-a

Append to an already existing audio file.

-f

Ignore sample rate differences on append.

-d dev

Specify an alternate audio device to which output should be directed. If the -d option is not specified, /dev/audio is the default audio device.

-?

Print a command line usage help message.

file

The name of the output file. This must be a ViewStation local path name. If the file name is omitted (or is “-”) the file is written to the standard output.

EXAMPLES

To record a sound file from a host computer, the following commands can be issued in the host’s shell. These examples assume that the remote shell command on your host computer is rsh. Your computer may use a different command, such as rcmd.

```
example% rsh fxhost hdsrecord > file.au
example% rsh fxhost hdsrecord -s 44100 -p 16 -e linear -c 2 - > cdquality.au
example% rsh fxhost hdsrecord -t 1:00 -r - > oneminute.raw
```

SEE ALSO

hdsaudio(1) hdsplay(1)

Typically the program will be invoked via the Remote Shell facility from a host computer. See the examples below.

Recording is usually terminated by using the interrupt character (usually Control-C). In order to provide more control over the recording start time, hdsrecord will optionally wait for the user to press the enter key before recording is actually started.

The hdsrecord program can only be used on ViewStations equipped with the optional HDS MultiMedia Audio Card.

The hdsplay program can be used to playback recorded audio files.

OPTIONS

-s rate

Specify the date sampling rate, in samples per second. The default value is 8000. Acceptable values are: 5512 6615 8000 9600 11025 16000 18900 22050 27428 32000 33075 37800 44100 and 48000.

-p precision

Specify the sample precision for each channel, measured in bits. Acceptable values are 8 and 16 bits. The default is 8 bits. A 16 bit precision can only be used for LINEAR encodings and 16 bit data will be in most-significant-byte-first order.

-e encoding

Specify the data sample encoding type. The default value is ULAW. LINEAR may also be used.

-c channels

Specify the number of interleaved channels. Acceptable values are 1 for mono and 2 for stereo. The default value is 1.

-r

Treat files as raw input data. No attempt will be made to write a file header.

-w

Wait for the user to press the enter key before starting to record. This allows finer control over the start of recording.

-v vol

Set the recording volume to vol before recording begins. vol is an integer value between 0 and 100, inclusive. If this argument is not specified, the recording volume remains at the level most recently set by any process.

-t [[hh:]mm:]ss[.ddd]

Set the maximum recording time.

-i info

Set an information string describing the file. This string will be saved in the audio file header.

HDSvid.audioType: Mono | Stereo

HDSSimulcast.inputDevice: audioinputdevice

HDSSimulcast.outputDevice: audiooutputdevice

HDSvid.forceAspect: Yes | No

HDSvid.showButtons: Yes | No

HDSvid.doAudio: Yes | No

HDSvid*Win1*width: width

HDSvid*Win1*height: height

HDSvid*Win2*width: width

HDSvid*Win2*height: height

HDSvid*Win3*width: width

HDSvid*Win3*height: height

HDSvid*Win4*width: width

HDSvid*Win4*height: height

Sets the width and height of the actual video image. The surrounding window will size itself to fit around it. The default width is 640 pixels and the default height is 480 pixels.

HDSvid*Window 1*geometry: geometry

HDSvid*Window 2*geometry: geometry

HDSvid*Window 3*geometry: geometry

HDSvid*Window 4*geometry: geometry

Sets the location and size of the video window. The size includes the control buttons and other framing. The default size is based on the size of the incorporated video image.

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2.7.6.11 HDS Record Client Man Page

NAME

hdsrecord - record an audio file from the HDS ViewStation

SYNOPSIS

hdsrecord [-s #] [-p #] [-e ULAW|ALAW|LINEAR] [-c #] [-r] [-w]
[-t [[hh:]mm:]ss[.ddd]] [-i info] [-a] [-f] [-v #] [-d dev] [[file]]

DESCRIPTION

hdsrecord will record audio files from an HDS ViewStation. The files can be recorded in standard Sun/Next format or can be raw binary digital audio format. The data format and sampling rate can be specified as command line options. If no filenames are specified, the standard output is used.

Indicate the type of audio device attached to the ViewStation’s AUDIO IN connector. It is better to save this value in the ViewStation’s Setup client or to set it in the ViewStation’s Configuration File. The audioinputdevice can be "Unspecified", "HDS ViewCam", "HDS Headset", "CallPort Spkr/Mic", "HDS Microphone", "HDS Tuner", "VCR", or "Line Level Audio". See the DESCRIPTION section for more information.

-outdev audiooutputdevice

Indicate the type of audio device attached to the ViewStation’s AUDIO OUT connector. It is better to save this value in the ViewStation’s Setup client or to set it in the ViewStation’s Configuration File. The audiooutputdevice can be "HDS Internal Speaker", "External Speakers", "HDS Headset", or "CallPort Spkr/Mic". See the DESCRIPTION section for more information.

-forceaspect

This option requires that video windows maintain the normal 4x3 aspect ratio. This is the default.

-noaspect

This option allows video windows to have any aspect ratio selected by the user. This will cause the video contents to stretch & shrink in the vertical and horizontal directions. This can distort the image, but will fill the window.

-nobuttons

This option removes the control panels from the video windows.

-noaudio

This option brings up hdsvid without using the ViewStation audio capabilities. This allows other programs to control the audio and avoids conflicts with other audio programs.

X RESOURCES

In addition to the usual Xt and Motif resources, the hdsvid supports the following application specific resources. The values and defaults are the same as the corresponding command line options.

HDSvid.windows: (0 to 4)

HDSvid.playVolume: (0 to 100)

HDSvid.inputVolume: (1 to 100)

HDSvid.inputPort: connector

HDSvid.inputFormat: format

HDSvid.resolution: resolution

HDSvid.brightness: (-30 to 30)

HDSvid.contrast: (-30 to 30)

HDSvid.saturation: (-30 to 30)

HDSvid.tint: (-30 to 30)

The Play Volume and Input Volume sliders are duplicates of those found on other control panels. Modifications to these sliders automatically adjust the other sliders.

OPTIONS

In addition to the usual Xt and Motif options, hdsvid supports the following application-specific options.

-windows (0 to 4)

Indicate the number of video windows displayed at startup. The default is 1. Only two widows can be displayed initially unless -lores is used.

-playvol (0 to 100)

Set the initial play volume.

-invol (1 to 100)

Set the initial amplification volume for the AUDIO IN source.

-inport connector

Select the video input connector. connector can be either Composite or SVideo.

-informat format

Select the video input signal format. format can be NTSC, PAL, or SECAM.

-hires

Indicate that the default window type should be HighResolution.

-lores

Indicate that the default window type should be LowResolution.

-resolution resolution

Set the default resolution. resolution can be either HighResolution (the default) or LowResolution.

-brightness (-30 to 30)

Set the initial video window brightness.

-contrast (-30 to 30)

Set the initial video window contrast.

-saturation (-30 to 30)

Set the initial video window saturation.

-tint (-30 to 30)

Set the initial video window tint.

-audio Mono | Stereo

Select either Mono or Stereo audio processing.

-indev audioinputdevice

The Video Controls panel contains the following items.

The Input Connector item selects which type of video signal is attached to the ViewStation. The default is the Composite signal which is a single-plug jack. Another option is the S-Video connector which has multiple pins and which separates color information from luminance information. If set incorrectly, the ViewStation video display may appear black-and-white or otherwise incorrect.

The Input Format item indicates which type of video signal format is being used. The default is NTSC which is the standard for North America and several other regions. Other options are PAL which is dominant in Europe, and SECAM which is dominant in France. Once you determine the standard for your equipment, you will usually use one setting exclusively.

The New Window Type can be set to HighResolution or LowResolution. This affects the amount of vertical resolution for the image. If HighResolution is specified the video signal is deinterlaced and both fields are displayed.

The Brightness, Contrast, Saturation, and Tint sliders control the video characteristics of all the video windows.

The Audio Controls panel contains the following items.

The Input Device item indicates the type of device attached to the ViewStation’s AUDIO IN connector. This value must be set properly or the ViewStation’s audio will not operate correctly. The initial value for the input device comes from the ViewStation’s Setup client. It is better to make any changes to this value in the Setup client menu "Setup Options/User Preferences/Audio Device Settings/ Audio In Device" and save the value for the future. NOTE: It is important to change this value whenever you change the audio device attached to the ViewStation. Otherwise, the ViewStation will not know what type of device is attached and severe audio quality problems will result. The input device can be set to "Unspecified", "HDS ViewCam", "HDS Headset", "CallPort Spkr/Mic", "HDS Microphone", "HDS Tuner", "VCR", or "Line Level Audio". The "Line Level Audio" category refers to the output level of many common home audio devices, such as CD players and cassette decks.

The Audio Type item indicates whether the input is Mono or Stereo. If the default value of Mono is in effect, the left channel is used.

The Output Device item indicates the type of device attached to the ViewStation’s AUDIO OUT connector. This value must be set properly or the ViewStation’s audio will not operate correctly. As with the Input Device, the initial value for the output device comes from the ViewStation’s Setup client. It is better to make any changes to this value in the Setup menu "Setup Options/User Preferences/Audio Device Settings/Audio Out Device" and save the value for the future. NOTE: It is important to change this value whenever you change the audio device attached to the ViewStation. Otherwise, the ViewStation will not know what type of device is attached and severe audio quality problems will result. The output device can be set to "HDS Internal Speaker", "External Speakers", "HDS Headset", or "CallPort Spkr/Mic".

By default, the client will create two windows. The first is the main driver panel, HDS Video. The second is the initial video window, Window 1. The initial video window offers several buttons and a volume slider.

The Freeze button can be used to freeze the current image. It affects only the video window in which it is pressed. Other video windows will not be affected. Pressing the button again cancels the freeze.

The Mute button will mute the ViewStation audio output. Pressing the Mute button on one video window affects the others. Pressing the button again cancels the mute.

The SnapShot button will create a new window containing a still of the current image. The snapshot window contents can be easily captured to a file using common X image manipulations tools such as xwd(1) and xv. Note that if there are not enough free color entries available in the ViewStation's colormap, the snapshot window may not appear to have the correct colors. If this occurs, select the snapshot window with the window manager to see the correct colors. This can generally be avoided if at least 128 colors are available when the first snapshot is taken.

The Done button terminates the video window. Other video windows (and the main HDS Video panel) are not affected. (To terminate the hdsvid session, exit the main HDS Video window.

The Play Volume slider controls the output volume of the ViewStation. Note that the settings of other items in the Audio Controls panel can also have an important affect on the overall audio volume. Changes to this slider are reflected in all the hdsvid windows.

The HDS Video panel contains a Start New Window button and two volume control sliders.

The Start New Window button creates a new video window. The window will be either HighResolution or LowResolution based on the setting of the New Window Type item in the Video Controls panel. Two HighResolution windows can be displayed at one time. Four LowResolution windows can be displayed at one time. When the maximum number of windows are in use, the Start New Window button will be grayed out. It will be active again when a video window has been closed.

The Input Volume slider adjusts the amount of gain applied to the Audio In Device. This volume should not normally need to be adjusted, except by very small amounts. When it is adjusted properly, the Audio meter level should generally stay in the safe green level, occasionally straying into the red zone for louder sounds.

The Audio meter indicates the level of the current Audio Input Device attached to the AUDIO IN connector. If the level is not registering green for most sounds, make sure the Audio In Device is set properly, the device is properly connected, and the Input Volume slider is properly adjusted.

The HDS Video panel contains an Options menu which offers access to two other control dialogs, Video Controls and Audio Controls.

HDSTuner.channel: channel_number

Specify the initial channel for the tuner.

HDSTuner.fineTune: value

Specify the initial finetune value for the tuner.

HDSTuner.mute: True | False

Specify whether the tuner's audio output should initially be muted.

SEE ALSO

hdsaudio(1) hdssimulcast(1) hdsvid(1)

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2.7.6.10 HDS Video Manual Page

NAME

hdsvid - view multiple live video windows.

SYNOPSIS

hdsvid [-windows (0 to 4)] [-playvol (0 to 100)] [-invol (1 to 100)] [-inport connector] [-informat format] [-hires] [-lores] [-resolution resolution] [-brightness (-30 to 30)] [-contrast (-30 to 30)] [-saturation (-30 to 30)] [-tint (-30 to 30)] [-audio (Mono or Stereo)] [-indev audioinputdevice] [-outdev audiooutputdevice] [-forceaspect] [-noaspect] [-nobuttons] [-noaudio] [-toolkitOption ...]

DESCRIPTION

hdsvid can display high-quality live video in up to four simultaneous windows. Windows can be independently resized and overlapped. Still-frame snapshots of each window can be taken and the contents of these snapshot windows can be easily saved to a file using common X Window System tools.

The live video sources can include the line-level output of a video camera, a VCR, television receiver monitor output, optional HDS Tuner TV Receiver output, or other video- producing device. The video source should be connected to the VIDEO connector on the ViewStation.

To use audio, an audio input device should be connected to the ViewStation's AUDIO IN connector. This could be the HDS ViewCam's audio cable, the HDS Headset, the echo-suppressing CallPort Speaker/Microphone, the HDS Tuner, VCR audio output, or some other audio device. An alternate audio output device can also be used.

Once the audio devices are attached, the ViewStation must be configured to recognize them. The audio device types should be set in the HDS Setup menu. See the descriptions of the audio Input Device and Output Device below for more information.

-noattenuate

Indicate whether the Audio Out level of the HDS Tuner device should be line level (noattentuate) or microphone level (attenuate). By default, the hdstuner program will automatically set for the attenuated level.

-mute

-unmute

Indicate whether the Tuner's audio output should be initially muted. The default is unmute.

-antenna

-cable

-hrc_cable

-icc_cable

Set the TV Input for the tuner.

-finetune value (-30 to 30)

Set the initial finetune value for tuner. Value ranges from -30 to 30.

-toolkitOption ...

Set any standard Xt Intrinsics toolkit option. These include the -display and -xrm options.

channel

Set the initial startup channel for the tuner.

X RESOURCES

In addition to the usual Xt and Motif resources, the hdstuner supports the following application specific resources:

HDSTuner.device: /dev/tty1 | /dev/tty2

Specify the serial port to which the tuner is attached. The default is Serial Port 1, /dev/tty1.

HDSTuner.tvInput: antenna | cable | hrc_cable | icc_cable

Specify the type of the video signal attached to the Antenna In. The default is the previous setting or antenna.

HDSTuner.audioLevel: microphone | line

Specify the level of the Tuner device's Audio Out connector. The default is microphone.

HDSTuner.channelPresets: channel:finetune ...

Give an initial list of channels the the tuner to use a presets. This avoids the need to scan for channels and also allows the user to have the most-viewed channels available at startup. Each entry has a channel number and a finetune value separated by a colon. The finetune value must be between -30 and 30.

Example: HDSTuner.channelPresets: 3:0 6:0 10:0

Note that the hdstuner program does not directly display the video output. Use other programs such as hdsvid and hdssimulcast in conjuction with hdstuner to actually display the tuner output.

The hdstuner program allows the user to scan for available channels, select channels, and fine tune reception. The type of signal can be selected (antenna, cable, etc) as well as the audio output level of the HDS Tuner device. Audio mute control is also available.

The Scan For Channels button will scan through all channels looking for an acceptable signal level. All channels found will be added to the current list of presets. The list of presets can also be initially configured using the HDSTuner.channelPresets X resource. In the absence of a pre-configured list of channel presets, the user will usually want to Scan For Channels after bringing up the HDStuner application. Make sure the TV Input has been set appropriately before scanning.

The Add/Delete Channel button is used to add or delete the current channel in the preset list.

The Mute button disables the audio output of the HDS Tuner device. The HDSTuner.mute X resource can be used to set the initial state of this button.

The Exit button exits the entire HDStuner application. The state of the HDS Tuner device remains the same. The audio mute state and selected channel remain the same. If the HDStuner application is restarted, it will by default display the settings which had been established previously. This default behavior can be overridden with command line options and X resources to force a particular initial configuration. If power is removed from the HDS Tuner device, the previous settings are lost.

The Up Arrow and Down Arrow buttons are used to skip through the list of preset channels. Channels which have not been scanned or specified in the initial list of channel presets cannot be reached via the arrow buttons. The Scan For Channels button or the direct keypad should be used to reach such channels.

The Numeric Keypad is used to go directly to a channel, regardless of whether it is in the current channel preset list.

The Channel Fine Tuning slider can be used to make fine tuning adjustments. Each channel is tuned independently of the others.

The TV Input option controls which type of signal is being provided on the Tuner's Antenna In connector. Antenna refers to standard over-the-air frequencies. Cable refers to common CATV channels. HRC Cable refers to Harmonically Related Carrier encoded cable signals. ICC Cable refers to Incremental Coherent Carrier encoded cable signals.

OPTIONS

-device /dev/tty1(or2)

Indicate the ViewStation device to which the HDS Tuner is attached. The default is /dev/tty1 for Serial Port 1. Serial Port 2 may also be used.

-attenuate

Specify the Internet TCP network port number to use for the video connection. The default is 4444.

-audport networkportnum

Specify the Internet TCP network port number to use for the audio connection. The default is 4445.

-noaudio

Don't use the ViewStation audio facilities. This can be used to prevent conflicts with other audio programs.

X RESOURCES

In addition to the usual Xt and Motif resources, the hdsnettv program supports the following application-specific resources. The values and defaults are the same as the corresponding command line options.

HDSNetTV.volume: (0 to 100)

HDSNetTV.displayType: Color | Grey

HDSNetTV.displaySize: Reduced | Normal | Enlarged

HDSNetTV.brightness: (-30 to 30)

HDSNetTV.contrast: (-30 to 30)

HDSNetTV.outputType: audiooutputtype

HDSNetTV.mcastAddress: networkportnum

HDSNetTV.vidPort: networkportnum

HDSNetTV.audPort: networkportnum

HDSNetTV.doAudio: Yes | No

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2.7.6.9 HDS Tuner Manual Page

NAME

hdstuner - control the optional HDS Tuner television tuner/receiver device.

SYNOPSIS

hdstuner [-device /dev/tty1(or2)] [-attenuate] [-noattenuate] [-mute] [unmute] [-antenna] [-cable] [-hrc_cable] [-icc_cable] [-finetune value (-30 to 30)] [-toolkitOption ...] [channel]

DESCRIPTION

hdstuner can be used to control the optional HDS Tuner television tuner/receiver. The HDS Tuner device must be attached to one of the ViewStation's serial ports. By default, Serial Port 1 is assumed. However, if Serial Port 2 is used instead, this can be specified using the -device option or the HDSTuner.device X resource.

The Video Net Port can be used to specify the UDP network port number for the outgoing video packets. The default value is 4444. Note that the the hdsnettv viewer program's Video Net Port must be set to match the address used by the hdssimulcast program.

The Audio Net Port can be used to specify the UDP network port number for the outgoing video packets. The default value is 4445. Note that the the hdsnettv viewer program's Audio Net Port must be set to match the address used by the hdssimulcast program.

OPTIONS

In addition to the usual Xt and Motif options, hdssimulcast supports the following application-specific options.

-volume (0 to 100)

Set the local audio speaker output volume.

-color

Display color images.

-gray

Display grayscale video instead of color.

-reduced

Indicate that the displayed image should be one quarter of the transmitted size. This can result in faster performance for larger images.

-normal

Indicate that the displayed image should be the normal transmitted size.

-enlarged

Indicate that the displayed image should be four times larger than the transmitted size. This can result in a larger displayed image, but a lower frame rate.

-brightness (-30 to 30)

Set the initial video window brightness.

-contrast (-30 to 30)

Set the initial video window contrast.

-outdev audiooutputdevice

Indicate the type of audio device attached to the ViewStation's AUDIO OUT connector. It is better to save this value in the ViewStation's Setup client or to set it in the ViewStation's Configuration File. The audiooutputdevice can be "HDS Internal Speaker", "External Speakers", "HDS Headset", or "CallPort Spkr/Mic". See the DESCRIPTION section for more information.

-mcast address

Set the multicast listen IP address.

-vidport networkportnum

The Video Controls panel contains the following items.

The Compression item indicates what kind of image compression was used for the incoming image. Compression lowers the amount of network usage, but can decrease the overall image quality. This must be adjusted by hdssimulcast which is sending the transmission. If HDSGrey image compression is being used, performance may be improved by setting the Display Type control to Grey.

The Incoming Resolution item indicates the size of the incoming image. The two available values are 160 x 120 and 320 x 240. Using the smaller image size usually provides smoother motion and higher frame rates. This must be adjusted in the sending hdssimulcast program.

The Display Type item indicates whether color or greyscale video should be displayed.

The Display Size item indicates whether the incoming image should be enlarged or reduced. Enlarging the image results in a larger image, but can reduce the performance and the frame rate. Reducing the image can improve frame rate if a large image is transmitted.

The Brightness and Contrast sliders control the video characteristics of the video window.

The Audio Controls panel contains the following items.

The Output Device item indicates the type of device attached to the ViewStation's AUDIO OUT connector. This value must be set properly or the ViewStation's audio will not operate correctly. The initial value for the output device comes from the ViewStation's Setup client. It is better to make any changes to this value in the Setup menu "Setup Options/User Preferences/Audio Device Settings/Audio Out Device" and save the value for the future. NOTE: It is important to change this value whenever you change the audio device attached to the ViewStation. Otherwise, the ViewStation will not know what type of device is attached and severe audio quality problems will result. The output device can be set to "HDS Internal Speaker", "External Speakers", "HDS Headset", or "CallPort Spkr/Mic".

The Network Controls panel contains the following items.

The Incoming Rate item shows the number of incoming video frames per second. This can be affected by the Quality and Compression settings on the hdssimulcast program.

The Incoming Net Use item shows the amount of network use for the incoming audio and video transmissions. This can be affected by the Quality and Compression settings on the hdssimulcast program.

The Network Addresses panel contains the following items.

The Multicast Net Address item gives the multicast IP address for listening on the network. The default is 224.2.1.1. The hdsnettv viewer program's Multicast Net Address must be set to match the multicast address used by the hdssimulcast program.

HDSSimulcast.vidPort: networkportnum

HDSSimulcast.audPort: networkportnum

HDSSimulcast.ttl: timetolive

HDSSimulcast.doAudio: Yes | No

HDSconf.meterSafeColor: Pixel

HDSconf.meterWarningColor: Pixel

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2.7.6.8 HDS NetTV Viewer Manual Page

NAME

hdsnettv - Receive Multicast video & audio from hdssimulcast.

SYNOPSIS

hdsnettv [-volume (0 to 100)] [-color] [-grey] [-reduced] [-normal] [-enlarged] [-brightness (-30 to 30)] [-contrast (-30 to 30)] [-outdev audiooutputdevice] [-mcast address] [-vidport networkportnum] [-audport networkportnum] [-noaudio] [-toolkitOption ...]

DESCRIPTION

hdsnettv uses IP Multicasting technology to receive video and audio sent by another networked HDS ViewStation running the hdssimulcast program.

Use of the hdsnettv program does not require any special video adapter hardware. It can be used on any HDS ViewStation. The Network Address act as a kind of "channel- selector." The entries used by the HDS NetTV Viewer must match those used by the corresponding HDS NetTV Simulcast program.

The Volume slider controls the volume of the received audio. Volume is also affected by the Output Type setting of the Audio Controls. Note that if there is no audio, the hdssimulcast program might not be sending audio.

The Freeze button can be used to freeze the video image. Pressing the button again clears the freeze.

The Mute button can be used to mute the audio temporarily. Pressing the button again cancels the mute.

The SnapShot button will create a new window containing a still of the current image. The snapshot window contents can be easily captured to a file using common X image manipulations tools such as xwd(1) and xv. Note that if there are not enough free color entries available in the ViewStation's colormap, the snapshot window may not appear to have the correct colors. If this occurs, select the snapshot window with the window manager to see the correct colors. This can generally be avoided if at least 128 colors are available when the first snapshot is taken.

The Options menu contains entries for the Video Controls, Audio Controls, Network Controls, and Network Addresses panels.

-quality (0 to 100)

See the DESCRIPTION section for more information.

-mcast address

Set the destination IP address. This can be a multicast or a standard unicast IP address.

-vidport networkportnum

Specify the Internet TCP network port number to use for the video connection. The default is 4444.

-audport networkportnum

Specify the Internet TCP network port number to use for the audio connection. The default is 4445.

-ttl multicasttimetolive

Set the time-to-live for multicast packets.

-noaudio

Don't use the ViewStation audio facilities. This can be used to prevent conflicts with other audio programs.

X RESOURCES

In addition to the usual Xt and Motif resources, the hdssimulcast program supports the following application- specific resources. The values and defaults are the same as the corresponding command line options.

HDSSimulcast.sendVid: Yes | No

HDSSimulcast.sendAud: Yes | No

HDSSimulcast.send: Yes | No

HDSSimulcast.localVolume: (0 to 100)

HDSSimulcast.outgoingVolume: (1 to 100)

HDSSimulcast.compression: None | CellB | HDSGrey

HDSSimulcast.inputConnector: connector

HDSSimulcast.inputFormat: format

HDSSimulcast.brightness: (-30 to 30)

HDSSimulcast.contrast: (-30 to 30)

HDSSimulcast.saturation: (-30 to 30)

HDSSimulcast.quality: (0 to 100)

HDSSimulcast.tint: (-30 to 30)

HDSSimulcast.inputDevice: audioinputdevice

HDSSimulcast.outputDevice: audiooutputdevice

HDSSimulcast.mcastAddress: networkportnum

Indicates that audio should be sent automatically.

-send

Indicates that both video and audio should be sent automatically.

-localvol (0 to 100)

Set the local audio speaker output volume.

-outvol (1 to 100)

Set the audio outgoing volume.

-compression compressiontype

Specify the type of compression to use. compressiontype can be None, CellB, or HDSGrey.

-large

Set the initial Outgoing Image Resolution to 320x240.

-connector connector

Select the video input connector. connector can be either Composite or SVideo.

-informat format

Select the video input signal format. format can be NTSC, PAL, or SECAM.

-brightness (-30 to 30)

Set the initial video window brightness.

-contrast (-30 to 30)

Set the initial video window contrast.

-saturation (-30 to 30)

Set the initial video window saturation.

-tint (-30 to 30)

Set the initial video window tint.

-indev audioinputdevice

Indicate the type of audio device attached to the ViewStation's AUDIO IN connector. It is better to save this value in the ViewStation's Setup client or to set it in the ViewStation's Configuration File. The audioinputdevice can be "Unspecified", "HDS ViewCam", "HDS Headset", "CallPort Spkr/Mic", "HDS Microphone", "HDS Tuner", "VCR", or "Line Level Audio". See the DESCRIPTION section for more information.

-outdev audiooutputdevice

Indicate the type of audio device attached to the ViewStation's AUDIO OUT connector. It is better to save this value in the ViewStation's Setup client or to set it in the ViewStation's Configuration File. The audiooutputdevice can be "HDS Internal Speaker", "External Speakers", "HDS Headset", or "CallPort Spkr/Mic". See the DESCRIPTION section for more information.

Device Settings/Audio Out Device" and save the value for the future. NOTE: It is important to change this value whenever you change the audio device attached to the ViewStation. Otherwise, the ViewStation will not know what type of device is attached and severe audio quality problems will result. The output device can be set to "HDS Internal Speaker", "External Speakers", "HDS Headset", or "CallPort Spkr/Mic".

The Network Controls panel contains the following items.

The Outgoing Rate item shows the number of outgoing video frames per second. This can be affected by the Quality and Compression settings.The Outgoing Net Use item shows the amount of network use for the outgoing audio and video connections. This can be affected by the Quality and Compression settings.

The Net Use Limit slider sets the maximum allowed network use. The default is 4096. Decreasing the value can result in decreased frame rates and in motion which is not as smooth. You can adjust this value to suit your needs.

The Quality slider controls the general quality of the out- going image. It generally controls how much of a change must occur in an area of the screen before it must be retransmitted to the receiver. The default is 100, which means the entire image is sent each frame. Lower values reduce the amount of outgoing network usage, but also reduce the quality of the image.

The Network Addresses panel contains the following items.

The Multicast Net Address item gives the destination IP address for the hdssimulcast output. The IP address is a multicast address if it is in the form aaa.bbb.ccc.ddd where aaa is between 224 and 239. If a multicast address is specified, then all receivers listening to that multicast group "channel" can receive the simulcast. If you want to specify a single receiver, you can use a non-multicast (uni-cast) address. The default value is 224.2.1.1. The hdsnettv viewer program’s Multicast Net Address must be set to match in order to receive the transmissions.

The Video Net Port can be used to specify the UDP network port number for the outgoing video packets. The default value is 4444. Note that the the hdsnettv viewer program’s Video Net Port must be set to match in order to receive the transmissions.

The Audio Net Port can be used to specify the UDP network port number for the outgoing video packets. The default value is 4445. Note that the the hdsnettv viewer program’s Audio Net Port must be set to match in order to receive the transmissions.

OPTIONS

In addition to the usual Xt and Motif options, hdssimulcast supports the following application-specific options.

-sendvid

Indicates that video should be sent automatically.

-sendaud

The Options menu contains entries for the Video Controls, Audio Controls, Network Controls, and Network Addresses panels.

The Video Controls panel contains the following items.

The Compression panel item controls the type of video compression to use for the outgoing video transmission. The compression lowers the outgoing network usage, but can decrease the overall image quality. The compressions available are: None, CellB, and HDSGrey. The CellB compression scheme provides good image compression for color images. The HDSGrey compression scheme provides only black-and-white transmission.

The Outgoing Resolution item controls the size of the local and outgoing image. The two available values are 160 x 120 and 320 x 240. Using the smaller image size usually provides smoother motion and higher frame rates.

The Input Connector item selects which type of video signal is attached to the ViewStation. The default is the Composite signal which is a single-plug jack. Another option is the S-Video connector which has multiple pins and which separates color information from luminance information. If set incorrectly, the ViewStation video display may appear black-and-white or otherwise incorrect.

The Input Format item indicates which type of video signal format is being used. The default is NTSC which is the standard for North America and several other regions. Other options are PAL which is dominant in Europe, and SECAM which is dominant in France. Once you determine the standard for your equipment, you will usually use one setting exclusively.

The Brightness, Contrast, Saturation, and Tint sliders control the video characteristics of the video window.

The Audio Controls panel contains the following items.

The Input Device item indicates the type of device attached to the ViewStation’s AUDIO IN connector. This value must be set properly or the ViewStation’s audio will not operate correctly. The initial value for the input device comes from the ViewStation’s Setup client. It is better to make any changes to this value in the Setup client menu "Setup Options/User Preferences/Audio Device Settings/ Audio In Device" and save the value for the future. NOTE: It is important to change this value whenever you change the audio device attached to the ViewStation. Otherwise, the ViewStation will not know what type of device is attached and severe audio quality problems will result. The input device can be set to "Unspecified", "HDS ViewCam", "HDS Headset", "CallPort Spkr/Mic", "HDS Microphone", "HDS Tuner", "VCR", or "Line Level Audio". The "Line Level Audio" category refers to the output level of many common home audio devices, such as CD players and cassette decks.

The Output Device item indicates the type of device attached to the ViewStation’s AUDIO OUT connector. This value must be set properly or the ViewStation’s audio will not operate correctly. As with the Input Device, the initial value for the output device comes from the ViewStation’s Setup client. It is better to make any changes to this value in the Setup menu "Setup Options/User Preferences/Audio on the ViewStation. If using the optional HDS Tuner device, be sure to connect the Video Out from the Tuner to the VIDEO connector on the ViewStation.

To transmit audio, an audio input device should be connected to the ViewStation’s AUDIO IN connector. This could be the HDS ViewCam’s audio cable, the HDS Headset, the echo- suppressing CallPort Speaker/Microphone, the HDS Tuner, or VCR audio output. An alternate audio output device can also be used.

Once the audio devices are attached, the ViewStation must be configured to recognize them. The audio device types should be set in the HDS Setup menu. See the descriptions of the audio Input Device and Output Device below for more information.

Before sending video or audio on the network, you may need to configure the Network Addresses under the Options menu. The network addresses correspond (roughly) to the broadcast "channel" carrying your HDS Simulcast program. You should choose addresses which do not conflict with any other simulcasts currently being used on your networks. See below for more details.

The Local Volume controls the volume of the audio speaker on the local machine. However, it does not affect the volume of the signal which is multicast over the network.

The Outgoing Volume slider controls the level of the audio signal which is sent out over the network. It adjusts the amount of gain applied to the Audio In Device. This volume should not normally need to be adjusted, except by very small amounts. When it is adjusted properly, the Audio meter level should generally stay in the safe green level, occasionally straying into the red zone for louder sounds. It should not be consistently in the red zone, or audio quality may suffer considerably. The Outgoing Volume slider will also affect the local volume.

The Audio meter indicates the level of the current Audio Input Device attached to the AUDIO IN connector. The meter is continuously updated, even when not transmitting audio. If the level is not registering green for most sounds, make sure the Audio In Device is set properly, the device is properly connected, and the Outgoing Volume slider is properly adjusted.

The Send Video button must be used to actually begin transmitting video over the network. Pressing the button again stops the video sending. Video is only transmitted if this button is highlighted.

The Send Audio button must be used to actually begin transmitting audio over the network. Pressing the button again stops the audio sending. Audio is only transmitted if this button is highlighted.

The Freeze button can be used to freeze the outgoing video image. Pressing the button again clears the freeze.

The Mute button can be used to mute the local audio temporarily. It does not affect the outgoing volume. To mute the outgoing volume, disable the Send Audio toggle.

X RESOURCES

In addition to the usual Xt and Motif resources, the hdsmovie supports the following application specific resources. The values and defaults are the same as the corresponding command line options.

HDSvid.filename: (0 to 4)

HDSvid.loop: Yes | No

HDSvid.brightness: (-30 to 30)

HDSvid.contrast: (-30 to 30)

HDSvid.saturation: (-30 to 30)

HDSvid.outputType: audiooutputtype

HDSvid.showButtons: Yes | No

HDSvid.doAudio: Yes | No

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2.7.6.7 HDS NetTV Simulcast Manual Page

NAME

hdssimulcast - Multicast video & audio to other ViewStations

SYNOPSIS

hdssimulcast [-sendvid] [-sendaud] [-send] [-localvol (0 to 100)] [-outvol (1 to 100)] [-compressioncompressiontype] [-large] [-connector connector] [-informat format] [-brightness (-30 to 30)] [-contrast (-30 to 30)] [-saturation (-30 to30)] [-tint (-30 to 30)] [-indev audioinputdevice] [-outdev audiooutputdevice] [-netlimit (0 to 4096)] [-quality (0 to 100)] [-mcast address] [-vidport networkportnum] [-audport networkportnum] [-ttl multicasttimetolive] [-noaudio] [-toolkitOption ...]

DESCRIPTION

hdssimulcast uses IP Multicasting technology to efficiently transmit video and audio to a potentially large number of HDS NetTV Viewer applications running on other networked HDS ViewStations. It is similar to a real-life TV broadcasting-station, except that the network is being used to carry the television signals instead of the airwaves or special-purpose cable.

To view the multicast transmissions on other ViewStations, you must use the HDS NetTV Viewer (hdsnettv) program. The HDS NetTV Viewer program can be run on any ViewStation and does not require the optional HDS netVideo hardware. As discussed below, if you change the Simulcast Network Addresses, make sure to set the HDS NetTV Viewer Network Addresses to match.

The live video sources can include the output of a typical video camera (such as the HDS ViewCam), a VCR, the optional HDS Tuner output, or some other video-producing device. The video source should be connected to the VIDEO connector

The Output Device item indicates the type of device attached to the ViewStation's AUDIO OUT connector. This value must be set properly or the ViewStation's audio will not operate correctly. The initial value for the output device comes from the ViewStation's Setup client. It is better to make any changes to this value in the Setup menu "Setup Options/User Preferences/Audio Device Settings/Audio Out Device" and save the value for the future. NOTE: It is important to change this value whenever you change the audio device attached to the ViewStation. Otherwise, the ViewStation will not know what type of device is attached and severe audio quality problems will result. The output device can be set to "HDS Internal Speaker", "External Speakers", "HDS Headset", or "CallPort Spkr/Mic".

OPTIONS

In addition to the usual Xt and Motif options, hdsmovie supports the following application-specific options.

-f filename

Gives the ViewStation path to the movie file to play. If specified, this file will be played automatically when the hdsmovie program is started.

-loop

Indicates that the file playback should be restarted when finished.

-playvol (0 to 100)

Set the initial play volume.

-brightness (-30 to 30)

Set the initial video window brightness.

-contrast (-30 to 30)

Set the initial video window contrast.

-saturation (-30 to 30)

Set the initial video window saturation.

-outdev audiooutputdevice

Indicate the type of audio device attached to the ViewStation's AUDIO OUT connector. It is better to save this value in the ViewStation's Setup client or to set it in the ViewStation's Configuration File. The audiooutputdevice can be "HDS Internal Speaker", "External Speakers", "HDS Headset", or "CallPort Spkr/Mic". See the DESCRIPTION section for more information.

-nobuttons

This option removes the control panels from the movie window.

-noaudio

This option brings up hdsmovie without using the ViewStation audio capabilities. This allows other programs to control the audio and avoids conflicts with other audio programs.

Stereo)] [-outdev audiooutputdevice] [-nobuttons] [-noaudio] [-noloop] [-toolkitOption ...]

DESCRIPTION

hdsmovie plays audio/video interleaved files. The video can be raw or compressed with the Indeo compression algorithm. Version 3.2 of Indeo is supported.

By default, the program will create a main driver panel called HDS Movie.

The Movie File item should be filled with a ViewStation file path. This should usually begin with the /hostname prefix. Note that video files usually require a fast Access Protocol such as FTP in order to read the file quickly enough for rapid display. The usual default of TFTP is not sufficient. You may need to update the Remote Hosts entries for the host in the ViewStation Setup screen.

The Play Movie button causes the movie file to be played once.

The Loop Movie button causes the movie file to played continuously in a loop.

The Clear File button simply clears the current filename entry to allow a new one to be entered. It does not affect the file contents in any way.

When the video file playing is started, a second window is created. This window has the video file name as its title. The movie window offers several buttons and a volume slider.

The Freeze button can be used to freeze the current image. It affects only the video window in which it is pressed. Pressing the button again cancels the freeze.

The Mute button will mute the ViewStation audio output. Pressing the button again cancels the mute.

The SnapShot button will create a new window containing a still of the current image. The snapshot window contents can be easily captured to a file using common X image mani- pulations tools such as xwd(1) and xv. Note that if there are not enough free color entries available in the ViewStation's colormap, the snapshot window may not appear to have the correct colors. If this occurs, select the snapshot window with the window manager to see the correct colors. This can generally be avoided if at least 128 colors are available when the first snapshot is taken.

The Restart button causes the current movie to restart from the beginning.

The Done button terminates the movie window.

The Play Volume slider controls the output volume of the ViewStation. Note that the settings of other items in the Audio Controls panel can also have an important affect on the overall audio volume. Changes to this slider are reflected in all the hdsmovie windows.

The main HDS Movie panel also contains an Options menu which offers access to two other control dialogs, Video Controls and Audio Controls.

The Brightness, Contrast, and Saturation sliders control the video characteristics of the video window.

HDSconf.addressList: addresses

As an alternative to using a file with addresses and descriptions, the addressList resource can be set directly. If set, this overrides the use of the addressListFileName. The resource should consist of one line for each ViewStation. Each line should contain the hostname (or host IP address) one or more spaces followed by a description. Lines should be separated by a newline character.

HDSconf.destAddress: connecthost

HDSconf.sendVid: Yes | No

HDSconf.sendAud: Yes | No

HDSconf.send: Yes | No

HDSconf.speakerVolume: (0 to 100)

HDSconf.micVolume: (1 to 100)

HDSconf.compression: Yes | No

HDSconf.inputConnector: connector

HDSconf.inputFormat: format

HDSconf.brightness: (-30 to 30)

HDSconf.contrast: (-30 to 30)

HDSconf.saturation: (-30 to 30)

HDSconf.quality: (0 to 100)

HDSconf.tint: (-30 to 30)

HDSconf.inputDevice: audioinputdevice

HDSconf.outputDevice: audiooutputdevice

HDSconf.doAudio: Yes | No

HDSconf.vidPort: networkportnum

HDSconf.audPort: networkportnum

HDSconf.screechDetection: Yes | No

HDSconf.meterSafeColor: Pixel

HDSconf.meterWarningColor: Pixel

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2.7.6.6 HDS Movie Manual Page

NAME

hdsmovie - view audio/video interleaved files

SYNOPSIS

hdsmovie [-f filename] [-loop] [-playvol (0 to 100)] [-invol (1 to 100)] [-brightness (-30 to 30)] [-contrast (-30 to 30)] [-saturation (-30 to 30)] [-audio (Mono or

Indicate the type of audio device attached to the ViewStation's AUDIO OUT connector. It is better to save this value in the ViewStation's Setup client or to set it in the ViewStation's Configuration File. The audiooutputdevice can be "HDS Internal Speaker", "External Speakers", "HDS Headset", or "CallPort Spkr/Mic". See the DESCRIPTION section for more information.

-quality (0 to 100)

See the DESCRIPTION section for more information.

-vidport networkportnum

Specify the Internet TCP network port number to use for the video connection. The default is 5100.

-audport networkportnum

Specify the Internet TCP network port number to use for the audio connection. The default is 5101.

-noaudio

Indicates that the ViewStation audio device should not be used. This is typically useful only if you wish to use the audio device for another purpose while using the video portion of the conference.

-nosendvid

Indicates that video should not be sent automatically as soon as the connection is established. The "Send Vid" button will still be available to start the video manually.

-nosendaud

Indicates that audio should not be sent automatically as soon as the connection is established. The "Send Aud" or "Hold to Talk" button will still be available to start the audio manually.

-nosend

Indicates that neither video nor audio should be sent automatically as soon as the connection is established. This is the sames as -nosendvid and -nosendaud.

-noscreech

Disables the use of screech detection. Screech detection attempts to determine when the speaker output signal level is too high and responds by lowering the Speaker Volume. Use this option to circumvent this feature.

X RESOURCES

In addition to the usual Xt and Motif resources, the hdsconf supports the following application-specific resources. The values and defaults are the same as the corresponding command line options.

HDSconf.addressListFileName: filename

Specify the file listing addresses and descriptions of conference-capable ViewStations. The default value is /FXUtilities/hds-fx/hdsvideo/lib/HDSconf.list.

OPTIONS

In addition to the usual Xt and Motif options, hdsconf program supports the following application-specific options.

-addressfile filename

Specify the file listing addresses and textual descriptions of ViewStations capable of conferencing. The default value is /FXUtilities/hds-fx/hdsvideo/lib/HDSconf.list.

-dest connecthost

Specify the host for initial connection.

-spkrvol (0 to 100)

Set the audio speaker output volume.

-micvol (1 to 100)

Set the audio input volume.

-compress

Use compression for outgoing video images.

-nocompress

Do not use compression for outgoing video images.

-connector connector

Select the video input connector. connector can be either Composite or SVideo.

-informat format

Select the video input signal format. format can be NTSC, PAL, or SECAM.

-brightness (-30 to 30)

Set the initial video window brightness.

-contrast (-30 to 30)

Set the initial video window contrast.

-saturation (-30 to 30)

Set the initial video window saturation.

-tint (-30 to 30)

Set the initial video window tint.

-indev audioinputdevice

Indicate the type of audio device attached to the ViewStation's AUDIO IN connector. It is better to save this value in the ViewStation's Setup client or to set it in the ViewStation's Configuration File. The audioinputdevice can be "Unspecified", "HDS ViewCam", "HDS Headset", "CallPort Spkr/Mic", "HDS Microphone", "HDS Tuner", "VCR", or "Line Level Audio". See the DESCRIPTION section for more information.

-outdev audiooutputdevice

The Input Device item indicates the type of device attached to the ViewStation's AUDIO IN connector. This value must be set properly or the ViewStation's audio will not operate correctly. The initial value for the input device comes from the ViewStation's Setup client. It is better to make any changes to this value in the Setup client menu "Setup Options/User Preferences/Audio Device Settings/ Audio In Device" and save the value for the future. NOTE: It is important to change this value whenever you change the audio device attached to the ViewStation. Otherwise, the ViewStation will not know what type of device is attached and severe audio quality problems will result. The input device can be set to "Unspecified", "HDS ViewCam", "HDS Headset", "CallPort Spkr/Mic", "HDS Microphone", "HDS Tuner", "VCR", or "Line Level Audio". The "Line Level Audio" category refers to the output level of many common home audio devices, such as CD players and cassette decks.

The Output Device item indicates the type of device attached to the ViewStation's AUDIO OUT connector. This value must be set properly or the ViewStation's audio will not operate correctly. As with the Input Device, the initial value for the output device comes from the ViewStation's Setup client. It is better to make any changes to this value in the Setup menu "Setup Options/User Preferences/Audio Device Settings/Audio Out Device" and save the value for the future. NOTE: It is important to change this value whenever you change the audio device attached to the ViewStation. Otherwise, the ViewStation will not know what type of device is attached and severe audio quality problems will result. The output device can be set to "HDS Internal Speaker", "External Speakers", "HDS Headset", or "CallPort Spkr/Mic".

The Network Controls panel contains the following items.

The Incoming Rate item shows the number of incoming video frames per second. This can be affected by the Quality and Compression settings on the other conferencing ViewStation.

The Incoming Net Use item shows the amount of network use for the incoming audio and video connections. This can be affected by the Quality and Compression controls on the other conferencing ViewStation.

The Outgoing Rate item shows the number of outgoing video frames per second. This can be affected by the local Quality and Compression controls.

The Outgoing Net Use item shows the amount of network use for the outgoing audio and video connections. This can be affected by the local Quality and Compression controls.

The Quality slider controls the general quality of the out- going image. It controls how much of a change must occur in each small area of the screen before the area must be retransmitted to the receiver. The default is 100, which means each area on the screen is always sent for each new video frame. Lower values mean that less of the screen must be sent for each new frame. This decreases the outgoing network usage, but can result in a poorer quality image. Values between 80 and 90 work well for typical cases, although lower values can be used when network bandwidth is at a premium.

Hold To Talk button again stops audio transmitting, and restores the speaker audio. The Hold To Talk button is only presented if the current combination of Audio In Device and Audio Out Device might cause local feedback. This generally means that the HDS Internal Speaker or External Speakers are being used with an open microphone.

The Send Audio button must be used to transmit audio. Unlike the Hold To Talk button, the Send Audio button does not disable the incoming audio. However, the Send Audio button is only available when the Audio In Device and Audio Out Device do not allow local feedback. This generally means that the CallPort Spkr/ Mic or the HDS Headset is being used.

The Speaker Volume slider controls the volume of the current Audio Out Device.

The Mic Volume slider controls the amount of gain applied to the Audio In Device. This volume should not normally need to be adjusted, except by very small amounts. When it is adjusted properly, the Audio meter level should generally stay in the safe green level, occasionally straying into the red zone for louder sounds. It should not be consistently in the red zone, or audio quality may suffer considerably.

The Audio meter indicates the level of the current Audio Input Device attached to the AUDIO IN connector. The meter is continuously updated, even when not transmitting audio. If the level is not registering green for most sounds, make sure the Audio In Device is set properly, the device is properly connected, and the Mic Volume slider is properly adjusted.

The Options menu contains entries for the Video Controls, Audio Controls, and Network Controls panels.

The Video Controls panel contains the following items.

The Compression panel item controls whether or not image compression should be used for the outgoing image. The compression lowers the amount of network usage, but can decrease the overall image quality.

The Input Connector item selects which type of video signal is attached to the ViewStation. The default is the Composite signal which is a single-plug jack. Another option is the S-Video connector which has multiple pins and which separates color information from luminance information. If set incorrectly, the ViewStation video display may appear black-and-white or otherwise incorrect.

The Input Format item indicates which type of video signal format is being used. The default is NTSC which is the standard for North America and several other regions. Other options are PAL which is dominant in Europe, and SECAM which is dominant in France. Once you determine the standard for your equipment, you will usually use one setting exclusively.

The Brightness, Contrast, Saturation, and Tint sliders control the video characteristics of the outgoing video window.

The Audio Controls panel contains the following items.

hdsconf - ViewStation video conferencing application

SYNOPSIS

hdsconf [-addressfile filename] [-dest connecthost] [-spkrvol (0 to 100)] [-micvol (1 to 100)] [-compress] [-nocompress] [-connector connector] [-informat format] [-brightness (-30 to 30)] [-contrast (-30 to 30)] [-saturation (-30 to 30)] [-tint (-30 to 30)] [-indev audioinputdevice] [-outdev audiooutputdevice] [-quality (0 to 100)] [-vidport networkportnum] [-audport networkportnum] [-noaudio] [-nosendvid] [-nosendaud] [-nosend] [-noscreech] [-toolkitOption ...]

DESCRIPTION

hdsconf is a powerful video teleconferencing application which allows multiple HDS ViewStation users to communicate using video and audio.

The HDS ViewCam should be connected to the ViewStation's VIDEO connector. An audio input device should be connected to the ViewStation's AUDIO IN connector. This could be the HDS ViewCam's audio cable, the HDS Headset, or the echo-suppressing CallPort Speaker/Microphone.

Once the audio devices are attached, the ViewStation must be configured to recognize them. The audio device types should be set in the HDS Setup menu. See the descriptions of the audio Input Device and Output Device below for more information.

Assuming the devices are properly attached and configured, a network connection can be made to another ViewStation using the Connect button. You can specify another host by IP address or by hostname (if the ViewStation Domain Name Services or Host Resolver File is properly configured).

Instead of using IP addresses or hostnames, you can arrange for a list of descriptive names to be presented. These descriptive names are placed in an address file. The default address file is /FXUtilities/hds-fx/hdsvideo/lib/HDSconf.list, where /FXUtilities refers to the current HDSware base directory. You can change the location of this file using the HDSconf.addressFileName X resource or the -addressfile command line option. Each line of the file consists of an IP address (or hostname) followed by a descriptive name, such as the ViewStation user's name or ViewStation's office location. Comment lines beginning with the '#' character are permitted.

The Disconnect button can be used to terminate a session.

The Freeze button can be used to freeze the outgoing video image. Pressing the button again clears the freeze.

The Send Video button must be used to actually transmit video. If the Send Video button is not highlighted, no video is being transmitted.

Depending upon the type of audio devices being used, either the Hold To Talk button or the Send Audio button will be available at any given time.

The Hold To Talk button is used to transmit audio. To avoid audio feedback, the speaker audio is temporarily suspended while using Hold To Talk. Releasing the

The following environment variables are used by NetAudio programs:

AUDIOSERVER

This specifies the name of default audio server to contact if no name is explicitly given on the command line.

DISPLAY

This specifies the name of an X Window System display that should be assumed to also have a corresponding NetAudio server.

SEE ALSO

auctl(1), audemo(1), audial(1), auinfo(1), auplay(1), auscope(1), autool(1)

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NAME

auinfo

This program lists information describing the capabilities of an audio server.

auctl

This program can be used to change various device parameters.

auscope

This program is an audio protocol filter that can be used to view the network packets being sent between an application and an audio server.

aupanel

This program provides an X-based window-oriented interface allowing the user to adjust the attributes of the devices provided by the NetAudio service.

auedit

This program provides an X-based window-oriented interface allowing the user to edit audio files.

auconvert

This program allows the user to perform various conversion operations on sound files.

AUDIO FILES

The audio programming library and utility programs can be used to read and write files in any of the following file formats:

Sun/NeXT

These files typically have a ′.au′ or ′.snd′ extension. They are usually produced by Sun or NeXT workstations.

Creative Labs

These files typically have a ′.voc′ extension. They are usually produced by by Soundblaster audio cards on IBM PC compatible computers.

Microsoft WAVE

These files typically have a ′.wav′ extension. They are usually produced by IBM PC compatible computers.

AIFF

These files typically have a ′.aiff′ or ′.aif′ extension. They are usually produced by SGI workstations or Apple computers.

Due to the nature of the file formats, only the Sun/NeXT file format can be piped through standard input and/or standard output. The convention for specifying standard input or standard output is to use a hyphen ("-") as the file name.

PROGRAMMING

Application developers may create their own audio clients using the NetAudio programming library.

ENVIRONMENT VARIABLES

AUDIO SERVER NAMES

Each audio server has a name that is used by applications in establishing a connection. The format of the name depends upon the type of network being used. In TCP/IP environments, audio server names look like:

```
tcp/hostname:portnum
```

where hostname is the name or numeric IP address of the desktop machine to be contacted and portnum is the port number on which the server is listening. If the "tcp/" prefix is not given, 8000 is automatically added to portnum so that the audio server name is compatible with the X Window System display name.

In DECnet environments, audio server names look like:

```
decnet/nodename::num
```

where nodename is the name or numeric DECnet address of the desktop machine to be contacted and num is the DECnet task AUDIO$num. If the "decnet/" prefix is omitted, it is automatically added so that the audio server name is compatible with the X Window System display name.

Most audio utilities accept a command line argument -audio servername for specifying the audio server to be contacted.

```
% auinfo -audio tcp/unit:8000
```

If no server is specified on the command line, the AUDIOSERVER environment variable is checked to see if a name has been stored there. Otherwise, the DISPLAY environment variable used by X Window System applications is checked and the corresponding audio server is used.

SAMPLE PROGRAMS

Several sample programs that use the NetAudio service are provided:

auplay

This program simply plays the files listed on its command line. It is typically used from shell scripts, command-line procedures, or other programs that just need to "dump" sound data to the audio server.

audemo

This program allows the user to select and play pre-recorded sound files or to record new sound files. It provides a simple control panel for dynamically changing the volume while a sound is being played and for aborting a sound.

audial

This program generates North American telephone touch tones correspond to a given string. audial can also recognize touch tones and produce the corresponding string.

autool

This program is compatible with the Sun audiotool program and is typically used to play prerecorded sound files. Unlike auplay it provides a graphical interface to allow the user to replay or cancel the data.

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AUTHORS

The HDS version of the NetAudio server was based on the publically-available NetAudio server source originally written by Greg Renda and Dave Lemke, which has large amounts of code borrowed from the sample X server.

The sample X server was originally written by Susan Angebranndt, Raymond Drewry, Philip Karlton, and Todd Newman, from Digital Equipment Corporation, with support from a large cast. It has since been extensively rewritten by Keith Packard and Bob Scheifler, from MIT.

2.7.6.4 NetAudio Audio Client Manual Page

This is the man page for NetAudio. More extensive man pages are available in the ./hds-fx/contrib/Netaudio directory.

NAME

NetAudio - a portable, network-transparent audio system

SYNOPSIS

The NetAudio service is a network-transparent system for playing, recording, and manipulating audio data over a network. It uses the client/server model to separate application code from the software drivers needed to control specific audio input and output devices.

DESCRIPTION

The NetAudio service provides applications with the ability to send and receive audio data such as voice, sound effects, and music in a network environment. A audio server inside the desktop terminal or personal computer controls the various input and output devices in response to messages sent from client programs running on other hosts.

A variety of utility programs are provided that can be used to play or record audio using shell scripts or command-line procedures. More ambitious applications can communicate directly with the audio server using a C-language programming library.

The NetAudio service supports a variety of the common for-mats used to store sound data. Audio inputs and outputs can run at a any of a range of sampling rates. The audio server automatically converts all data to the designed format or rate.

Streams of data from multiple inputs can be mixed together and directed to any attached output device. Sounds that are used many times can be stored in the server so that they do not need to be transmitted over the network each time they are played. Furthermore, inputs can be hooked directly to outputs (for example, a CD player can be connected to a set of speakers) so that data can be played without requiring any client intervention or network traffic.

The HDS ViewStation local client hdsaudio can be used in conjunction with auhds to control output speaker selection, volume, etc.

The auhds server can only be used on ViewStations equipped with the optional HDS MultiMedia Audio Card.

NETWORK CONNECTIONS

The NetAudio server supports connections made using the following reliable byte-streams:

TCP/IP

The server listens on port 8000+n, where n is the listen port offset.

Unix Domain

The NetAudio server uses /dev/netaudion as the filename for the socket, where n is the display number.

OPTIONS

The auhds server accepts the following command line options:

-aa

Allows clients on any host to connect. By default, access is allowed only to clients on the local host. This option should almost always be specified.

SIGNALS

The NetAudio server attaches special meaning to the following signals:

SIGHUP

This signal causes the server to close all existing connections, free all resources, and restore all defaults.

SIGTERM

This signal causes the server to exit cleanly.

SIGUSR1

This signal is used quite differently from either of the above. When the server starts, it checks to see if it has inherited SIGUSR1 as SIG_IGN instead of the usual SIG_DFL. In this case, the server sends a SIGUSR1 to its parent process after it has set up the various connection schemes.

DIAGNOSTICS

Too numerous to list them all. If started in the background, messages are usually logged through the ViewStation’s syslog facility.

HDS VIEWSTATION FILES

/dev/netaudio* Unix domain socket

/dev/audio Audio device

SEE ALSO

hdsaudio(1), netaudio(1), auinfo(1), auplay(1), auctl(1)

A 16 bit precision can only be used for LINEAR encodings and 16 bit data must be in most-significant-byte-first order.

-r

Treat files as raw input data. No attempt will be made to read a file header.

-?

Help. Print a command line usage message.

EXAMPLES

To play a sound file from a host computer, the following commands can be issued in the host's shell:

```
example% rsh fxhost hdsplay - < file.au
example% rsh fxhost hdsplay -r -s 44100 -p 16 -e linear -c 2 - < cdquality.raw
example% rsh fxhost hdsplay /myhost/sounds/demo.au
```

From a ViewStation 'HDS Console' shell:

```
hds% hdsplay /mysun/usr/demo/SOUND/sounds/spacemusic.au
```

SEE ALSO

hdsaudio(1)

2.7.6.3 HDS Au Audio Client Manual Page

NAME

auhds - HDS NetAudio server

SYNOPSIS

auhds [:listen port offset] [-option ...]

DESCRIPTION

auhds is the name of the NetAudio server running as a down- loaded client on the HDS ViewStation. The auhds NetAudio server provides ViewStation audio services to applications on the network.

See netaudio(1) for more information.

STARTING THE SERVER

If frequent use is expected, auhds should be started in the background from the ViewStation's Startup Command File. If only occasional use is expected, auhds can be started when needed via the HDS Console or by using the Remote Shell protocol.

When the NetAudio server starts up, it takes over the ViewStation's local /dev/audio. Note that other local applications that attempt to access /dev/audio (such as hdsplay) will fail while it is running.

NOTES

Note that TFTP is generally not a fast enough protocol to transfer sound files with a high sample rate. Instead, use NFS or FTP for files with high sampling rates.

The hdsplay program can only be used on ViewStations equipped with the optional HDS MultiMedia Audio Card.

OPTIONS

-V

Verbose. Print informational messages to the standard error.

-v vol

Set the output volume to vol before playing begins. vol is an integer value between 0 and 100, inclusive. If this argument is not specified, the output volume remains at the level most recently set by any process.

-m vol

Set the monitor volume to vol before playing begins. vol is an integer value between 0 and 100, inclusive. Changes to the monitor volume will persist after the 'hdsplay' program has exited.

-d dev

Specify an alternate audio device to which output should be directed. If the -d option is not specified, /dev/audio is the default audio device.

-b size

Specify the blocksize for file reads and device writes, in kilobytes. The default value is 64.

-s rate

Specify the date sampling rate, in samples per second.

The rate is usually determined from the input file header, so this option is only needed for raw input data. The default value is 8000. Other acceptable values are: 5512 6615 9600 11025 16000 18900 22050 27428 32000 33075 37800 44100 and 48000.

-e encoding

Specify the data sample encoding type. The encoding is usually determined from the input file header, so this option is only needed for raw input data. The default value is ULAW. Other acceptable values are ALAW and LINEAR.

-c channels

Specify the number of interleaved channels. The number of channels is usually determined from the input file header, so this option is only needed for raw input data. Acceptable values are 1 for mono and 2 for stereo. The default value is 1.

-p precision

Specify the sample precision for each channel, measured in bits. The precision is usually determined from the input file header, so this option is only needed for raw input data. Acceptable values are 8 and 16 bits. The default is 8 bits.

XmForm sam

XmLabel label

XmLabel val

XmSeparator sep

XmForm rate

XmLabel label

XmLabel val

XmForm chan

XmLabel label

XmLabel val

XmForm prec

XmLabel label

XmLabel val

XmForm enc

XmLabel label

XmLabel val

XmDialogShell audio_popup

XmMessageBox audio

SEE ALSO

auhds(1) hdsplay(1) netaudio(1)

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2.7.6.2 HDS Play Audio Client Manual Page

NAME

hdsplay - play audio file on HDS ViewStation

SYNOPSIS

hdsplay [-V] [-v #] [-m #] [-d dev] [-b #] [-s #] [-c #] [-e ULAW|ALAW|LINEAR] [-p #] [-r] [file...]

DESCRIPTION

hdsplay will play audio files on a Human Designed Sytems ViewStation. The files can be in standard Sun/Next format or can be raw binary digital audio files. For raw data files, the data format and sampling rate can be specified as command line options. If no filenames are specified, the standard input is used.

The hdsplay program is run locally by the ViewStation. Any input files specified as arguments should be ViewStation paths using the ViewStation's Remote Hosts Setup configuration. See the EXAMPLES section below.

XmSeparator sep
XmForm rate
XmLabel label
XmLabel val
XmForm chan
XmLabel label
XmLabel val
XmForm prec
XmLabel label
XmLabel val
XmForm enc
XmLabel label
XmLabel val
XmFrame
XmRowColumn record
XmLabel title
XmSeparator sep
XmForm open
XmToggleButton toggle
XmLabel label
XmForm paused
XmToggleButton toggle
XmLabel label
XmSeparator sep
XmForm active
XmToggleButton toggle
XmLabel label
XmForm error
XmToggleButton toggle
XmLabel label
XmForm waiting
XmToggleButton toggle
XmLabel label
XmSeparator sep
XmLabel

XmForm sform
XmMenuShell
XmRowColumn src_menu
XmPushButton line
XmPushButton min
XmPushButton dyn
XmPushButton boost
XmForm StatusPanel
XmFrame
XmRowColumn play
XmLabel title
XmSeparator sep
XmForm open
XmToggleButton toggle
XmLabel label
XmForm paused
XmToggleButton toggle
XmLabel label
XmSeparator sep
XmForm active
XmToggleButton toggle
XmLabel label
XmForm error
XmToggleButton toggle
XmLabel label
XmForm waiting
XmToggleButton toggle
XmLabel label
XmSeparator sep
XmForm eof
XmLabel label
XmLabel val
XmForm sam
XmLabel label
XmLabel val

WIDGETS

In order to specify resources, it is useful to know the hierarchy of the widgets which compose HDS Audio. In the notation below, indentation indicates hierarchical structure. The widget class name is given first, followed by the widget instance name.

HDSAudio hdsaudio
XmForm BaseFrame
XmFrame
XmRowColumn GainPanel
XmLabel title
XmSeparator sep
XmForm slider
XmLabel play
XmScale scale
XmForm slider
XmLabel playbalance
XmScale scale
XmForm slider
XmLabel record
XmScale scale
XmForm slider
XmLabel recordbalance
XmScale scale
XmForm slider
XmLabel monitor
XmScale scale
XmForm pause
XmPushButton pause
XmPushButton pause
XmCascadeButtonGadget speaker
XmCascadeButtonGadget source
XmForm spform
XmMenuShell
XmRowColumn spkr_menu
XmPushButton internal
XmPushButton external

The disaster control center is a centralized regional group that relies on netVideo ViewStations to monitor problems via TV news and weather channels, with internal distribution at the center via the ViewStation's multicasting client. They also use extensive teleconferencing to local offices with the ViewStation, which is especially efficient because of their high-speed networks and routing.

2.7.6 HDS Multimedia Client Manual Pages

2.7.6.1 HDS Audio Local Client Manual Page

NAME

hdsaudio - HDS ViewStation Audio Control Panel

SYNOPSIS

hdsaudio [-d dev] [-Xt/Motif options]

DESCRIPTION

The hdsaudio downloadable Motif client runs locally on the HDS ViewStation. It provides a control panel which allows the user to easily set and monitor various audio settings.

These settings include:

Playback Volume

Playback Stereo Balance

Record Gain

Record Stereo Balance

Input Monitoring Volume

Audio Out Device Type

Audio In Device Type

The client also displays useful statistics about current audio activity (sample counts, sampling rates, etc).

Changes made with hdsaudio stay effective even after the client is exited. If a -display argument is used, the controls can appear on a remote X Window display but the audio device affected is the one on the ViewStation executing hdsaudio. This client can be used with or without the HDS NetAudio server, auhds.

This client can only be used on ViewStations equipped with the optional HDS MultiMedia Stereo Sound Card.

OPTIONS

The hdsaudio client accepts all of the standard X Toolkit command line options as well as the following:

-d dev

Specify an alternate audio device to which output should be directed. If the -d option is not specified, /dev/audio is the default audio device.

Quality: 100

Frame Rate: 32.5 frames per second

Bits per second: 1,200,000 average

% of Ethernet: 1,200,000/5,000,000 = 24%

% of switched Ethernet: 1.200,000/10,000,000 = 12%

2.7.5.2 How large are digital video files in different formats?

There are two principal variables to consider: first, the resolution size of the image (either 160x120 or 320x240 pixels); second, the audio component of the files.

We've examined some .avi files which use Indeo 3.1 compression. The audio tracks in the files were recorded in mono at 11 KB/sec. The 160x120 image files occupy approximately 3 MB of file space per minute of video (the audio portion of the file represents about 22% of the file size). The 320x240 image files occupy approximately 9 MB of file space per minute of video (the audio portion of the file represents about 7% of the file size).

2.7.5.3 What do I need for my in-house video training?

A typical training application in a university setting uses HDS ViewStations with video features. A laboratory classroom uses a ViewStation with netVideo and a video camera and microphone. This ViewStation captures the professor with his lectures and exhibits, then uses the netTV Simulcast client to send this video and audio to other ViewStations on the network, in this case in several different classrooms across the campus.

The equipment needed for this simple installation is one ViewStation with HDS netVideo (along with appropriate cameras, microphones, etc.), and as many other ViewStation FX models with HDS netTV Viewer software and audio capability as needed.

Other training techniques include preparation of instructional video tapes which are broadcast at scheduled times on an HDS netVideo unit to other ViewStations on the network. This is an easy way to create an internal broadcast network for your company.

2.7.5.4 What are some other applications for netVideo ViewStations?

Two of HDS's customers use their ViewStations for emergency response services, in one case for a municipal emergency response center, and in another case for a disaster control center for a regional communications company.

In the emergency response center, the netVideo ViewStation receives TV signals from a remote camera at the emergency site via a private cable channel broadcast. This is then multicast to other ViewStations (along with news and weather channel information). Since the ViewStations are full-featured X terminals, the operators have access to multiple host computers for database information and dispatch to support their on-site teams.

2.7.5 Frequently Asked Questions:

These are questions often asked about HDS ViewStation video operations.

2.7.5.1 How does Video affect my network?

The HDS netTV Simulcast client does several things:

- Receives video (and audio) from its analog source
- Converts the analog data (video and audio) to digital format
- Compresses the video data using Sun’s CELL-B compression algorithm (Alternately, HDSGrey discards the color data of the image to reduce traffic)
- Transmits the compressed data over the Ethernet using IP Multicasting

The HDS netTV Simulcast client has two slider bars that let you adjust the impact of the multicasting load on the network. These two slider bars are “Quality” and “Net Use Limit” on the Network Controls menu. They control the amount of compression used by the Simulcast client.

The HDS netTV viewer client reports the frame rate it is receiving and the traffic generated on the network. These are affected both by the compression setting and also by the content of the video image (CELL-B compression doesn’t send the entire video image with each frame, but only the pixels changed since the last frame. Therefore, an image of rapid movement has much more data to be compressed than an image of a “talking head” against a static background).

The examples shown below illustrate several possibilities. In these cases, the “Quality” slider was set to 0%, 50%, and 100% with the results as recorded. The “Net Use Limit” was not restricted in these tests. Compression was turned On.

Case 1: Maximum Compression (maximum frame rate)

Capture size: 160x120 pixels

Quality: 0

Frame Rate: 34 frames per second

Bits per second: 200,000 average

% of Ethernet: 200,000/5,000,000 = 4%

% of switched Ethernet: 200,000/10,000,000 = 2%

Case 2: Average Compression

Capture size: 160x120 pixels

Quality: 50

Frame Rate: 30 frames per second

Bits per second: 400,000 average

% of Ethernet: 400,000/5,000,000 = 8%

% of switched Ethernet: 400,000/10,000,000 = 4%

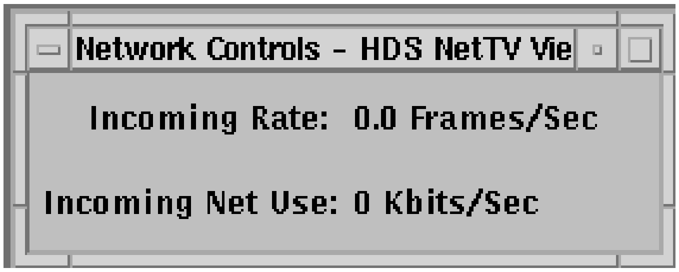
Case 3: Maximum Quality (minimum compression)

Capture size: 160x120 pixels

The Audio Controls menu offers one selection:

- Output Device - HDS Internal Speaker, External Speakers, HDS Headset, or Callport Spkr/Mic. This lets you select the type of audio output device you are using.

The Network Controls - HDS netTV Viewer Menu

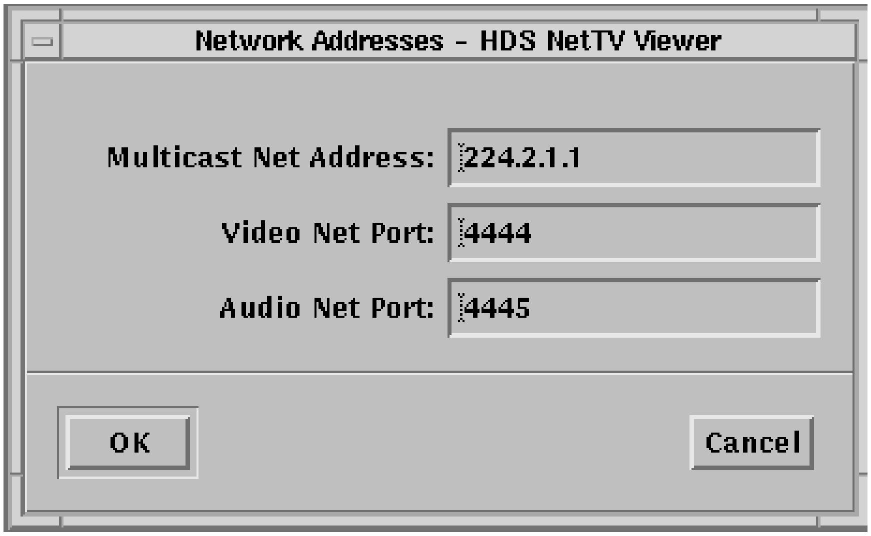


Incoming Rate: 0.0 Frames/Sec

Incoming Net Use: 0 Kbits/Sec

The Network Controls menu reports network usage: Incoming frame rate and Incoming network use. These are adjustable on the multicasting ViewStation.

The Network Addresses - HDS netTV Viewer Menu



Multicast Net Address: 224.2.1.1

Video Net Port: 4444

Audio Net Port: 4445

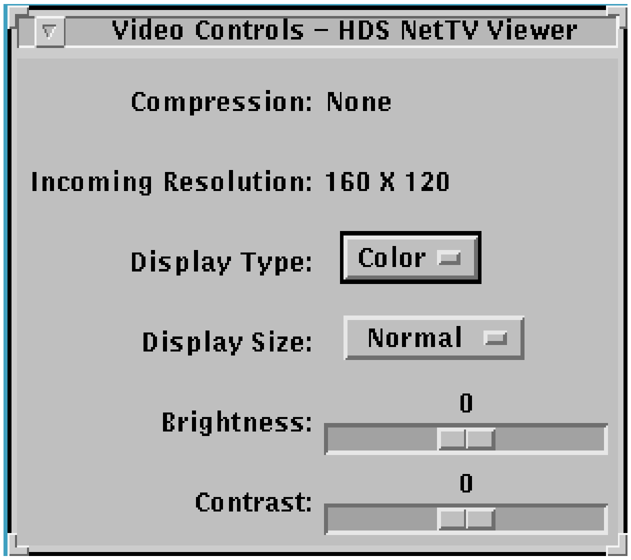
The Network Addresses menu allows you to set several network variables. All of these variables should be set the same for both the Simulcast and Viewer clients on all ViewStations using these options.

- Multicast Net Address - the default is 224.2.1.1; other multicast addresses are permitted with the IP protocol.
- Video Net Port - the default port is 4444; you can select another port number.
- Audio Net Port - the default is 4445; you can select another port.

These addresses and ports allow selection of video signals like TV channels, the sender and receiver must have the same settings to receive the signal.

There is also a button to take a "Snapshot" of the video image. There is a slider bar for Play Volume.

The Video Controls - HDS NetTV Viewer



Video Controls – HDS NetTV Viewer

Compression: None

Incoming Resolution: 160 X 120

Display Type: Color

Display Size: Normal

Brightness: 0

Contrast: 0

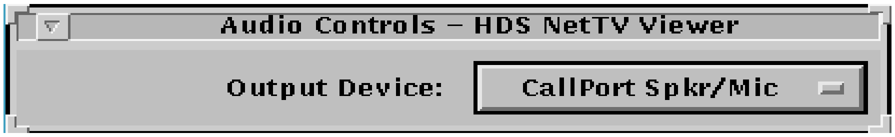
The Video Controls menu offers a number of selections.

- Compression - This reports the compression of the video image as sent by the HDS netTV Simulcast client. There are three compression selections available: None, CellB, and HDSGrey. None indicates no compression of the images. CellB indicates that the ViewStation uses CellB compression (adjustable with the "Quality" slider on the Network Controls menu). HDSGrey indicates that the image color is discarded in order to improve the transmission frame rate.
- Incoming Resolution - 160x120 or 320x240. This reports the pixel size of the received image.
- Display Type - Color or Grey. The Grey setting uses fewer colors in the colormap and may display at a higher frame rate.
- Display Size - Normal, Reduced, or Enlarged. This lets you expand the received image on your local display. Note that the number of pixels transmitted remains the same, but the displayed image size is changed.
- There are two slider bars for adjustment of the video image:

  Brightness

  Contrast

The Audio Controls - HDS netTV Viewer Menu



Audio Controls – HDS NetTV Viewer

Output Device: CallPort Spkr/Mic

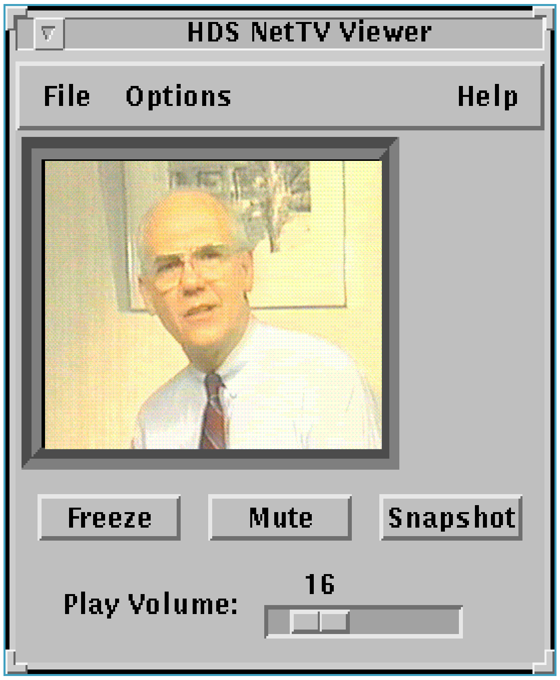
To hear the broadcast audio, the ViewStation must have the Audio option installed.

Start the HDS netTV viewer client from the window manager's pull-down menu. Hold down the right mouse button on the root window and select the HDSperx sub-menu. Click on HDS netTV Viewer.

The HDS netTV Viewer client opens a connection to the multicast IP address and will display the HDSnetTV signal being broadcast.

Running the HDS netTV Viewer on the same ViewStation which is broadcasting via the HDS netTV Simulcast client is strongly discouraged, as this will greatly diminish the broadcast frame rate.

HDS netTV Viewer Client



The HDS netTV Viewer offers several options:

- The "File" menu offers a "Quit" option.
- The "Options" menu offers four submenus (discussed below)
  - Video Controls - to control the local video image
  - Audio Controls - to control the local audio signals
  - Network Controls - to control the impact of simulcasting on the network
  - Network Addresses - to select address and port variables for multicasting

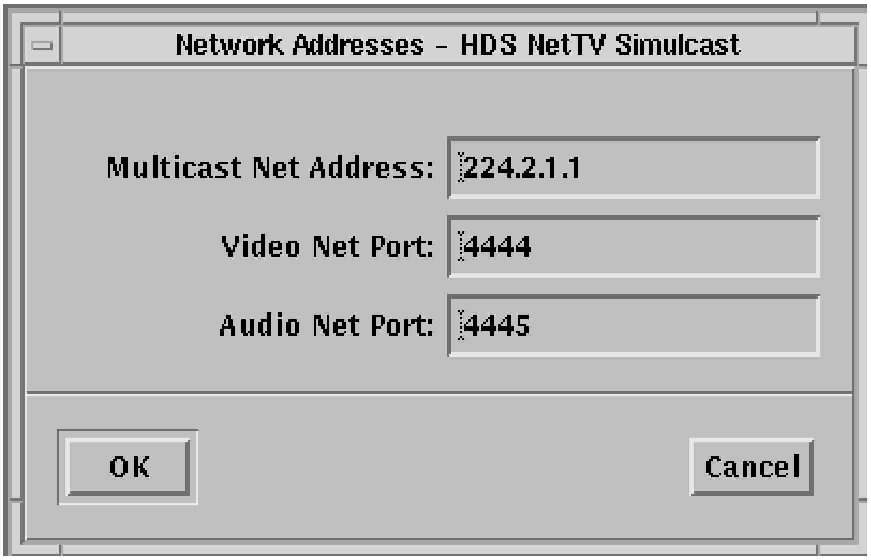
There are also buttons for "Freeze" to stop the video transmission temporarily. There are also buttons to "Mute" the audio signal. These are both toggle buttons.

The Network Controls menu reports network usage (frame rate and network load) and allows you to set some variables to control the impact of multicasting on your network.

- Net Use Limit slider bar allows you to set a maximum network usage value. This variable sets an upper boundary for network use by the simulcast. Decreasing this value can result in reduced frame rates. The setting appropriate for your network is dependent on your network environment.

- Quality slider bar selects the amount of compression done to the video images by the ViewStation. Quality of 100% is maximum video quality (and probably a reduced frame rate). Quality of 0% means maximum compression, so you will have a relatively high frame rate but somewhat less video image quality.

The Network Addresses - HDS netTV Simulcast Menu



Network Addresses - HDS NetTV Simulcast

Multicast Net Address: 224.2.1.1

Video Net Port: 4444

Audio Net Port: 4445

The Network Addresses menu allows you to set several network variables.

- Multicast Net Address - the default is 224.2.1.1; other multicast addresses are permitted with the IP protocol. You can also enter an address for a specific ViewStation if you want to restrict the viewers to a single ViewStation.

- Video Net Port - the default port is 4444; you can select another port number.

- Audio Net Port - the default is 4445; you can select another port.

These addresses and ports allow selection of video signals like TV channels, the sender and receiver must have the same settings to receive the signal.

2.7.4.6 HDS netTV Viewer Client

This is the client to receive multicast video signals sent by the Simulcast client.

The netTV Viewer client can be used on any ViewStation FX, Dual or Ultra equipped with HDS netVideo Playback software. It need not be a ViewStation with the video hardware installed but must be running HDSware video software.

- Outgoing Resolution - 160x120 or 320x240. This is the actual pixel size of the transmitted image. Note that the larger image has 4 times as many pixels, with corresponding impact on the network. (Note also that the HDS netTV viewer client has options to enlarge the received image. This is frequently the better choice as it reduces the network traffic.)
- Input Connector - Composite or SVideo. You would use this only if you have an SVideo input connector.
- Input Format - NTSC, PAL, or SECAM.
- There are four slider bars for adjustment of the video image:

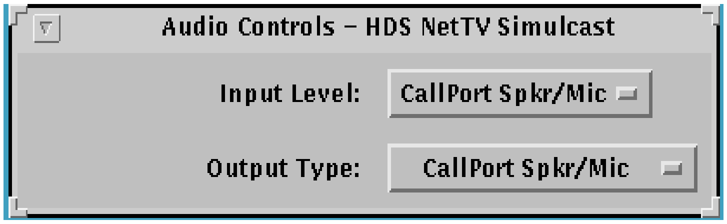
  Brightness

  Contrast

  Saturation

  Tint

The Audio Controls - HDS netTV Simulcast Menu



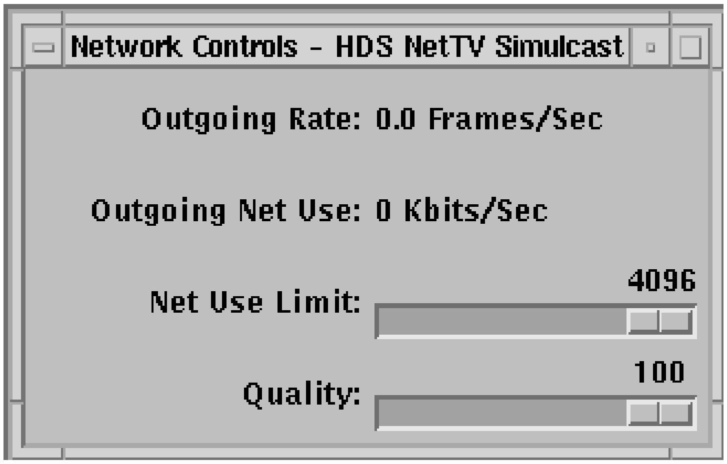
Input Level: CallPort Spkr/Mic

Output Type: CallPort Spkr/Mic

The Audio Controls menu offers two selections:

- Input Level - Unspecified, HDS ViewCam, HDS Headset, CallPort Spkr/Mic, HDS Microphone, HDS Tuner, VCR, and Line Level Audio.
- Output Type - HDS Internal Speaker, External Speakers, HDS Headset, and CallPort Spkr/Mic.

The Network Controls - HDS netTV Simulcast Menu



Outgoing Rate: 0.0 Frames/Sec

Outgoing Net Use: 0 Kbits/Sec

Net Use Limit: 4096

Quality: 100

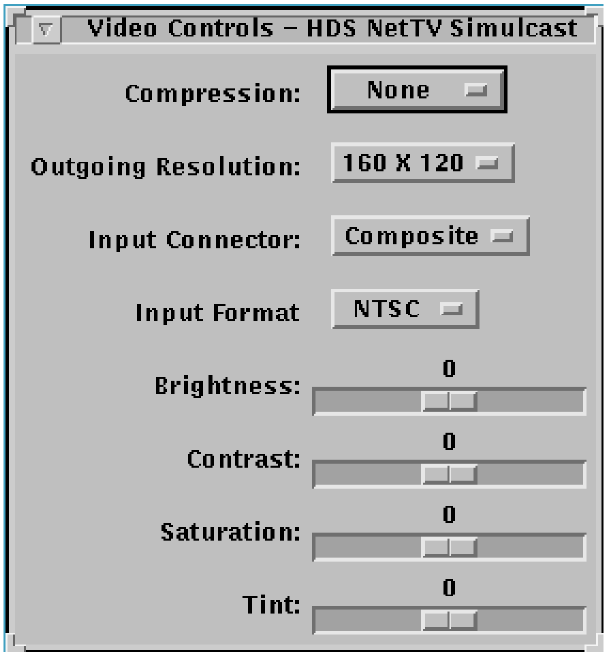
- The “File” menu offers a “Quit” option.
- The “Options” menu offers four submenus (discussed below)
  - Video Controls - to control the local video image
  - Audio Controls - to control the local audio signals
  - Network Controls - to control the impact of simulcasting on the network
  - Network Addresses - to select address and port variables for multicasting

There are also buttons for “Send Video” to broadcast the video or toggle to stop the transmission. You can also “Freeze” the video image. There are also buttons to “Send Audio” to broadcast the audio or toggle to stop the transmission. You can also “Mute” the local audio. All of these buttons are toggle buttons.

There are slider bars for Local Volume and Outgoing Volume.

The "Audio level:" bar is a signal strength meter that continuously monitors the audio level, with green levels indicating good audio and red levels indicating too much volume.

The Video Controls - HDS netTV Simulcast Menu



Compression: None

Outgoing Resolution: 160 X 120

Input Connector: Composite

Input Format NTSC

Brightness: 0

Contrast: 0

Saturation: 0

Tint: 0

The Video Controls menu offers a number of selections.

- Compression - This controls the quality of the video image. A slider bar for this variable is available on the “Network Controls” menu. There are three compression selections available: None, CellB, and HDSGrey. None indicates no compression of the images. CellB indicates that the ViewStation uses CellB compression (adjustable with the "Quality" slider on the Network Controls menu). HDSGrey indicates that the image color is discarded in order to improve the transmission frame rate.

2.7.4.5 HDS netTV Simulcast Client

The HDS netTV Simulcast client allows you to broadcast a video signal on your network using IP multicasting to other HDS ViewStations equipped with HDS netVideo software.

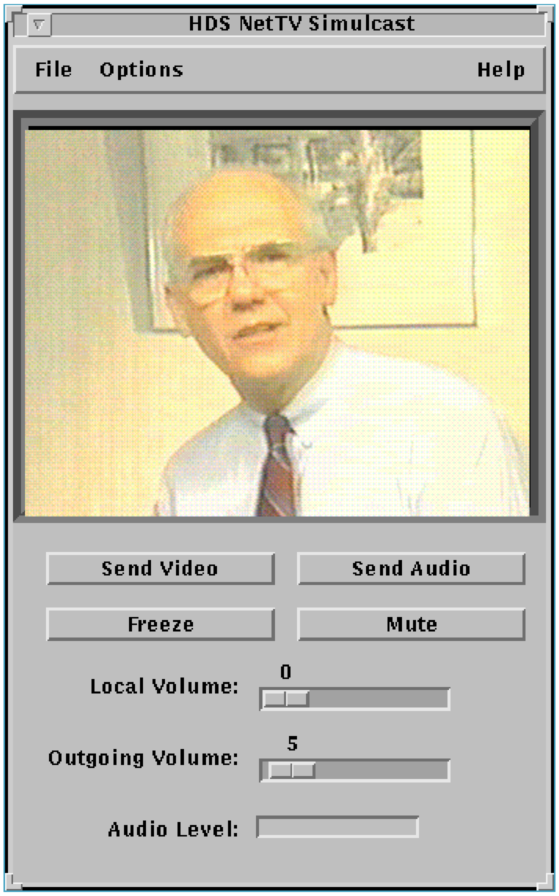
Start the HDS netTV Simulcast client from the window manager's pull-down menu. Hold down the right mouse button on the root window and select the HDSperx sub-menu. Click on HDS netTV Simulcast.

HDS netTV Simulcast displays the current video input in its window, typically from your camera or VCR or from the tuner.

Click on the buttons to "Send Video" and "Send Audio" to broadcast the signals. This sends the audio and video signals to a multicast IP address (the default is 224.2.1.1) where it can be received by any ViewStation on the network. (The values for the multicast address and the video/audio ports are selectable from the "Network Addressing" option of the Simulcast client.)

Note that the Simulcast can be sent in two sizes, 160x120 or 320x240.

HDS netTV Simulcast Client



The HDS netTV Simulcast client offers a number of options:

The HDS Tuner Client

Connected to tuner /dev/tty1

Using the HDS Tuner Client

This is the ViewStation client you use to control the TV/cable input to the ViewStation's video. It looks like a hand-held remote control for your television. Start the HDS Tuner client from the window manager menu. Hold down the right mouse button on the root window and select the HDSperx sub-menu. Click on HDS Tuner.

The HDS Tuner client is a graphical means to control the tuner. It allows you to select channels, scan the channels, etc. just like a hand-held remote control for your TV. The ViewStation controls the HDS Tuner through its serial port connection according to your selections on the ViewStation screen.

When you connect the HDS Tuner for the first time, you should scan the available channels (the available channels depend largely on your geographical location and your antenna or cable connection) so the tuner client can find the available channels. You can use the fine tuning on the tuner client to enhance your reception (these settings are retained by the tuner). Refer to the HDS Tuner man page for information on preconfiguring the available channel and fine tuning information.

Open the HDS Video client and bring up a video window, as described in the section above. With the tuner's output connected to the ViewStation's video port, the ViewStation displays the signal selected by the tuner. You can change the channel with the HDS Tuner client on the ViewStation's display.

that the frame rate will probably decrease. The consequence will be a high quality image, but less smoothness of motion.

Quality set at 0% selects minimum quality of the video image, which usually means that the ViewStation sends only the parts of each frame that have changed significantly from the previous frame. The result is that the frame rate is high, with good motion but somewhat less quality of the images themselves. Refer to the HDS Conference manual pages for a more detailed discussion.

This Quality setting is a highly subjective choice and will depend on the objectives of your conference session. The actual frame rate is also greatly affected by the motion within the image and other network usage. You will probably want to experiment a little to see the consequences of these selections.

2.7.4.4 Using the HDS Tuner Client

The HDS Tuner allows you to display a live television or cable image on the ViewStation screen. This might be useful for monitoring news feeds or weather information, or closed circuit TV for security monitoring, and so on.

The HDS Tuner consists of two components: a small tuner box, with cables, and a ViewStation local client to control channel selection and tuning.

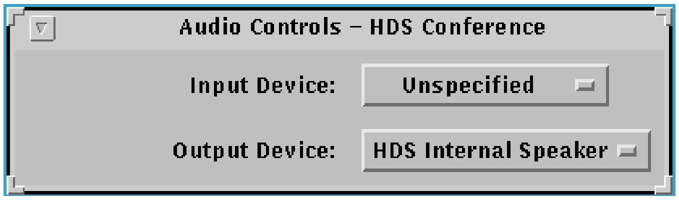
Connecting the HDS Tuner to the ViewStation

Unpack the HDS Tuner box. There is a separate installation guide for the HDS Tuner. There should be a tuner box, a power transformer and cable, an audio and a video cable, and a special cable to connect to the ViewStation's Serial 1 port.

- Plug in the power from the AC transformer to the tuner (on the side).
- Connect the HDS Tuner's controls to the serial port, "Serial 1", so you can control the tuner from the ViewStation's display. All connectors and adapters are supplied. Connect the other end of the cable to the tuner's special connector.
- Connect the tuner's audio cable to the ViewStation's AUDIO IN connector.
- Connect the tuner's video cable to the ViewStation's VIDEO connector.
- Connect a TV antenna (not supplied) or cable input to the tuner (coaxial connector).

Contrast
Saturation
Tint

The Audio Controls - HDS Conference Menu



Audio Controls – HDS Conference

Input Device: Unspecified

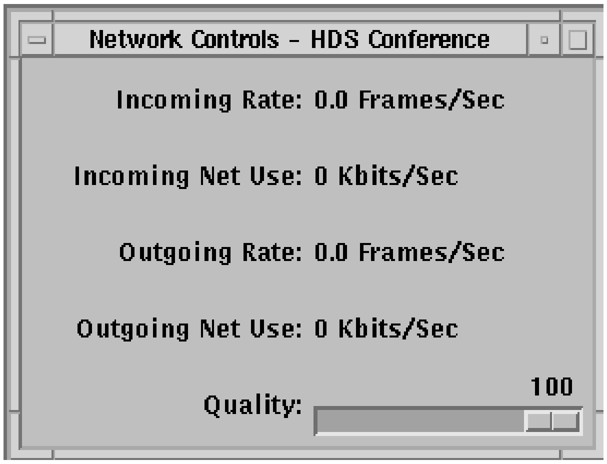
Output Device: HDS Internal Speaker

The Audio Controls menu offers two selections:

• Input Device: This lets you select the Audio Input device you have installed. Options are: Unspecified, HDS ViewCam, HDS Headset, CallPort Spkr/Mic, HDS Microphone, HDS Tuner, VCR, and Line Level Audio. This selection can also be made in Setup Mode from the User Preferences menu.

• Output Device: This allows you to specify the Audio Output device you have installed. Options are: HDS Internal Speakers, External Speakers, HDS Headset, and CallPort Spkr/Mic. This selection can also be made in Setup Mode from the User Preferences menu.

The Network Controls - HDS Conference Menu



Network Controls – HDS Conference

Incoming Rate: 0.0 Frames/Sec

Incoming Net Use: 0 Kbits/Sec

Outgoing Rate: 0.0 Frames/Sec

Outgoing Net Use: 0 Kbits/Sec

Quality: 100

The Network Controls menu reports the current state of the HDS Conference session, with data on the frame rate and network usage for both the incoming and outgoing video images. These values report actual network usage and reflect the working of the HDS Conference session - how much data is transmitted (based on the content of the image and the compression selected) and the network load.

These values can be adjusted with the "Quality" slider bar. This lets you select the level of compression that the ViewStation uses on the video image.

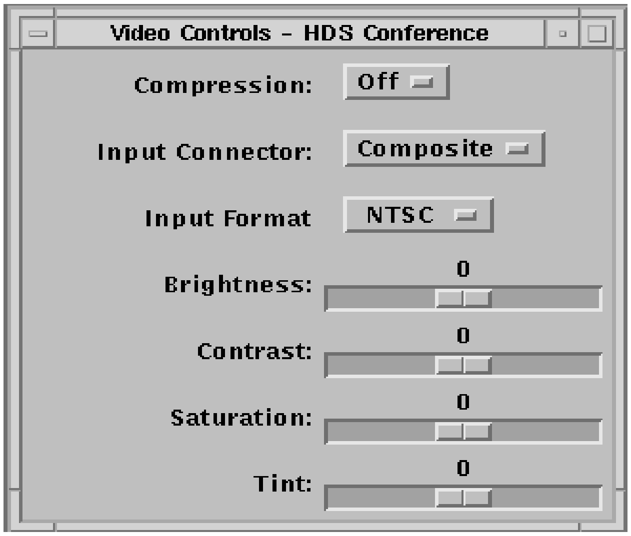
Quality set at 100% selects the maximum quality of the video image, which means that the ViewStation will send every frame in its entirety, which in turn means

- The "Audio:" bar is a signal strength meter that continuously monitors the audio level, with green levels indicating good audio and red levels indicating too much volume.

The video images are received by each ViewStation as analog signals. They are then converted to digital images, compressed, and sent as packets across the Ethernet connection between the two ViewStations, where the receiving ViewStation uncompresses them and displays them on the screen in the HDS Conference window.

There are several things to observe about this process. The compression done by the ViewStation is variable based on the image itself, and adjustable by the user. The compression technique examines the image and transmits only parts of the image which were changed from the previous frame - so a relatively static image, such as a person talking, has less actual data transmitted than a full-motion image. The picture quality of the received image will vary based on this volume of data, first because of the network constraints, and second, because of the level of compression selected by the user.

The Video Controls - HDS Conference Menu



Video Controls - HDS Conference

Compression: Off

Input Connector: Composite

Input Format NTSC

Brightness: 0

Contrast: 0

Saturation: 0

Tint: 0

This menu allows you to select several things about the HDS Conference video on your ViewStation.

- Compression - On or Off. This affects the quality of the transmitted image. You may want to select Off if the image is relatively static and the network is relatively open. This is also variably adjustable with the "Quality" slider on the Network Controls menu.
- Input Connector - Composite or SVideo. You would use this only if you have an SVideo input connector.
- Input Format - NTSC, PAL, or SECAM.

There are slider bars to adjust your local video image:

Brightness

Speaker Volume: 39

Mic Volume: 5

- Disconnect - this button disconnects the HDS Conference connection to the remote host.
- Freeze - this freezes the incoming image. This button is a toggle button.
- Mute - this button mutes the incoming audio. This button is a toggle button.
- Send Video - this button transmits live video automatically. If you toggle this button, the image is not sent; this is useful for pausing the conference while you conduct some off-line conversation.
- Hold to Talk - this button controls whether your audio signal is transmitted to the other ViewStation. When the Audio Device is set to the Callport Spkr/Mic or to the HDS Headset, audio is transmitted automatically. Otherwise, you must select it with the left mouse button and hold it down while you speak. This allows you to control what conversation is sent and also to reduce the network activity by not transmitting any more audio data than necessary.
- Speaker Volume slider bar allows you to control the audio level of the speakers.
- Mic Volume slider bar allows you to adjust the local microphone level. If you adjust the microphone volume, look at the Audio meter to see that the signal ranges remain in the green range. Sustained red audio levels result in a poorer sound quality.

Video Controls - to control the video image from the ViewStation’s camera
Audio Controls - to control the audio levels of the ViewStation’s input
Network Controls - to control the “Quality” and report network activity

There are a number of buttons available to control the HDS Conference session.

- Connect - this button brings up a dialog box asking for the name or IP address of the ViewStation to which you want to conference.

You can also create a list of commonly used hosts (their names must be resolvable by name server) with an appropriate label for each which will be displayed above the window (such as the “Main Conference Room” name above). This list is a simple text file with a name or IP address along with the label. The file is in */FXUtilities/hds-fx/hdsvideo/lib/HDSconf.list*.

The HDSconf.list file looks like this:

```
# The # comment character can be used only at the beginning of a line.
#
# Add your own entries below:
123.123.123.120   Main Conference Room
123.123.123.140   Marketing Conference Room
steveafx   Steve Ahlbom’s Office
mkt26   David Tolman’s Office
eng14   Ed Parks’ Office
123.123.123.189   Bill Bredbenner’s Office
```

The "Connect" button brings up a chooser box for the hosts listed in the HDSconf.list file, as shown in this example. You can enter the list appropriate for your site and environment and make the connection by clicking on the name you want. The names in this file must be resolvable by your domain name server.

2.7.4.3 Using the HDS Conference Client

The HDS Conference client establishes a teleconference between two video ViewStations. The video window from the users desktop is displayed side-by-side with the video window from a remote display; audio signals from each display are also transmitted and played on the ViewStation’s speakers.

You start the HDS Conference client from the HDSperx window manager menu. It displays your own video image in the left-hand window. When you try to make a connection, your HDS Conference client tries to connect to the remote ViewStation; it will try to start an HDS Conference session on the remote ViewStation if one is not already running. The remote ViewStation pops up a dialog box reporting the request and asks the remote user to accept the conference session. If it is accepted, the remote ViewStation’s video image appears in the right-hand window.

HDS Conference automatically sends video when it starts. If the Audio Device is set to "Callport Spkr/Mic" or "HDS Headset", it automatically sends Audio too. For other audio device selections, you must press and hold the "Hold to Talk" button to send audio.

This is the HDS Video Conference client:

Speaker Volume: 39

Mic Volume: 5

The “File” menu offers a “Quit” option.

The “Options” menu offers three submenus:

The Audio Controls - HDS Movie Menu

The Audio Controls menu lets you select the Output Type (Speaker or Headphones) and the Play Volume.

The HDS Movie Client

The HDS Movie window displays the movie file. It also offers buttons that let you

- Freeze the movie. This is a toggle button.
- Mute the audio. This is a toggle button.
- Take a Snapshot of the movie.
- Restart the movie. This restarts the movie file at the beginning.
- Done, which stops the movie and closes the movie window.

There is also a slider bar to select the sound level.

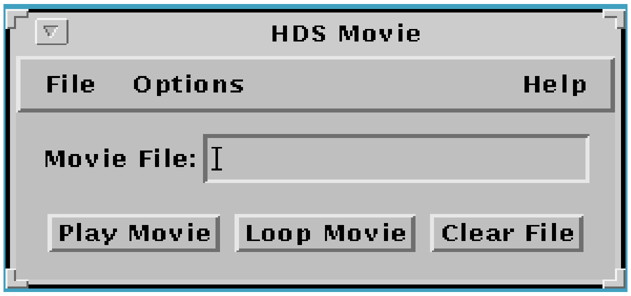
More detailed discussion is available in the HDS Movie manual page in Section 2.7.6.6.

2.7.4.2 Using the HDS Movie Client

The HDS Movie client reads and displays Microsoft AVI format movie files transmitted to the ViewStation. These file are compressed using the Intel INDEO compression algorithm. INDEO versions 2.1, 3.1, and 3.2 are supported. Note that the .avi extension alone does not specify the compression method used in the file.

Microsoft AVI files using different compression schemes are not supported.

The HDS Movie Client



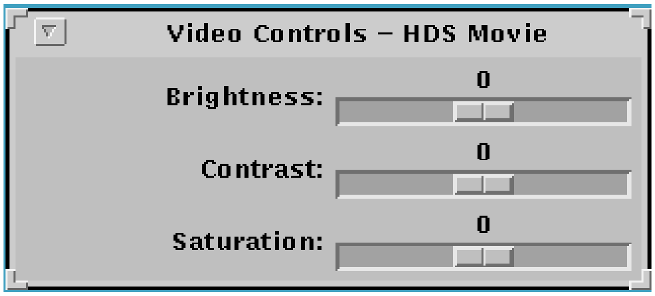
The HDS Movie client offers a number of options:

- The "File" menu offers a "Quit" option.
- The "Options" menu offers a "Video Controls" and an "Audio Controls" submenu, which are discussed below.
- The "Help" menu offers a brief description of HDS Movie.

There is line to enter the movie file's path and name. Individual buttons allow you to play the movie file, or loop the movie (continuous replay), or clear the file name.

The file should be loaded with FTP or NFS file transfer protocols (TFTP has a 16 MB limitation); FTP usually gives the best performance. The path should use ViewStation file syntax with a host name specified (e.g. /hostname/path/filename). General discussion of File Transfer Protocols is available in Section 3.1.

The Video Controls - HDS Movie Menu



There are three slider bars to control the HDS Movie window - Brightness, Contrast, and Saturation.

HDS Video Window

Capturing an Image from the HDS Video Window

It is simple to capture an image from the HDS video window. All you have to do is click on the "Snapshot" button. This creates a full-color window of the video image as a separate window.

The snapshot window may have its own colormap, so it might not display correct colors unless the pointer focus is in the snapshot window. This sometimes occurs because the snapshot window allocates 128 colors. and creates a private colormap if 128 colors aren't available on the server. If the snapshot has a private colormap, the screen will show colormap flashing as you move the cursor in and out of the window. The final image will have a full complement of correct colors.

You can import the snapshot window into documents directly, such as Framemaker that have a capture option. This typically uses an .xwd (X Window dump) graphics format. You can also use other X graphics programs, such as Xwd, xv , or ImageMagick, to write your snapshot to a file. These programs also allow you to crop or resize, or convert the format of the snapshot image.

More detailed information is available in the HDS Video manual page in Section 2.7.6.10.

The Audio Controls Menu

Audio Controls – HDS Video

Input Device: CallPort Spkr/Mic

Audio Type: Mono

Output Device: CallPort Spkr/Mic

Play Volume: 0

Input Volume: 1

The Audio Controls Menu offers a number of selections:

- Input Level: Select the appropriate field either in this menu, or in the Audio Device Setting menu in Setup Mode (refer to Section 2.7.1.4 of this manual for more details).
- Audio Type: Mono or Stereo. This selects either mono or stereo audio.
- Output Type: Select the appropriate field either in this menu, or in the Audio Device Setting menu in Setup Mode (refer to Section 2.7.1.4 of this manual for more details).
- There are also slider bars for “Play Volume”, which is the audio signal level sent to the speakers. The “Input Volume” slider bar is for the audio gain of the input signal; this should normally be left at one.

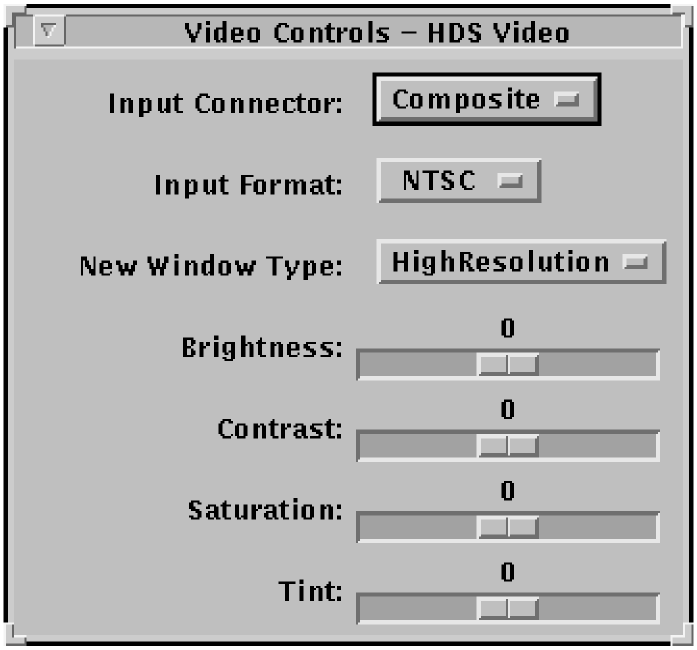
The HDS Video Window

The HDS Video window created when you click “Start New Window” is a full-motion display (30 frames/sec) of the analog input.

There are a number of controls on the video window frame, including:

- Freeze: This temporarily stops the display. This is a toggle button.
- Mute: This temporarily stops the audio output. This is a toggle button.
- Snapshot: This makes a snapshot copy of the video image and displays it in a separate window on the screen. This image can then be copied or manipulated by normal X graphics processing controls (an example) follows.
- Done: This closes the video window.
- Play Volume: There is a slider bar for audio level control.

The Video Controls Menu



Video Controls – HDS Video

Input Connector: Composite

Input Format: NTSC

New Window Type: HighResolution

Brightness: 0

Contrast: 0

Saturation: 0

Tint: 0

This menu offers a number of selections:

- Input Connector: Composite or SVideo. Note that the SVideo selection also requires a different connector on the ViewStation's back panel.
- Input Format: NTSC or PAL or SECAM.
- New Window Type: HighResolution or LowResolution. This specifies the resolution used by the "Start New Window" button. The "HighResolution" starts an interlaced video window (the most frequent choice), and "LowResolution" starts a non-interlaced window. Two High Resolution windows can be displayed simultaneously; four Low Resolution windows can be displayed simultaneously.
- There are slider bars for Brightness, Contrast, Saturation, and Tint.

Start the HDS video client by pulling down the HDSperx menu with the right mouse button and clicking on the “HDS video” line. The video control menu appears.

The “File” menu offers a “Quit” option to close the HDS video client.

The “Options” menu offers submenus for Video and Audio controls, which are described in detail below.

The “Help” menu offers a brief description of the HDS video client.

There is a button to open a new video window (with settings as specified). There are also slider bars for “Play Volume:”, which is the audio signal level sent to the speakers. The “Input Volume:” slider bar is for the audio gain of the input signal; this should normally be left at 1 (one).

The "Audio:" bar is a signal strength meter that continuously monitors the audio level, with green levels indicating good audio and red levels indicating too much volume.

These clients are added automatically to your HDSperx menu. The needed paths and configurations, etc. are updated automatically in the clients.config file.

2.7.4.1 Using the HDS Video Client

The HDS Video client displays analog video on the ViewStation from any ordinary video input, including cameras, TV tuners, VCRs, etc.

This client displays high-quality live (30 frames/sec) video from an analog source. It can display up to 4 simultaneous live video windows. The windows can be resized, even to full-screen size, though their aspect ratio is constant. They can be handled as normal X windows by your window manager. There are options to freeze or capture the image, as well as integrated audio capabilities.

Connect either the camera or the tuner (or other analog video input) to the ViewStation's video input. This connection varies with the input device, but is usually a very simple matter. There are no settings or jumpers to set. The NTSC and PAL signal formats are detected automatically; SECAM formats must be selected on the Options menu. For optimum performance with the PAL format, use the Options menu to select "PAL".

Connect the HDS ViewCam Camera

Any common video camera, VCR, camcorder, etc. can be connected to the ViewStation. The phono plug video connector accepts any NTSC (or PAL or SECAM) input.

The HDS ViewCam comes with an AC transformer with cable, and a connecting cable. It is auto-focusing. There is a power switch on the side and buttons for adjusting the contrast.

- Plug in the AC transformer connector to the socket on the back of the camera.
- Plug the HDS ViewCam's video connector into the back of the camera and then plug the video connector (phono jack with yellow cover) into the ViewStation's video jack located on the back of the ViewStation base.
- Connect the HDS ViewCam's two audio phono jack connectors to 3.5 mm stereo adapter (supplied), and then plug that into the ViewStation's input audio jack.

Set Up the Audio Connections

Audio signals accompanying the video, whether from the microphones built into the camera, or from a VCR, or the from the HDS tuner, etc. are controlled by the local HDS audio client whose controls are integrated into the video clients window. The audio input and output jacks on the ViewStation's back panel should be connected to the microphones/speakers, etc. as needed (the HDS ViewCam has microphones built into the camera head). Make the appropriate selections for internal/external speakers, microphone type, etc. from the Audio Device menus in Setup Mode (User Preferences menu).

Refer to Section 2.7.1 for details of operation of the HDS Audio client.

Start an HDS Video Window

You must have HDSware 3.1 server software installed in order to use the HDSware video software.

If you have customized your configuration files (config.fx and clients.config), you should copy them to another directory and then restore the customized lines to the new configuration files after your installation is complete.

- Load the HDSware video software tape on your system. You should change your directory to the HDSware directory - /path/hds-fx and load the tape into that directory. For example:

```
cd /<path>/hds-fx
tar xvf <device name>
```

The tar command should load the /hdsvideo directory into the hds-fx tree. You can delete the HDSvidinstall script if you wish.

- Edit the /hds-fx/config/clients.config file with a text editor (make sure you have the file permission to do this).

Remove the comment character from the hds.server.Extensions line for the MIT-SHM extension. This is available with HDSware 3.1.

```
hds.serverExtensions: /FXUtilities/hds-fx/extensions/MIT-SHM
```

Add this line at the end of the file:

```
#include "../hdsvideo/config/hdsvideo.clients"
```

- Save the clients.config file.

You need to reboot your ViewStation in order to use the video software. The clients.config file points to the new HDSware video clients and they will appear on your HDSperx menu in your window manager's root menu.

2.7.4 HDS netVideo Clients

The HDS ViewStation netVideo clients run locally on the HDS ViewStation. They are distributed on a separate HDSware release, such as Version 3.1.0.1. This HDSware has a separate installation script and loads the video clients into the normal HDSware software directory structure. Appropriate configuration files and client paths are configured automatically when the HDSware netVideo software is loaded.

HDSperx netVideo Clients

The HDS netVideo clients are these:

HDS Video - for display of analog video on the ViewStation
HDS Conference - for two ViewStations connecting over a network
HDS Tuner - for displaying live TV/cable signals on the ViewStation
HDS Movie - for playing a digital video file on the ViewStation
HDS netTV Simulcast - for broadcasting video from a ViewStation
HDS netTV Viewer - for viewing video broadcasts from the network

2.7.3 HDSware netVideo Software

HDSware with video software is sold separately from the normal HDSware server code. It is installed after the normal HDSware server is installed. You must have HDSware server version 3.1 or higher in order to load HDS netVideo software.

If you have the earlier HDSware 3.1 installed, you can install the HDS netVideo software, but you will have to edit two lines in the clients.config file. If you have HDSware 3.1.0.1, this file has been modified for you. HDSware 3.1.0.1 includes an installation script for the video software installation.

2.7.3.1 Installing HDSware netVideo Software

Installing HDSware 3.1.0.1 netVideo software

If you have HDSware 3.1.0.1 or higher, you can use the installation script to install the video software.

If your site has some video ViewStations and some regular ViewStations, you can install the HDSware 3.1.0.1 with the video options and use that software for all units. The HDS netVideo clients will appear on the HDSperx menu of all ViewStations, but the video clients won’t start on non-video ViewStations.

If you have customized your configuration files (config.fx and clients.config), you should copy them to another directory and then restore the customized lines to the new configuration files after your installation is complete.

- Load the HDSware tape on your system (use the *HDSware Installation Guide* for sample tape commands) and get the installation script. For example:

```
tar xvf <device name> HDSvidinstall
```

This finds the installation script; it is the first file on the tape. The tar command continues to search through the entire tape, which may take a few minutes. Once the screen reports that the HDSvidinstall is loaded, you can discontinue the search by typing *Ctrl-C*.

- Run the installation script by typing:

```
HDSvidinstall
```

- HDSvidinstall requests two things:

  the path of your HDSware directory

  the device name of your tape drive

- HDSvidinstall will check for the presence of the *./hds-fx* directory to determine if your HDSware path is correctly specified. It will also check to see that the files in the directory */HDSware/hds-fx/hdsvideo* are writable, and exits if they are not. Verify that the write permissions are correct.

The installation proceeds and notifies you when complete. You need to reboot your ViewStation in order to use the video software.

Installing HDSware Video Software with Version 3.1

HDS netVideo ViewStations can use either a normal analog video input connector (phono jack), or a mini-DIN 4 connector for SVideo input as a factory-installed option. The mini-DIN connector is supplied with an adapter cable for accepting a phono plug as input. Note that the SVideo input can be selected Using the "Input Connector" option in the HDS video client.

Note on monitors:

You can use the HDS ViewStation with netVideo hardware with any HDS-supplied monitor and is set correctly at the factory. If you use another monitor, or change monitors, there is a jumper setting that must be set depending on whether your monitor uses sync on green in its video signal. The sync on green signal affects the range of the video brightness adjustment (typical symptoms of this problem are dim or overly bright displays).

The HDS ViewStation with netVideo hardware has been set at the factory for the monitor on the original order; if you want to use a different monitor, you may have to make this adjustment. The jumper is at position R60, near the video connector (you will have to remove the PC Card board if one is installed). Align the two pins on R60 with the two arrows on the jumper label as needed for your monitor. Look carefully at the label and the arrows, as there is only 0.1" difference between the two selections.

Note on memory:

HDS ViewStation models with the HDS netVideo hardware option contain two SIMM sockets for memory, with no memory on the main circuit board. At least 4 MB of SIMM memory must be installed in socket U3. The U3 socket must be populated first. The second SIMM socket, U2, can have memory of any size. A minimum of 8 MB of memory is required for units equipped with the HDS netVideo hardware option.

2.7.2.3 HDS netVideo (analog and digital video) Specifications

The HDS ViewStation with HDS netVideo hardware accepts analog video inputs in either NTSC, PAL, SECAM composite formats, or SVideo inputs (also called SVHS signals; this video input uses separate luminance and chrominance signals). The SVideo signals use a mini-DIN 4 pin connector on a modified video board. The ViewStation accepts input from a wide variety of devices using these formats, including the HDS Tuner, HDS ViewCam, standard camcorders, VCRs, and laser disk video players.

2.7.2.4 HDS netVideo Playback (digital video) Specifications

HDS ViewStation FX, Dual and Ultra models can be ordered with the HDS netTV Playback software option. This allows these models to receive multicast audio and video streams from the HDS netTV Simulcast client.

The HDS netTV Playback option requires video software only. It allows the use of the HDS netTV viewer.

- CallPort Spkr/Mic - this is a line-level input setting.
- HDS Microphone - this is a boosted microphone input (see "Headset" above).
- HDS Tuner - this is a battery/phantom powered microphone (100 mV input).
- VCR - this is a line-level input.
- Unspecified - this should generally not be used; if there is a question of appropriate levels for your device, choose the line-level input setting.

If you are connecting your own audio device, select the entry that matches the specifications of your device.

Output jack specifications:

The Audio Output devices are as follows:

- HDS Internal Speakers - 2 W output at 8 Ohms. Harmonic distortion is 0.055% with power at 1 W.
- External Speakers - self-powered for mono or stereo output
- HDS Headset - 0.75 W at 1 V (peak-to-peak) when driving loads of 25-32 Ohms. Harmonic distortion is approx. 0.005% with 32 Ohm load.
- CallPort Spkr/Mic. - self-powered speakers

This selection can also be made in Setup Mode from the User Preferences menu.

The ViewStation's audio signals can be either stereo or mono, have 8 or 16-bit precision and audio sampling rates from 5 to 48 KHz.

2.7.2 HDS ViewStation Video Operations

HDS ViewStation Multimedia Video is a combination of hardware and software options for HDS ViewStation X Window terminals that provide full-motion video within an X Window. These video options are available with HDSware Version 3.1.0.1 and higher.

Additionally, a software-only version of HDS netVideo, called netVideo Playback is available for ViewStation FX, ViewStation Dual and ViewStation Ultra models. This software version can run the HDS netTV Viewer video client.

2.7.2.1 HDS Video Hardware Configuration

HDS ViewStation can be configured with a hardware option called HDS netVideo, which provides both analog and digital video. This video hardware option (actually a different main circuit board using the fast ViewStation Ultra processor with video hardware built in) allows the ViewStation to support connection of an analog video source (camera, VCR, etc.) and to use all the HDS video clients.

2.7.2.2 ViewStation with HDS netVideo Hardware

These ViewStation models have a video circuit board that allows them to accept analog video input (from the HDS ViewCam camera, a VCR, or from the HDS tuner, etc.). These ViewStations can use all the video clients.

means creating a shell script that substitutes the ViewStation’s audio player for the application program’s audio player name.

For instance, the Mosaic Internet browser uses an audio player called “showaudio”. Mosaic looks for this program in your path and sends showaudio the file when an audio excerpt needs to be played.

This is a script to allow Mosaic and its “showaudio” player to play an audio file on the ViewStation. Name this file "showaudio" and put it in your path so Mosaic can find it when needed.

```
#!/bin/sh
#
# Script to play an audio file on the HDS ViewStation.
#
# Usage: showaudio filename
#
# The ViewStation hostname is determined from the DISPLAY
# environment variable. The IP address cannot be used
# directly with the ‘rsh’ command.
#
remote_shell_cmd=rsh
remhost=‘expr “$DISPLAY” : “\([^:]*\).*”‘
if [ ‘expr “$DISPLAY” : “[0-9]”‘ -ne 0 ]
then
 remhost=‘grep “^$remhost[^0-9]” /etc/hosts | awk ’{print
$2}’‘
fi
exec $remote_shell_cmd $remhost hdsplay - < $1
```

This example with Mosaic is typical of many application programs. Check the audio process used by your application and make the appropriate adjustments to these examples.

2.7.1.10 ViewStation Audio Specifications

The HDS ViewStation Multimedia unit has both input and output jacks on the back panel, using stereo 3.5mm connectors.

Input jack specifications:

There are several Audio Input device selections:

- Line Level Audio - this is line-level input, which accepts 2 V (RMS) analog signals. This is the preferred setting.
- HDS ViewCam - this is a line-level input setting.
- HDS Headset - this is a boosted microphone input for dynamic type unpowered microphones, 2-10 mV input. These microphones must have JP1/JP2 set in the 1-2 position (this is the default position so you should not have to change it).

```
rsh -n <ViewStation name> “auhds &”
```

As with other ViewStation messages, any error messages can be examined with the HDS Console **log** and **logpg** commands. The HDS NetAudio server executable is called *./hds-fx/bin/auhds* on the HDSware distribution.

2.7.1.7 HDSperx Audio File Playback program - hdsplay

The **hdsplay** program plays an individual sound file directly to the ViewStation’s audio interface. This program does not use the NetAudio protocol, or require the **auhds** server to be running. It can be used by many applications which require a simple means to output a sound.

The **hdsplay** program reads a file specified on its command line (or from its standard input). The Sun/Next audio format is supported directly. Raw audio data files can be played by using the ‘hdsplay’ command line options to set the sample rate, encoding (linear, ulaw), sample precision (8 or 16 bit), and number of channels (1 or 2).

You should type **hdsplay -help** in the HDS Console for a list of **hdsplay** options.

Examples:

```
rsh <VS name> hdsplay - < sample.au
rsh <VS name> hdsplay /host/usr/demo/sounds/spacemusic.au
rsh <VS name> hdsplay -s 44100 -p 16 -e linear -c 2 - < cdquality.raw
```

NOTE: The **hdsplay** program cannot be used if the NetAudio server is running. If the **auhds** server is running, a NetAudio program such as **auplay** should be used to play sound files.

The **hdsplay** program executable is called *./hds-fx/bin/hdsplay* on the HDSware distribution. More details are available in the hdsplay man page in Section 2.7.6.2.

2.7.1.8 HDSperx Audio File Recording program - hdsrecord

The hdsrecord program records an audio file from the ViewStation’s audio input and stores it in a file on a host computer. Various recording options and characteristics can be selected from the command line. These are described in the HDSrecord man page in Section 2.7.6.11.

You should run hdsrecord from a host computer with a remote shell command to the ViewStation. You can stop the recording either by specifying a time limit (with the -t option on the command line) or by pressing *Ctrl-C*.

Some examples of recording sound files from the ViewStation are:

```
rsh <VS name> hdsrecord > audiofile.au
rsh <VS name> hdsrecord -s 44100 -p 16 -e linear -c 2 > cdquality.au
```

2.7.1.9 Using ViewStation Audio with Application Programs

Application programs that utilize audio files usually try to start a separate “audio player” on the desktop display that actually plays the audio file. This audio player usually has a name, and running the ViewStation’s audio usually just

- Monitor Volume: This controls the amount of input audio to be sent directly to the audio output. This is usually zero.
- Pause Play and Pause Record buttons: These permit pausing the play or record functions. If paused, the buttons change to Resume Play and Resume Record.
- Audio Out Device: This allows you to specify the Audio Output device you have installed. Options are: HDS Internal Speakers, External Speakers, HDS Headset, and CallPort Spkr/Mic. This selection can also be made in Setup Mode from the User Preferences menu.
- Audio In Device: This lets you select the Audio Input device you have installed. Options are: Unspecified, HDS ViewCam, HDS Headset, CallPort Spkr/Mic, HDS Microphone, HDS Tuner, VCR, and Line Level Audio. This selection can also be made in Setup Mode from the User Preferences menu. Refer to Section 2.7.1.2 for more detail.

The lower part of the client screen reports settings selected by client resources or on the audio command line, including sampling rates and precision. Refer to the HDS audio manual pages for details.

2.7.1.5 Starting the HDS Audio Client

The HDS audio client, like other HDSperx clients, can be started in several ways:

- Choosing the 'HDS Audio' selection from a local window manager's 'HDSperx' menu.
- Starting directly from the HDS console window via the 'hdsaudio' command.
- Starting remotely from a host via the Remote Shell protocol.

  (e.g. **rsh -n testfx "hdsaudio &"**)

See Section 2.1 in this manual for further information on starting local clients.

The **hdsaudio** client can be used in conjunction with the HDS NetAudio server.

2.7.1.6 HDSperx NetAudio compatible server - auhds

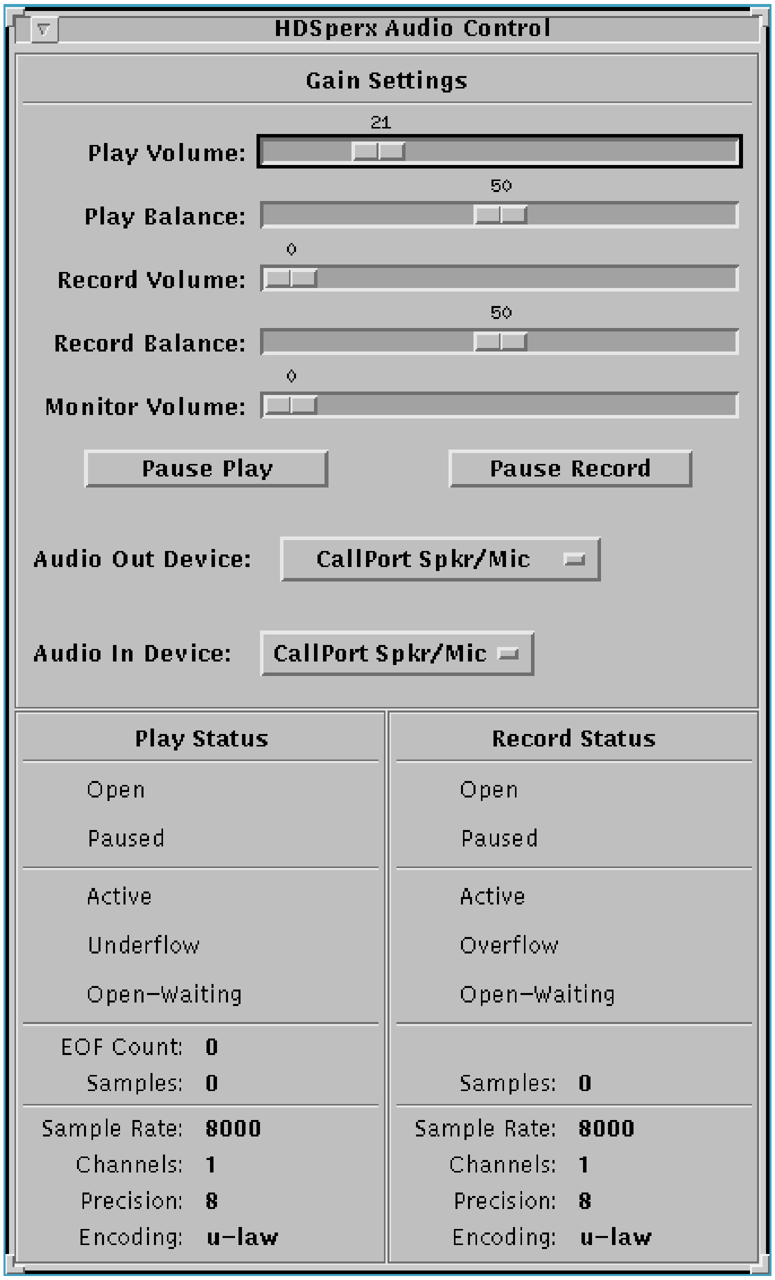
The NetAudio server has a number of functions and features. Some of these NetAudio clients are available with HDSware in the *./hds-fx/contrib/netaudio* directory. More details are in the auhds and NetAudio man pages in Sections 2.7.6.3 and 2.7.6.4.

The downloadable NetAudio server, called **auhds,** is not started automatically. If you intend to use the NetAudio protocol to access the ViewStation's audio capabilities, you must first start the **auhds** Audio Server task. If you intend to use the NetAudio server regularly, you should consider starting it automatically with a command in the ViewStation's Startup Command file:

```
auhds &
```

(The client configuration database automatically adds the '-aa' option, by default. Refer to the *./hds-fx/config/clients.config* file.)

As an alternative, the audio server can be started via Remote Shell with:



HDSperx Audio Control

Gain Settings

Play Volume: 21

Play Balance: 50

Record Volume: 0

Record Balance: 50

Monitor Volume: 0

Audio Out Device: CallPort Spkr/Mic

Audio In Device: CallPort Spkr/Mic

Play Status	Record Status
Open	Open
Paused	Paused
Active	Active
Underflow	Overflow
Open–Waiting	Open–Waiting
EOF Count: 0	
Samples: 0	Samples: 0
Sample Rate: 8000	Sample Rate: 8000
Channels: 1	Channels: 1
Precision: 8	Precision: 8
Encoding: u–law	Encoding: u–law

The Audio Control client contains the following entries:

- Play Volume: This sets the play volume for the audio output
- Play Balance: This sets the right/left balance for stereo sound.
- Record Volume: This sets the recording volume.
- Record Balance: This sets the recording balance.

If you are using your own audio equipment, you will have to determine which input level settings are appropriate.

The **Audio Out Device** line toggles between several output devices, HDS internal speaker, HDS external speakers, HDS headset, and the CallPort integrated Speaker/Microphone (with echo-cancelling).

If you are using your own audio equipment, you will have to determine which output level settings are appropriate.

BE SURE TO SAVE THESE SETTINGS in NVM so they are available to the Audio client when it is started.

2.7.1.3 ViewStation Audio Client Overview

This section includes the HDS audio man pages as well as associated audio programs that run on the HDS ViewStation, as follows:

hdsaudio hdsplay hdsrecord auhds

2.7.1.4 HDSperx Audio Control client - hdsaudio

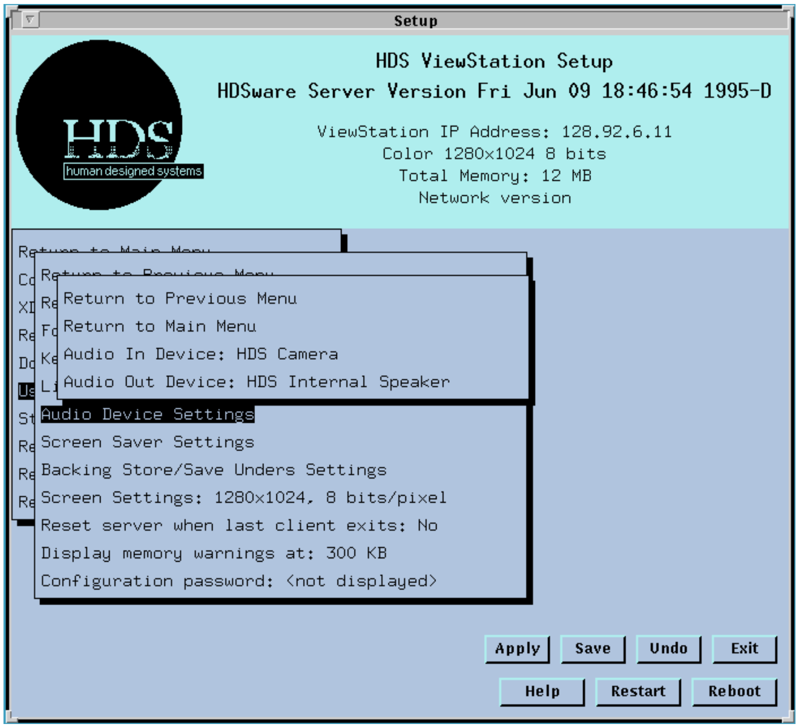
The HDS audio program is downloadable ViewStation local Motif client which provides a control panel which allows the user to set various audio parameters for presentation on the ViewStation. The HDS audio client executable is called ./*hds-fx/bin/hdsaudio* on the HDSware distribution (version 3.0 and higher).

The Audio Control client is shown below. The man pages for hdsaudio are in Section 2.7.6.1.

You have not yet specified the type of
audio device attached to this ViewStation’s
"AUDIO IN" connector.

Please use the HDS Setup menu
"Setup Options/User Preferences/Audio Device Settings"
to set this value and then Save it for later.

The **Audio Device Setting** line in the User Preferences menu brings up a sub-menu for selecting the audio input and output devices you are using on your ViewStation.



HDS ViewStation Setup
HDSware Server Version Fri Jun 09 18:46:54 1995-D
ViewStation IP Address: 128.92.6.11
Color 1280x1024 8 bits
Total Memory: 12 MB
Network version

Return to Previous Menu
Return to Main Menu
Audio In Device: HDS Camera
Audio Out Device: HDS Internal Speaker

Audio Device Settings
Screen Saver Settings
Backing Store/Save Unders Settings
Screen Settings: 1280x1024, 8 bits/pixel
Reset server when last client exits: No
Display memory warnings at: 300 KB
Configuration password: <not displayed>

The **Audio In Device** line toggles between several input devices, HDS Camera (with built-in microphones), HDS headset, the CallPort integrated Speaker/ Microphone (with echo-cancelling), HDS microphone, HDS tuner, VCR, and Line Level Audio. This setting selects the appropriate input level for the HDS audio device. These settings can also be made in the HDS audio client.

HDS ViewStation: Multimedia Operations

This chapter discusses the operation of the HDS ViewStation's audio and video local clients.

2.0 Section 2.0 - HDS ViewStation Local Clients

2.7 HDS ViewStation Multimedia Operations

The HDS ViewStation supports audio and video multimedia options. These are local ViewStation clients, and depending on the options, require additional hardware and/or software options as discussed below.

2.7.1 HDS ViewStation Audio Operation

This section discusses hardware and software requirements for using the Audio features of the HDS ViewStation.

2.7.1.1 Audio Operation Hardware

The HDS ViewStation Audio option includes a PC Card board with an Audio board installed. It also includes an internal speaker and audio input and audio output jacks on the ViewStation's backpanel.

Additional audio equipment is available from HDS, including an integrated speaker and microphone with echo cancelling. Microphones and stereo speakers (external) are available from HDS. Other compatible audio equipment is available from commercial suppliers.

2.7.1.2 Audio Device Setting Menu in Setup Mode

When you start an Audio or Video client without first selecting an audio input device, a message appears requesting the setting: