in color or in gray scale. Enter <code>True</code> for color, <code>False</code> for gray scale.
ShowMeTV.Brightness	Enter the desired default brightness level. The values are an integer value between 0 and 100, inclusive.
ShowMeTV.TVSyncThreshold	The "lip synch" threshold. It is the number of milliseconds by which the audio and video are allowed to be out of synch before the program will try to correct the situation. Enter an integer value greater than or equal to 62500 (1/16 second).

**TABLE 6-1** .showme-defaults File (Continued)

<b>File item</b>	<b>Description</b>
ShowMeTV.AudioInputPrecision	Number of bits each audio sample is: 8 or 16.
ShowMeTV.AudioInputEncoding	Audio encoding: "ULAW" or Linear"
ShowMeTV.AudioInputSampleRate	Number of audio samples per second: 8000, 11025, 22050, or 44100.
ShowMeTV.ZoomSize	The default zoom size when a Receiver window first opens. Enter either Quarter, Half, Normal, or Double.
ShowMeTV.RecordMaxFileSize	The maximum size file to create when recording. Enter the size in megabytes.
ShowMeTV.AddressBookPath	The UNIX path name of your default address book file.
ShowMeTV.BroadcastType	This specifies either Multicast or UDP Broadcast.
ShowMeTV.AudioInputSource	The audio input source: Mic or LineIn.
ShowMeTV.VideoInputSource	The video input source: Port1, Port2, Svideo, or NoVideo.
ShowMeTV.InputVolume	The desired default speaker volume level. The values are an integer value between 0 and 100, inclusive.
ShowMeTV.Resolution	The default picture resolution: Low, Medium, or High.
ShowMeTV.MotionSpeed	The default motion speed in frames per second. This is an integer value between 1 and 30, inclusive.
ShowMeTV.MulticastTtl	The default TTL number for multicast broadcasts. This is an integer value between 1 and 256, inclusive.
ShowMeTV.PromptBegin	Indicates whether you want to be prompted before starting a schedules broadcast. Specify True to request prompting, False for no prompting.
ShowMeTV.TransmitterSyncThreshold	The "lip synch" threshold. It is the number of milliseconds by which the audio and video are allowed to be out of synch before the program will try to correct the situation. Enter an integer value greater than or equal to 62500 (1/16 second).
ShowMeTV.AudioInputCompression	Audio compression to use: None or DVI. DVI uses IMA ADPCM algorithm.
ShowMeTV.VideoCodec	Compression scheme: JPEG, CellB, or H.261
ShowMeTV.CompQuality	Compression quality: 1 - 100
ShowMeTV.MpegAudioQuality	MPEG audio quality used during playback: Low, Medium, High.
ShowMeTV.MpegAudioMode	MPEG audio playback mode: Left, Right, Stereo.

# ShowMe TV System Configuration File

The ShowMe TV system configuration file enables a system administrator to configure ShowMe TV to control the system and network resources that can be used by ShowMe TV users.

See the file itself for its syntax and instructions for modifying it. The path name of the file is

```
/opt/SUNWsmtv/ShowMeTV/share/showmetv-defaults
```

---

## Host Name Addresses

### Name Services

To send a closed broadcast to someone outside of your network domain, you must provide that person's network address.

There are two UNIX commands that can help you construct your own complete network address: `hostname` (`uname -n` on Solaris 2.x) and `domainname`. When you enter `hostname` in a shell, it returns your machine name. When you enter `domainname` in a shell, it returns your domain name. Append the domain name to the machine name to get your full name. For example, if your machine name is `bullwinkle` and your domain name is `West`, appending the two gives your full name, `bullwinkle.West`.

### Hosts Database

Alternatively, an organization may keep its list of host names in a file called `/etc/hosts`. If this is the case in your organization, a copy of this file is stored on every machine. It is essential for the proper functioning of the network that all machines know the addresses of all other machines, and that there are no duplicate addresses. A sample entry in a host's file looks like the following:

```
129.144.221.36    bullwinkle.West
```

The number is the Internet address for the machine named `bullwinkle`. Although there may be more than one machine on the network named `bullwinkle` (for example, `bullwinkle.East` and `bullwinkle.West`), there is exactly one machine named `bullwinkle` with an Internet address of `129.144.221.36`.

---

**Note** – When you broadcast to a user in ShowMe TV, you can refer to a machine either by its full name (for example, `rivers@bullwinkle.west`), if it is known to the name service, or by its unique Internet address (for example, `rivers@129.144.221.36`).

---

## Using Multicast

Multicast enables ShowMe TV Transmitter to give broadcast data an address so that the data goes to a group of people or machines, rather than to a single person or machine. In this way, you can send out one copy of your video or audio stream and multiple people can receive it. With multicast there is no data duplication and no wasted bandwidth.

## Installing Multicast

To broadcast to people beyond your local subnet, install `mrouterd` on each of the routers between you and them (or create a multicast tunnel). Without `mrouterd`, multicast data is not sent from one local network to another. If you are not using Sun machines for gateways, you should contact your router company and ask them if they support multicast.

## TTL on Your Network

The current multicast routing technology (`mrouterd`) is not very sophisticated in its transportation of data: `mrouterd` takes all multicast data and transmits it to all of the interior nodes (routers) of a multicast tree, regardless of whether any of the leaf nodes (workstations) have requested multicast data.

If you choose a very high TTL, even though only two people are tuned into the broadcast, *all* multicast routers are required to carry the traffic because they are within the TTL range.

---

**Caution** – This means that multicast data is sent to every gateway within the range of the TTL number you have chosen. A large TTL number could have a serious impact on your network.

---

There is a new version of `mroute` under development that has a more sophisticated method for handling multicast routing. This version prunes off areas of the multicast tree that have not requested traffic (that is, joined a particular multicast group). This version also allows some bandwidth policy enforcement.

## For More Information on Multicast

The following RFC document is available for multicast:

- *MBone: Interactive Multimedia on the Internet* by Vinay Kumar. Published by New Riders, Indianapolis, Indiana. Reprinted in 1995. This contains references to many other publications.

---

## Calculating Network Bandwidth Use

To calculate the impact that a single video stream has on the network, you have to take into account the compression used, the picture resolution, and the motion speed of the video. The following table describes these three parameters.

### Compression

#### CellB

CellB achieves a range of compression from 0.75 bits per pixel (bpp) to 1.5 bpp for each pixel in the image. This is because CellB uses motion estimation or intra-frame coding. The amount of compression varies depending on the amount of movement in the video image. An image of a person sitting relatively still results in compression closer to 0.75 bpp. An image with rapidly changing pictures or a noisy video signal results in compression closer to 1.5 bpp.

#### JPEG

JPEG achieves a range of compression from 0.75 bits per pixel to 1.0 bpp for each pixel in the image. JPEG uses a still image compression method based on discrete cosine transform (DCT). The amount of compression varies depending on the compression quality set and the complexity of individual image. If the compression



quality is lower, the image is more capable of achieving a higher compression ratio. An image with little details and variation in contrast will generate higher compression ratio than an image with lots of contrast and details.

## H.261

As in JPEG and CellB cases, H.261 rate of compression also greatly depends on the characteristics of the image sequence. In general, H.261 codec achieves better compression rates on video sequences with little movement on the image scene. User can influence H.261 compression rate by setting the desired Encoding Bit Rate. In most situations, H.261 achieves compression rates anywhere from 0.1 to 0.5 bpp.

## Picture Resolution

For CellB, ShowMe TV supports three image sizes. For NTSC format video data, low resolution is 160 x 120 pixels, medium resolution is 320 x 240 pixels, and high resolution is 640x480 pixels.

PAL format is also supported. PAL low resolution is 192 x 144 pixels, medium resolution is 384 x 288 pixels, and high resolution is 768 x 576 pixels.

JPEG is supported only in medium resolution:

- NTSC is 320 x 240 pixels
- PAL is 384 x 288 pixels.

H.261 broadcasts have the following resolution sizes, which are independent of video source format (PAL or NTSC). The possible screen resolution sizes are:

- Low - 176 x 144
- Medium - 352 x 288
- High - 704 x 576 (achieved by zooming a 352 x 288 broadcast resolution)

## Motion Speed

Motion speeds from 1 to 30 frames are supported. Higher motion speeds means more data in the video stream.

The bandwidth of a single video stream equals the resolution of the image multiplied by the frame rate and the compression rate. In general, the bandwidth of a stream is:

$$width \times height \left( \frac{pixels}{frame} \right) \times f \left( \frac{frames}{second} \right) \times c \left( \frac{bits}{pixel} \right) = b \left( \frac{bits}{second} \right)$$

If, for example, we broadcast in CellB, where  $c$  (the compression ratio) ranges from 0.7 to 1.5 bits per pixel, then:

- At low resolution (160x120 pixels) and 1 frame per second will yield from (160\*120\*1\*0.75)Kbps to (160\*120\*1\*1.5)Kbps. Or from 14Kbps when there is little motion in the image to 29Kbps when there is a lot of motion. This is the smallest possible bandwidth for one video stream.

In contrast, if you send an uncompressed low resolution 8-bit video image at one frame per second you would send  $160*120*8 = 153$ Kbps.

- At high resolution and 12 frames per second will yield from (640\*480\*12\*0.75)Kbps to (640\*480\*12\*1.5)Kbps. Or from 2.8Mbps to 5.5Mbps.

---

## Audio Considerations

An average audio does not consume nearly as much network bandwidth as video.

**TABLE 6-2** Audio Format Bandwidth Requirements

Quality	Format	Bandwidth (K bits per second)
Voice (uncompressed)	8 bit ulaw, 8000 Hz, mono	64
Voice	IMA ADPCM/IMA4, 8000 Hz, mono	32
Low	IMA ADPCM/IMA4, 11025 Hz, mono	44
Medium	IMA ADPCM/IMA4, 22050 Hz, mono	88
High	IMA ADPCM/IMA4, 44100 Hz, mono	178

---

## Conserving Network Bandwidth

If you are concerned about the effect that ShowMe TV Transmitter is having on your network, there are several steps you can take to minimize network impact.

If you want to decrease your impact on the network while using ShowMe Video you can:

- Reduce the motion speed to fewer frames per second.
- Decrease your picture resolution. A high resolution image (640x480 pixels) sends sixteen times as much data as a low resolution image (160x120 pixels).
- Use multicast. For more information on multicast see Using Multicast.

---

## X-terminal Support

ShowMe TV supports X-terminals. This means that multiple users on a machine can each run their own copy of ShowMe TV on their X terminal. However, there are two things to keep in mind:

- The audio output from a broadcast goes to the *original* workstation speaker, *not* the X-terminal.
- Uncompressed video data is sent via the X protocol to the X-terminal. This could be a *significant* amount of data being sent. For example, a single 8-bit color video stream at 340x260 pixels and 15 frames per second is approximately 9.2 Megabits per second.

Any displays conforming to X11R5 specifications, including those available on PCs and Macintosh, should work.

---

## Preventing Color Flash

On an 8-bit frame buffer machine, ShowMe TV shares a color palette with the other applications on the desktop. There are 256 color entries available on an 8-bit machine, and all of the applications running on the desktop compete for these entries. When all of the colors have been used up—the color map is full—the desktop applications create their own color maps. Once they do this, you see color

flash. When you move your pointer into a window with its own color map, you will see all other colors on the desktop change. When you move your pointer out of that window, its colors also change. This is called color flash.

ShowMe TV has been designed to reduce the possibility of color flash occurring on your system. All of the icons and palettes presented in the ShowMe TV windows use a palette of 16 colors. The window manager also allocates nine colors to display the default ShowMe TV window colors (this includes highlight colors for the widgets), resulting a total of 25 colors used.

However, ShowMe TV always uses a certain number of colors to display video images.

If you are experiencing color flash, there are a number of things you can do to combat this problem:

- Quit applications on your desktop that consume a large number of colors. Any application that displays an image or uses many colors to present windows and images probably consumes a significant number of colors. You may need to restart ShowMe TV after you quit these applications in order for ShowMe TV to recognize the newly available colors.
- Change ShowMe TV to use fewer colors or change to grayscale.

ShowMe TV runs on 1-bit monochrome, 8-bit color and 24-bit color displays. ShowMe TV Transmitter supports broadcasting to a mixture of display hardware. For more information on this, see Graphics Compatibility.

---

**Note** – There are displays that support multiple depths. For example, a Sun SPARCstation with a GS display supports 4-bit, 8-bit and 24-bit applications all at the same time. ShowMe TV runs on these types of displays, but only if 1-bit, 8-bit or 24-bit depths are supported by the display. ShowMe TV does *not* run on 24-bit StaticGray or 24-bit DirectColor displays.

---

## Locking in a Colormap

If you are using *olwm*, you can lock in a colormap. This means that as you move from window to window, the colormap that you lock remains the current colormap. Ctrl+Again locks the colormap in to the current window and Ctrl+Undo unlocks it.

The Motif window manager (*mwm*) has Next colormap and Previous colormap commands which you can bind to keyboard commands by including the following lines in your `.mwmrc` file:

```
Ctrl<Key>L2 window|icon f.next_cmap
Ctrl<Key>L4 window|icon f.prev_cmap
```

This makes the Again key and the Undo key on the Sun keyboard go to the next and previous colormaps on the desktop. You can bind these commands to other keyboard keys if you want.

---

## Graphics Compatibility

The images sent by ShowMe TV are display independent. Each display that receives an image shows the video images for its own display. Monochrome machines show black and white images, 8-bit and 24-bit machines show color images. If you are using a 24-bit machine, there is three times as much color information to display. Therefore, the frame rate on 24-bit machines is slower.

On monochrome systems, ShowMe TV supports only one viewing size. This means that the picture-in-picture and zoom controls are not available.

---

## Hardware and Software Limitations

The H.261 decompression and display software requires the X Shared Memory Extensions of non-Ultra based systems This is available on all systems from Sun. There are, however, situations when you cannot run H.261 decompression; for example, while running via rlogin or telnet. Therefore, you cannot use H.261 decompression through rlogin or telnet on non-Ultra systems (for example, SPARCstation 20).

When using the SunVideo card for H.261 video compression, the captured images are slightly altered. For an NTSC camera, the captured image is  $320 \times 240$  pixels, and it is stretched vertically to a  $320 \times 288$  image. For a PAL camera, the right hand side of the  $384 \times 288$  pixel image is cut off to fit a canvas size of  $352 \times 288$ . These limitations do not exist with the SunVideo Plus card.



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