

# Stream Software

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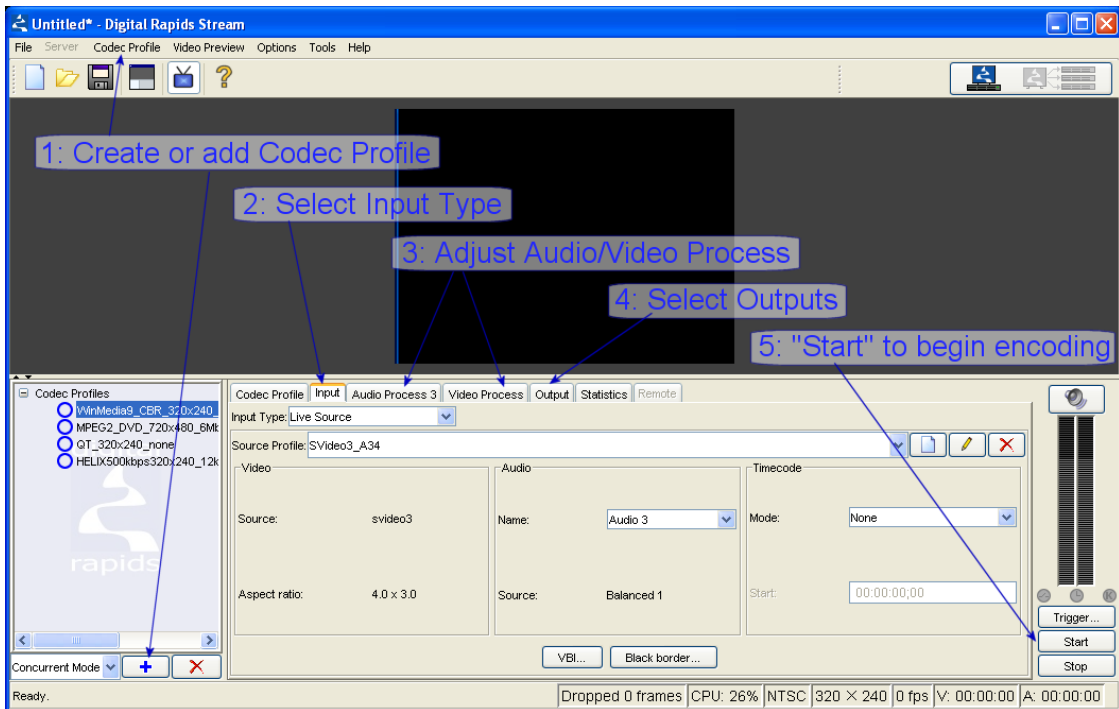
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# Getting Started with Stream Software

There are 5 basic steps to using your Stream system to create a digital video output.

1. Create Codec Profiles (the target audience settings) or add previously created Codec Profiles
2. Select your input video or input files (or deck control with StreamPro/StreamEnterprise)
3. Adjust your input video processor and/or audio processor controls
4. Select your outputs for each Codec Profile
5. Click Start to begin encoding, and Stop to end encoding



# Codec Profiles

A codec profile is a file which contains all of the settings that are needed to control the encoding of one output type. For example, to create 3 output files for 3 different target audiences, a Windows Media file at 320x240 and 300kbps, and a Real Helix file at 160x120 at 50kbps, and a QuickTime file at 320x240 at 400kbps, you would need to create 3 codec profiles, one for each of your specific target audiences.

## Creating a Codec Profile

To create a Codec Profile you use the main menu and select **Codec Profile > Create**, then choose the type of codec you would like to use. When you select a codec, the settings window for that codec will open.

Each codec has slightly different available settings. However, certain settings will be common to most codecs. These may include:

Resolution (width by height in pixels)

Frame rate (frames per second or fps)

Video Data rate (in kbps or Mbps)

Audio data rate (in kbps) – for some codecs the video and audio data rates are combined into one setting

De-interlace – if you want to de-interlace your video you will get better results if you use the Stream hardware's de-interlace function (rather than the codec's de-interlace function), so normally you will disable the codec's software de-interlace function.

Bit rate/type of encode: CBR (constant bit rate), VBR (variable bit rate) or 2-pass encode (note that a 2-pass encode cannot be real-time)

Most codec settings windows will also have an Advanced button. This gives you access to the controls which are specific to the codec you have selected.

Once your codec settings are complete, click the **Save + Add** button to save the codec profile, and to add it to the Codec Profile list that will be used for this project. You may click the **Save** button to save the profile without adding it to the current project's codec list, or cancel to close the window without saving.

Once your codec profiles have been added to the list, you can select the codec profile and some details about the profile will appear on the Profile Tab.



## Codec Profiles with Multichannel Audio

Currently you can make a multichannel audio codec profile for WAV, AVI and WM9. If you have the AC3 Surround option you will also be able to create a stereo or 5.1 channel AC3 file. (The AC3 option requires an updated key from Digital Rapids and an AC3 license.)

WAV: You will see all of the Multichannel audio modes in the Number of Channels drop down box, including a Custom setting so that you can configure your own.

AVI: Following the Audio Compressor drop down box you will see a setting button. Click this button and you will see a Number of Channels drop down box.

WM9: Choose “Windows Media Audio 9.1 Professional” as your Audio Media Type. When you add a new target bit rate (or edit an existing one) you will see 2 channel, 5.1 channel and 7.1 channel options in the Audio Format drop down box.

## Creating Full-Sized SD Codec Profiles

The DRC-500, DRC-1000, DRC-1500, DRC-2000 and DRC-2500 boards use an NTSC input resolution of 720 x 480.

Note that the high definition DRC-5500 series boards use an NTSC video input resolution of 720 x 486. If you are making a 720 x 480 sized output (for example, an MPEG2 file for a DVD) you will get best results by **cropping** off 6 lines from the video before making the 720 x 480 sized file.

PAL input resolution is the same on all boards, at 720 x 576.

## Creating HD Sized Codec Profiles

If you have one of the high definition DRC-5500 series boards, you will be able to encode to an HD file in real time.

When using a system with dual 3.2 GHz processors and HD resolutions, you will be able to capture in real time to an uncompressed AVI file. You will have to transcode to other formats.

Using a system with dual 3.6 GHz processors you will also be able to capture 1280x720 24P in real time to a WM9 file. You will not be able to capture files at higher resolutions or frame rates in real time to a WM9 file.

If you want to capture to an uncompressed AVI file and then automatically transcode to the other formats, you can use the “Batch Mode” (instead of the default Concurrent Mode) to automate the process. (These modes can be set using the drop down box found in the lower left hand corner of the Stream interface and are explained in a later section.)

## Adding a Codec Profile

Once a codec has been saved, it can be added to the project's clicking on the blue + button at the bottom of the Codec Profile list.

## Modifying a Codec Profile

If you want to remove a codec profile from the list, click on the red **X** button. If you want to modify the codec profile, right click on a profile in the list and select **Adjust Profile Settings**. This will re-open the codec's settings window. After you have made your changes, click **Save**. You will be asked "Do you want to save the new settings to the original profile?" If you click yes, the original profile will be overwritten. If you click no, and you renamed the profile on the settings window before clicking **Save**, your settings will be saved to a new file with the new file name. If you did not rename the profile before clicking **Save**, your modified settings will be used for this project, but the modified profile will not be saved.

## Fix Aspect Ratio

You can right click on a codec profile in your list and select Fix Aspect Ratio. This option allows you to override the resolution that has been defined in the codec profile based on the aspect ratio defined in the Input.

For example, if you have a codec profile which contains a resolution of 320x240 (a 4:3 aspect ratio) and your Input has a 16:9 aspect ratio, the output (encoded) video will look "squished" because the input and output aspect ratios do not match.

Most of the codecs and players available today do not support automatic aspect ratio correction on playback. MPEG2 is a notable exception as it does handle aspect ratio correctly but it does not allow for arbitrary aspect ratios.

### **Fix Aspect Ratio > Adjust Height**

This will change the height while keeping the width the same. For example, if your input has an aspect ratio of 16:9, and your codec profile resolution was 320x240, the "fixed" resolution would be 320x180.

### **Fix Aspect Ratio > Adjust Width**

This will change the width while keeping the height the same.

### **Fix Aspect Ratio > Auto Height Adjustment**

Automatically adjusts the height based on the aspect ratio defined in the Input Profile. Changing source profiles will automatically cause new values to be calculated and applied.

**Fix Aspect Ratio > Auto Width Adjustment**

Automatically adjusts the width based on the aspect ratio defined in the Input Profile. Changing source profiles will automatically cause new values to be calculated and applied.

**Fix Aspect Ratio > Auto Adjustment Disabled**

Disables auto adjustment features. This is the default mode.

**Fix Aspect Ratio > Group**

Note that if you right click on the Codec Profile heading instead of an individual codec profile in the list you will be able to adjust all of the codec profiles in the same way. The default is “Individual Adjustment”.

## Concurrent, Queued and Batch Modes

You can encode to more than one codec profile simultaneously in real-time. Exactly how many depends on the codec format, resolution and bit rate, as well as your system’s available CPU power and memory. For a rough guide, refer to the Appendix for a chart that shows some testing that was done using a StreamZ server.

To encode to all of the formats in your Codec Profile list simultaneously, select **Concurrent Mode** from the drop-down box at the bottom of the Codec Profile list. Concurrent Mode is the default mode.

If you want to encode to a codec profile (or profiles) that cannot be encoded in real-time, for example a 2 pass encode, or if you want to encode to multiple formats and do not have enough system resources to encode all of them in real-time, then you will need to switch from Concurrent Mode to Queued Mode or Batch Mode.

**Queued Mode** can be used to transcode to the profiles in the Codec Profile list, one at a time, from a master file. Queued Mode cannot be used for live input (real-time) encodes. To use Queued Mode, create a master file first using Concurrent Mode. The master file is typically an uncompressed or lossless AVI file. Then switch to Queued Mode, select the master file as the input, and add the codec profiles you want to use into the Codec Profile list. Click the Start button and the master file will be transcoded into the formats in your Codec Profile list.

If you have StreamPro or StreamEnterprise, you will also be able to use **Batch Mode** for non-real-time encoding. Batch Mode encodes to a master file first in real-time, typically an uncompressed or lossless AVI file, and then automatically transcodes the master file to the other formats you have selected. (This is more automated than in Queued Mode, where you have to create the master file first, and then select it as an input.)

When you first switch to Batch Mode you will be asked to open a codec profile. This will be the codec used to create the master file. You can then add additional file to the Batch List. If you already had codec profiles in your list when you switched to Batch Mode, they will automatically be entered into your new Batch List.

## Generate Output Filename(s)

If you right click on the Codec Profiles at the top of the list, one of the options is to Generate Output filenames. This creates output archive filename(s) using the codec profile name and the default output path. For example, if the default path is C:\StreamOutput and the current codec is a QuickTime with a coded profile name of ClientA, then the output archive filename would be C:\StreamOutput\ClientA.mov.

## Codec Profile Tips

### Windows Media

When you create a Windows Media profile, if you enable video and audio there must be a video and audio source when you encode.

You may preserve timecode by clicking on the Video Settings button. If you preserve the timecode you will be able to see it in the Windows Media Player by selecting View > Enhancements > Play Speed Settings.

### MPEG (MainConcept)

You can increase the quality of your file by increasing the Quality setting. The default value is 12 and the highest value is 50.

To see the complete MPEG settings click on the Advanced button.

To change from the default 4:2:0 sampling to 4:2:2 go to the Advanced Video Settings tab and change from Main Profile to High Profile. In the list on the right hand side click the + next to Sequence Extension, and change the Chroma Format value from 0 to 1.

To change from Program Stream to Transport Stream go to the Multiplexor Settings tab and choose DVB (or one of the other multiplexor types for Transport Stream: DVB, ATSC (US broadcast), MicroMV, DVHS and HDV ).

If you want to create an MPEG file that is larger than 720x480 (NTSC) or 720x576 (PAL) go to the Advanced Video Settings tab and change from Main Level to High Level.

**AVI Uncompressed** If you have an AVI codec profile from a previous build of Stream, and it did not specify the audio compressor, you will not be able to use it in Stream 2. Recreate the AVI codec profile in Stream 2.

**QuickTime** If you have StreamPro you can use Sorenson ACE to create higher quality QuickTime files with Sorenson Video 3 Pro and a variety of audio codecs, including MP3 and MPEG4 audio.

**Real Helix** When creating a Real Helix codec profile you must add at least one Audience by clicking the blue + button. You can then select that Audience and click on the Edit button (the button with the pencil icon) to change the frame rate and to make codec adjustments.

### **Sorenson ACE (StreamPro)**

If you have Sorenson ACE you can use it to create MPEG4, AVC (H.264), QuickTime, Flash and MP3 codec profiles. To adjust the settings for your codec profile choose a media type, then highlight the video stream or audio stream that you want to adjust (by selecting the data rate for the stream) and then click the Edit button (with the pencil icon) to open a settings window. Note that a frame rate of -1 means 1 source frame to 1 destination frame, and of -2 means 2 source frames to 1 destination frame (half the source frame rate). To see more settings click on the Codec Settings button.

### **Image Sequence (StreamPro)**

You can enable Strobe Mode and set the time between image captures.

For BMP files you can change the bit format from 24 bits to 32 bits.

For JPG files you can set a maximum file size or file quality.

For YUV files you can choose between YUY2 or UYVY formats.

### **AC3 codec (Surround or Stereo) Option**

You can purchase an AC3 audio codec for your Stream software. If you are interested in this option please contact your Digital Rapids Dealer.

## Input

The Input tab is where you set your input type.

Clips for Transcoding

DPS Files

Direct Show Media Files

QuickTime File Source

Image Sequence File Source (StreamPro)

Watch Folder (StreamPro)

Clip List (StreamPro)

Video Input

Live Source

Deck Control (StreamPro)

## Clips for Transcoding

These input options allow you to input clips that can then be transcoded to other formats.

### Video Preview (for Clips for Transcoding)

When using these input modes you can play your video file by clicking on the Monitor Source button. You can see some options for the video preview using the main menu's Video Preview. These affect the preview only, not the final encoded file. Note that the video preview is sensitive to the codec profile that you have currently selected.

### DPS Files

Input Leitch DPS video files and DVA or WAV audio files.

### Direct Show Media Files

Input files with DirectShow filters. These are the files that can be played back using the Windows Media Player, for example: Windows Media files (wmv, wma, avi, asf), MPEG files (mpg, mp3, mp4, mpeg) and other file types (such as wav, mp3, etc.).

### QuickTime File Source

These are QuickTime video with or without embedded audio (mov files).

### Image Sequence File Source (StreamPro)

These are numbered image files typically produced by an animation program. Add the image sequence files and specify a frame rate for the transcoded video. You can also add an audio file (such as wav or mp3) if you want your encoded video to have a sound track.

### Watch Folder (StreamPro)

When you select Watch Folder as an input, you will be able to select a folder on your system, and every time a file is dropped into this folder it will be transcoded and any output options you have set on the Output tab will start automatically.

For example, you may want people to drop files into the folder, to have them made into a single video file, and then to have the file automatically sent to a client using the Email function. Or you may want people to drop files into the folder and then to have those files transcoded individually, and to be uploaded to an FTP server as the transcoding is completed.

If you have a mixture of file types for your Watch Folder, for example some video files which you do want to transcode and some data files you cannot transcode (e.g., exe files, txt files) but that you do want output (for example, to upload to your FTP site with the transcoded video), you may still use Watch Folder. Files with file extensions that are not recognized as video or audio media files will use output functions without being transcoded. If you want to use Watch Folder to manage video files but you do not want to transcode these files before transmitting them, you can add the files to a zip file before dropping them into the Watch Folder.

When you select Watch Folder you must select an individual folder to watch for files. Be sure to select the folder, and not to accidentally double click on the folder, which will create a sub-folder which you may not be expecting.

If you will be using a numbered sequence of files, for example an image sequence (Logo001.tga, Logo002.tga, etc.) or a numbered sequence of clips (clip01.avi, clip02.avi, etc.), you can also choose to transcode the files to a single video file before transmitting the file. To accomplish this, check the "Output to single file" box. You will then be able to fill in all of the numbered file information.

If you want the input files to be deleted after they have been transcoded into their delivery format, check the box at the bottom of the window. Note that files that are not transcoded before they are delivered (e.g., exe files, doc files, etc.) will not be deleted after they are transmitted.

When you are creating a single output file from multiple input files, you may click the Stop button before you have added the last file (as defined by the End at box) to the Watch Folder. When you click the Stop button Stream will stop transcoding the files and will start any additional output options you have set on the Output tab. Otherwise the transcoding will continue until the 'End at' number of files has been reached, and then Stream will start any additional output options you have set on the Output tab.

### **Persistent Watch Folder**

You can set up a project with a Watch Folder as a "persistent" project. That way, should the power be lost, when your computer starts up Stream will be launched, the project with the Watch Folder will be loaded, and the Watch Folder will be active and ready to accept files. This tool can be found in the main Stream menu under Tools > Persistent Watch Folders.

### Clip List (StreamPro)

When you use Clip List as an input type you will be creating a list of clips that exist on your system. You can then choose to transcode each clip on the list to another file format (or formats). Note that you can only use single pass codecs, not 2-pass codecs, with the Clip List function.

You can also choose to combine all of the clips in the list into a single clip by enabling the Concatenate output checkbox.

### Video Input

When your Digital Rapids SD hardware was installed it was set to NTSC or PAL. You can switch video standards by selecting Options > Preferences from the main menu, and then selecting the Hardware tab. If you are going from PAL to NTSC you will have to re-start your drivers (by re-booting your computer for example). (This does not apply to HD hardware, which detects the input standard automatically.)

### Video Preview (for Live Source or Deck Control)

When using these modes you can see your video input by clicking on the Monitor Source button. You can see the options for the video preview using the main menu's Video Preview. These affect the preview only, not the final encoded file. Note that the video preview size is sensitive to the codec profile that you have currently selected.

### Live Source

If you have a live video source connected to your Digital Rapids hardware, for example a camera, a tape deck, a DVD player, etc., you can encode the live source to a file. After you select Live Source as an input type, you will need to create a Source Profile, which specifies which video and audio inputs to monitor. Click the Create Source Profile button to open the Source Profile window.

### Source Profile for SD Boards

(For DRC-500, DRC-1000, DRC-1500, DRC-2000, DRC-2500)

Select a video source and an aspect ratio.



For the DRC-500, in the audio section highlight an audio channel and then click the Edit button. Click the enable audio processor and you will then be able to use the Source drop down box to select the type of audio you are using. Click OK to enable your audio selection. Click the Save button to save your Source Profile and to add it to the Source Profile's drop down list.

For the DRC-1000 to 2500 you will see a Settings button in the audio section. Click that button and an audio selection window will open. Select the audio you want to assign to the 4 stereo audio channels and click ok. Note that if you want to select 2 SDI pairs from one SDI input you must click the SDI button twice.

If you added more than one audio channel to your Source Profile, you can select which one you want to encode on the main interface's Input tab by using the drop down box in the Audio section of the Input tab.

## Source Profile for HD Boards

(For DRC-5500 series)

**Video:** For Live Source, there is only one video input, the SDI input.

The Video section of the source profile window tells the hardware what to do to the video input before it is passed on to the codec profiles for encoding. The three things that can change are the size, interlaced vs. progressive, and aspect ratio. Use the Conversion drop-down box to choose one of the options:

- None = No format conversion. Use the same Size, I/P, and Aspect ratio as the input.
- Automatic = Convert to the dimensions of the largest codec profile; user defined I/P and aspect ratio.
- Custom = User defined conversion of Size, I/P, and Aspect ratio.
- One of the presets used to convert to a specific video format (e.g., 720P, 1080I, NTSC, PAL, etc.).

Generally, the source profile's dimensions should be as large as the largest dimension used by the codec profiles you have added to your project.

Any video changes defined in the source profile are made in hardware. Note that the codec profiles can also change the dimensions, interlaced vs. progressive, and the aspect ratio in software. However, if you know you want to format convert from the input video to a different output format you will find the hardware format converter will give you faster and better results.

**Note: Frame rates of 59.94, 29.97, 23.976 fps**

If your input frame rate is not an integer, for example, it is 23.976 fps instead of 24 fps, then the Stream Software will detect the actual frame rate. If you have a 1080p 23.976fps source and you select a Conversion to "1280 x 720

progressive 24 fps”, then the output frame rate will actually be 23.976 fps, the same as the input frame rate. If your input is 1080i 29.97 fps and you convert to “1280 x 720 progressive 24 fps”, then the output frame rate will actually be 23.976 fps.

**Scaling interlaced video:** Note that you cannot scale interlaced video, you must convert it to progressive video first. Use an Automatic or Custom conversion in the Source Profile and select Progressive. Alternatively, you can use one of the preset Conversions to go from a interlaced format to a preset progressive format.

### **NTSC video: Scaling from 720 x 486 to 720 x 480**

If you are going from 720x486 NTSC to 720x480 NTSC (for example, for MPEG2 DVD output) you can use a source profile with no format conversion, as long as you crop 6 lines of video off the video height.

Alternatively, you can use a source profile with a Custom format conversion and specify a Size of 720 x 480, in which case 6 lines will automatically be cropped from the video (4 at the top and 2 at the bottom).

### **Audio:**

The DRC-5500 board has 4 stereo AES inputs and embedded SDI audio inputs.

In the Audio area of the Source Profile window click the Configure button. You can add the AES inputs by clicking on the numbered AES graphic that you want to add. You can add the embedded SDI audio by clicking on the SDI graphic and then selecting the SDI group and pair. To add another SDI audio group or pair click on the SDI graphic again. To remove an audio input highlight the input and click the Delete button.

Once you have finished all settings click OK to return to the main Source Profile window. Give your Source Profile a name and then click OK to save the source profile.

Once you have closed the Source Profile window you will see the audio inputs you have selected in the audio section of the Input tab. Click on the Audio Source and on the Channel in the audio section of the input tab to set the audio inputs being used by the currently selected codec profile.

## **Additional Input Settings**

### **Timecode**

If you want to add timecode to your file, you can choose to use Auto-Increment or Time of Day. For Auto-Increment you specify a starting timecode and the timecode will count up automatically. For Time of Day your system’s clock will be used to generate the timecode.

## Black Border

(For DRC-500, DRC-1000, DRC-1500, DRC-2000, DRC-2500)

If you want to add a black border to your video, “squeezing” your video into the active video area inside the black border, you can click the Black Border button.

## Capturing VBI data to preserve closed captioning data

(For DRC-1000, DRC-1500, DRC-2000, DRC-2500)

When you are capturing video, if you want to capture vertical blanking interval data, for example to preserve closed captioning data, you can click the VBI button. (Note: this option is not available for DRC-Stream 500 hardware.)

1) Select your input: Live Source or Deck Control.

2) Select Options > Preferences from the main menu, and then select the Hardware tab. Enable the “Use external video timing” option and disable the “Enable deinterlacing” option.

3) On the Input tab click the VBI button and enable VBI. Depending on your playback device, you may need to capture different numbers of VBI and Black border lines. The following is one such method.

For NTSC set start line 21 and number of lines to 2.

For PAL set start line 15 and number of lines to 8.

Click OK.

4) On the Input tab click the Black Border button.

For NTSC set the Bottom to 2. For PAL set the bottom to 16.

5) Click the Monitor Source button. You will notice the VBI lines with the closed captioning information at the top of the frame. (If you were already monitoring the source you may need to toggle it off then on again to see the VBI.)

6) Select Codec Profile > Create to create your codec profile. Include the Closed Captioning VBI lines in the profile. For example:

NTSC: If it is a WM9 profile set it to 720 x 486 (for NTSC).

NTSC: If it is a MPEG2 profile use the Advanced Settings button and then select the Advanced Video Settings. Change the “Profile ID” to High Level. Click OK to return to the main MPEG Profile window, and set the frame size to 720 x 486.

PAL: If it is a MPEG2 profile use the Advanced Settings button and then select the Advanced Video Settings. Change the “Profile ID” to High Level. Click OK to return to the main MPEG Profile window, and set the frame size to 720 x 608.

7) Set an Output file name and then click Start to encode your video clip.

If you used the settings outlined above you will be able to use the “Closed-Captioning Decoder” (available as a short cut in your Start > Programs > Digital Rapids folder). This will allow you to verify that there is closed captioning data in the live source and that there is closed captioning data in the encoded file. Note that it is intended to be used as a verification tool rather than to produce an accurate log of the text.

Note: Depending on your specific playback device you may have to adjust the number of VBI lines you are capturing, and then number of Black Border lines you need to “pad” your video frame.

Capturing closed captioning data into the user defined data in an MPEG2 file is not supported in this release of the Stream software.

### **Single Stream Mode for DRC-500**

You can start Stream in Single Stream Mode and that will allow you to capture more than the default lines. This may be useful for example, if you need to capture 720x486 instead of the default 720x480 (for NTSC).

### **Deck Control**

If you have StreamPro or StreamEnterprise, and your deck is equipped with RS422 control (using the Sony protocol) you will be able to use Deck Control. Connect your VTR to your computer’s serial port using a RS422 to RS232 converter.

Select Deck Control as your input type, and the Deck Control window will open.

On the Deck Control window select Options > Configure from the menu. Click the New Configuration button to set up the deck configuration. Select a COM port, a Timecode Source type (LTC or VITC), and a preroll time for your deck in seconds. When you click OK you will be asked to save a Deck Configuration Profile. You can edit your setting later by clicking on the Edit (pencil icon) button or delete a deck configuration from the list by using the Delete (red x) button. Once you have created a Deck Configuration Profile it will appear in the drop-down list.

If you notice that your deck is consistently off by a few frames you can use the Advanced Settings button on the Deck Configuration window. You will be able to select a Timecode offset by the number of frames that your deck is off. If

you are using some types of RS422 adapters (e.g., a DV LANC adapter) and the deck control window is having trouble reading timecode from your deck, you will be able to correct the problem by using the “Set a time limit between consecutive queries to the timecode” check box and to specify a time in milliseconds. (For the DV LANC adapter a time of 5 ms corrects the problem.)

If you need to change the Source Profile (the video and audio inputs) for your Deck Control, or any of the other options on the Input tab, you can do so without closing the Deck Control window. Simply drag it out of the way. If you do close the Deck Control window you can re-open it by clicking the Show Deck Control Window button at the bottom of the Media Selection tab's window.

On the Input tab you will also see a “Use external video timing” check box. Enable this to lock your video timing to your video input for frame accurate deck control. Note that you must also turn off deinterlacing for frame accurate deck control. If deinterlacing is enabled you will be off by approximately one frame.

To create a capture list, click the Logger button. If you have not yet configured the deck you must close the Logger and use the Deck Control's Options > Configure menu item, then re-open the Logger to connect to the deck. Use the tape transport buttons to play/stop/pause the tape. Use the jog forward/jog back buttons to move frame by frame. Use the rewind and fast forward buttons to move through the tape quickly. Use the eject button to eject the tape. Under the timecode box is a slider. You can use this to shuttle through the tape.

For each clip you must enter an in-point, out-point, and/or duration (you must enter 2 of these to define the clip). You must also enter a clip name and a reel name. The clip name will be automatically incremented after you click the Add button. If you enter a clip name that includes a number, such as Clip001, then the clip name will be automatically incremented including the padded zeros. A comment may also be added. If you want to edit an item in the list, you can select the item and then click the Edit button.

When you exit the Logger you will be asked if you want to save the changes. If you say yes any clips which have been marked with a check mark will be added to the Deck Control clip list, overwriting the existing list. Any clips which do not have a check mark will not be added to the Deck Control clip list. You may multi-select clips in the Logger and use the Mark and Unmark buttons to affect all of the selected clips. If you say no the Logger will be closed without adding the list or any changes to your list to the Deck Control list. Any changes you have made to the list will be lost.

Once you have added your Log to the Deck Control window you can save the list with the File > Save menu item. If you have a list that you saved previously you can append it to the current list using File > Append.

On the Input tab you will see a Select Capture Profile button. If you have previously created a capture list using the Logger you may click this button to open a list from the CaptureProfiles directory.

Other controls found on the Input tab when Deck Control is selected are the same as the ones found when Live Source is selected as an input type.

### **FLEx Files and CMX 3600 Files**

You can import a FLEx file in the Deck Control window by selecting File > Append, and then changing the “Files of type” drop down box at the bottom of the Open window to “FLEx (\*.flx)”.

Similarly you can import CMX 3600 EDL files by changing the “Files of type” drop down box at the bottom of the Open window to “All Files” and then selecting the CMX 3600 EDL file.

When the file is appended, it will be converted to the Digital Rapids xml capture log format.

### **Using the Logger as a stand alone tool**

You can also install the Logger as a stand alone tool on a system without Digital Rapids hardware. When the Logger is run as a stand alone tool it will have its own Configuration button and File > Save As/Open menu.

## **Audio Levels and Audio Process**

The Audio Levels tab includes sliders for Volume control. The C button above each slider returns the slider to its default position of 0 dB.

The Audio Process tab will only appear when you are using a standard definition board (DRC-500, DRC-1000, DRC-1500, DRC-2000, DRC-2500) and are using Live Source or Deck Control as an input.

Some codecs can only handle one audio input (mono or stereo) while some can handle multichannel audio. You select the audio source that will be used by the codec on the Input tab. Which ever audio source you highlight on the Input tab, a corresponding Audio Process # tab will appear.

The second set of sliders are for Bass and Treble control.

To the right you will see two graphs, one for EQ and one for Dynamic Range Compression/Expansion. Clicking on a graph will open the controls for the respective function.

## Using EQ

The EQ window has 2 dB vs. frequency graphs. The one on the left shows you the effect of currently selected control. The one on the right shows you the cumulative effect of all of your EQ settings.

There are seven bands that you can control. You can activate a band by clicking on the button at the top of each slider.

Each band can be set to a mode using the drop down box at the bottom of the control:

EQ – This is a notch controller, where you raise or lower the dB of a frequency range and control the range of frequencies affected.

Shelf Low – Raise or lower the dB below the frequency you set

Shelf High – Raise or lower the dB above the frequency you set

Butterworth Low – cuts off the frequencies above the frequency you set. This cut off is a gradual curve. The frequency you set is the – 3 dB point.

Butterworth High – Cuts off the frequencies below the frequency you set. This cut off is a gradual curve. The frequency you set is the – 3 dB point.

## Using Dynamic Range Compression/Expansion

This function is useful when you are dealing with audio with very loud and or very quiet sections, and you want to automatically even out the sound to a more consistent volume.

Below Threshold Ratio (in:out): This adjusts the gain applied to low volume signals

Above Threshold Ratio (in: out): This adjusts the gain applied to high volume signals

Threshold: This is where you define the point where the normal volume signal is located.

Energy Level Detection: You may want to leave very sudden, short term changes in volume unchanged. For example, you may not want to reduce the volume of a sudden bang, even if it is in a quiet section. If that is the case, enable this function.

You have 3 time settings: Time Constant (overall duration of the sudden change), Attack Time Constant (the time the change takes to reach its peak), Decay Time Constant (the time the change takes to return to a normal volume).

## Video Process

Video processing controls include Cropping, Processing Amplifier (Proc-amp), Horizontal/Vertical filtering, Noise reduction control and Graphic Overlay controls. You will see all of these controls if you are using a Live Source or Deck Control as your input. If you are using a digital file as an input you will just see the Cropping controls.

### Cropping

The Cropping controls affect how much video is removed from the top, bottom, and sides of the incoming video. Typically you would use cropping to remove the black areas which often surround a video image (known as ‘underscan’), or the large black bars above and below the image found in letterboxed material.

Keep in mind that when you remove lines from the video, you are not changing the size that will be used by the codec profile. This means that if you crop 20 lines from the height of your video, the picture will be “stretched” to fit the size of your codec profile. If you don’t want this to happen, you must also reduce the vertical height of your codec profile by 20 lines.

### Deinterlacing

Each frame of video from an NTSC or PAL source will contain 2 interlaced fields. Video that is displayed on a computer VGA monitor will be displayed frame by frame. In order to display the video correctly on a computer VGA monitor, it must be deinterlaced.

**Deinterlacing for the HD Boards (DRC-5500):** Deinterlacing is set in your Source Profile (on the Input tab).

**Deinterlacing for the SD Boards:** An Enable Deinterlacing box will be found on the Video Process tab. Check the Enable Deinterlacing to use the Stream hardware’s deinterlacing feature. If you plan to deinterlace the video the hardware deinterlacing will give you superior quality compared to a codec’s software deinterlacing. (Do not use both the hardware deinterlacing and the codec’s software deinterlacing.)



Note that Temporal Noise Reduction can only be used if hardware deinterlacing is enabled.

## Processing Amplifier (Proc-Amp)

The Processing Amplifier (Proc-Amp) controls affect the brightness, contrast, saturation, and hue (hue for SD boards in NTSC mode only). You can also set individual color gain and color balance.

The gamma controls can be used to boost the brightness on a curve (rather than as a linear function as you do with the simple brightness and contrast controls). You may find the gamma controls useful when you are adjusting the levels of a video signal that you want to make into a digital file that will play back correctly on a computer VGA monitor. Typically gamma values around 1.8 will give good results when adjusting video for display on a computer monitor.

## Filtering and Noise Reduction

When you filter a video signal you are reducing the high frequency part of the video signal. In ideal situations, high frequency signals are created in response to details in the image, such as fine lines. In practice, high frequency signals are often noise, so filtering out some of the high frequency signal is a good idea.

The Horizontal and Vertical filtering controls allow you to override the default filtering values used by the Stream drivers. For example, you may want to turn up the filtering (over-soften) because the video contains noise from the camera it was shot with, or you may choose to under filter a very clean video source in order to bring out additional detail.

Adding more filtering (over-filtering) will make it easier for the codec to compress the video stream at the expense of some of the detail in the image.

You will also be able to apply Temporal or motion adaptive 3D noise reduction. Temporal noise reduction works best with low level noise such as tape noise or noise caused by low lighting levels.

When you are adjusting the noise reduction you can temporarily disable it by clicking and holding down the disable button at the end of the drop down box. This allows you to compare the video source and the video with the noise reduction applied, so that you can check the effect.

### Temporal Noise Reduction

Temporal noise reduction compares images in sequence over a predetermined period of time, blending the images between fields or frames. The simplified theory is that by blending data over time you can reduce the overall noise content of the resulting image. This is used in the film industry to remove film

grain from blue or green screen shots. Successive samples of the same blue or green screen scene are blended together which will effectively cancel out the noise found in any individual frame. The problem with typical noise reduction algorithms is that if there is any motion in the individual scene you will get a motion blur (trails) artifact in the processed frame. One answer to this is to limit the blending process to a specific range of frames or to restart the process every few frames. This is very visible in the noise reduction found in some software codecs. Every few frames the noise reduction will reset and the noise will suddenly reappear only to disappear several frames later, then the process starts over again.

The DRC-Stream hardware uses a very advanced form of temporal noise processing called motion adaptive 3D noise reduction. Motion adaptive 3D noise reduction combines the information in multiple frames of video using the information obtained from the motion adaptive de-interlacing in order to decide how much processing is applied to each pixel in the final frame. Because each pixel is calculated individually the result will be more precise noise reduction with less motion blurring artifacts than would otherwise be normally possible. Note that Temporal Noise Reduction can only be used if deinterlacing is enabled.

There are three possible settings for the 3D motion adaptive noise reduction:

None: No noise reduction is applied

Optimal: A predetermined amount of noise reduction is applied.

Custom: You are free to set the amount of noise reduction applied. Too much noise reduction will result in motion trails effect.

If you choose the Custom option, you will be presented with the Temporal Noise Reduction window. You can set the amount of noise reduction applied and preview the output in real-time. Selecting OK saves the current setting.

### Spatial Noise Reduction

If you have an SD board (DRC-500, DRC-1000, DRC-1500, DRC-2000, DRC-2500) you will also be able to apply Spatial or 2D noise reduction. Spatial noise reduction works best with single pixel 'salt and pepper' type noise such as video dropouts. Spatial and Temporal noise reduction can be used separately or together.

Spatial or 2D noise reduction only affects the current frame of video, specifically targeting high frequency noise which is not part of the structure of the image. It specifically attempts to deal with high frequency noise which is not part of the edge of an object in the picture or other structures in the video.

There are three settings for 2D noise reduction:

None: No noise reduction is applied

Optimal: A predetermined amount of noise reduction is applied. This has been determined by testing with many hours of video.

Extreme: A greater amount of noise reduction is applied at some loss of overall picture sharpness.

## Graphics Overlay

When you are using a Live Source or capturing using Deck Control you can use a graphic overlay, as a title board, watermark or a logo for example. A 32 or 24 bit bmp graphic can be used.

A 32 bit bmp sample and a Photoshop psd file that shows how this bmp file was created is located in the Overlays folder in your Stream directory.

Graphics overlay is not supported during transcoding because it only occurs while the video is being processed by the hardware. The video is not passed back through the hardware during transcoding.

To use this function, click the Graphic Overlay Settings button. Use the checkbox at the top of the Settings window to enable this function. Browse for a file to use as your overlay.

Set a default fade duration.

Set the position and scale your graphic if desired.

Click OK to save your settings and close the window.

Click the up arrow to fade up the graphic using your fade duration and the down arrow to fade down the graphic using your fade duration. Click the slider button to open a slider that will allow you to manually fade up and down the overlay.



## Output

The output tab controls where the final encoded video will be stored, broadcasted, published or delivered. The output tab is context sensitive to the codec profile currently selected in the codec profiles list. Each codec profile will have its own output options.

## Monitoring Video and Audio during encoding

While you are encoding you will be able to monitor your video and audio.

If your CPU usage is high during a live encode you will be able to reduce it slightly by toggling the Monitor Source button off.

While you are encoding, the audio preview that you hear will be the audio from the **source**. The video you are seeing will be the video from the **encoder**. The audio **preview** from the source **will not** be in sync with the video from the encoder. However, the encoded audio will be in sync with the encoded video, so **the final encoded file or stream will be in sync**.

While you are encoding, you may mute the audio preview by clicking the “toggle audio mute” button found above the VU meters. This will not mute the audio in the encoded file.

While you are encoding all of the Video Process and Audio Process controls will be available to you. For example, while you are encoding you can adjust the volume of the audio. This will affect the volume of the audio in the encoded file or stream.

## Archive

An archive file is a file saved to a hard drive. All codec profiles have this option.

**For HD Boards:** For HD output in real time you must direct the output file to the RAID. Do not use the default OutputMedia folder found on your C drive. That drive will not be able to keep up with HD data rates.

**Tags:** You may want to use “tags” in your archive file name, to automatically insert information such as the date and time into the file name. (See “System Tags” on page 39 for more information on Tags.)

**Rollover Mode:** For Windows Media and Real Helix you will be able to encode to a single file (default) or to automatically start a new file based on the encoded file size or duration. The root file name will automatically be appended by an incrementing number, so that a new file will not over-write an existing file. Note that if you use system tags in your file name the tags will only be calculated at the end of the first file, so for example, if you used a time tag it would only be the time of the first file.

**Use Custom Block Size:** When you are encoding an MPEG file you will be able to set a custom block size.

**Helix 10 DRM:** When you are using Helix 10 you will see an “Enable DRM” option. In order to use DRM you must obtain a license from RealNetworks. You must also obtain a special build of the DRM software from RealNetworks, that has been customized to work with Digital Rapids boards.

## Broadcast

Use this option when you want to stream a live source to a video server and broadcast to the internet or an intranet.

You can broadcast Windows Media or Real Helix streams.

If you have StreamPro you will also be able to broadcast MPEG2 Transport Stream. (This option is available to Stream customers as an optional upgrade.)

## Command (StreamPro)

This option allows you to enter in a command line function that will start once encoding/transcoding has stopped. For example, you may want to run a batch file that will execute several commands that are specific to your setup.

## Publish

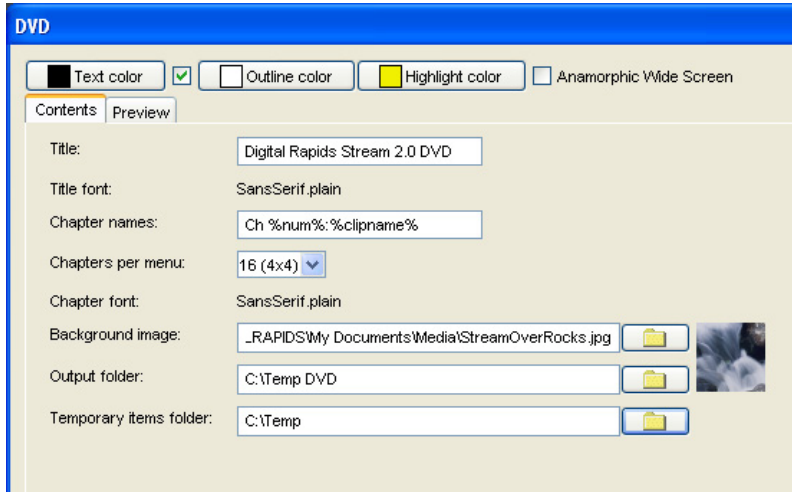
This feature allows you to use a Publish Template file which includes tags. The Publish Output file will be your template with your tags replaced by the information from the encode. For example, you could create an encoding report which shows the details of the encoding session, or an html web page which includes an embedded player with a tag for your archived video file. There are some sample template files installed for you in your Stream\PublishTemplates folder.

## DVD (StreamPro)

Save your files as DVD ready folders and files with an automatically created simple menu structure. The DVD output can only be used when you are using Deck Control (a StreamPro feature) to capture your clips with Concatenate Output enabled. The in-points on the capture log will be used as chapter points for your DVD.

Note that you will only see this option when you are using an MPEG2 codec profile that was created with the Codec Profile > Create > MPEG2 - MainConcept > DVD option, and with the "Force I-frame at in-points" option enabled on the MPEG codec profile.

When you click the DVD button the following window will open:



You can use it to change the text that is shown as the title of the DVD, choose between a 4x4 or 3x3 chapters per menu, and choose a background image (a jpg, gif or png file). You must also set a Output folder (for your Video\_TS and Audio\_TS folders) and a Temporary items folder that will be used while creating the DVD folders.

The Chapter names text is based on tags (a list of valid tags is shown when you hover your mouse over the text box, and is shown below).

Use tags to create unique chapter names.  
Valid tags are:  
%% - %  
%num% - Chapter #  
These tags take values from the Capture Profile:  
%clipname% - name of the clip  
%comment% - clip comment  
%tapename% - tape that clip was from  
%inpoint% - in point of clip  
%outpoint% - outpoint of clip

You can change the text color and the text outline color (or disable the outline by disabling the check box). The highlight color is the color that will be shown when you are on a chapter selection.

If you are using anamorphic footage you can enable the Anamorphic check box.

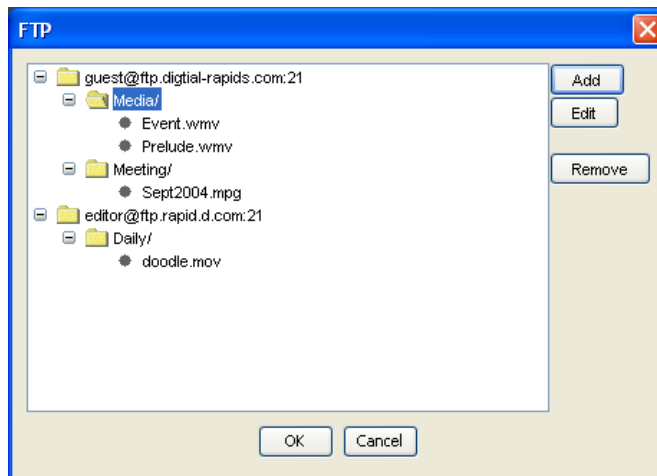
You can switch between the Preveiw and Contents tab to see the effect of your changes on your DVD menu.

## FTP (StreamPro)

Send your archived file using ftp. To enter an item, click the FTP button, and then click the Add button. This will open an FTP Item window. Enter in the information for that item.

When you click OK the item will be added to your FTP list.

You can then add another item to the same folder by clicking the destination folder name and then clicking the Add button.

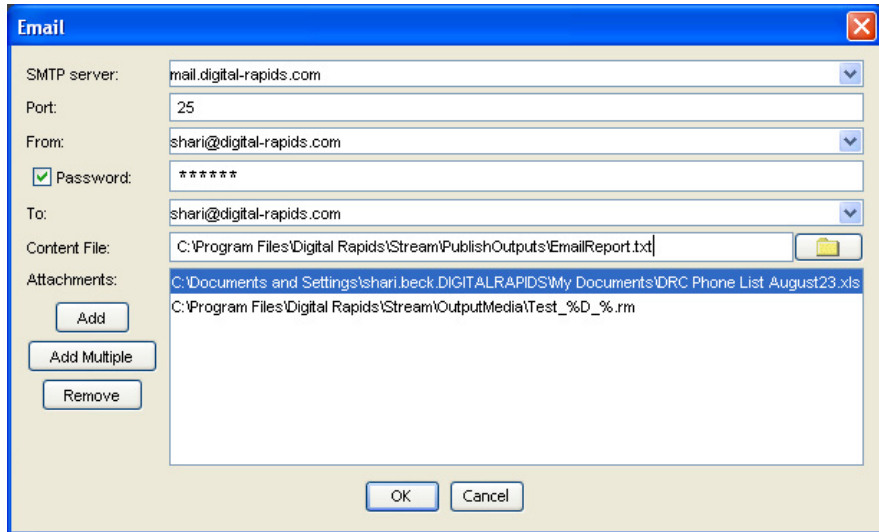


If you want to send some items to a different FTP site, you can click the Add button and create a new FTP Item with the new server information.

If you need to edit the information, you will edit the level that you have highlighted. For example, if you need to change information about the server, but not information about the folder or files, highlight the server information before you click the Edit button.

## E-mail (StreamPro)

Send an e-mail to tell someone that the encode is complete or to e-mail them a file.



Enter your SMTP mail server, the port used by the server, your e-mail address and your e-mail password. Enter the e-mail address of the person you want to send the e-mail to.

Enter a Content File to show in the body of your e-mail message. This can be a simple text file, or it could be a text output from the Stream Publish command, with information automatically filled in. (There is a sample Email.txt file in the Stream\PublishTemplates folder which you can use as a sample for the Publish Template. Set your Publish Output file and enter that as the Content File in the Email window.)

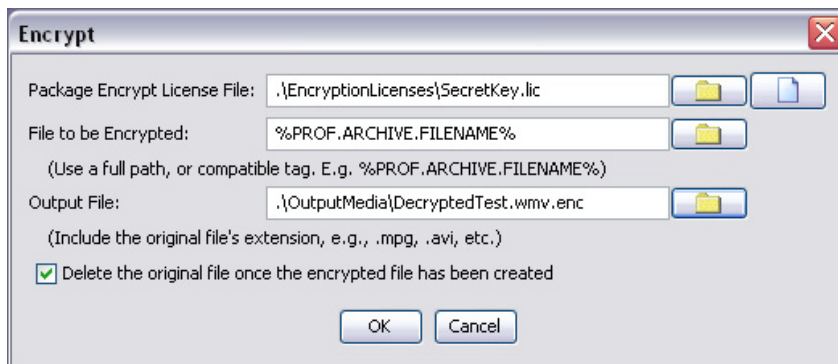
You may also send attachments with your e-mail. The attachments could include the video file you just encoded, or other supporting files. If you use System Tags in your Archive file name you can use the same System Tags in the e-mail attachment to send the file you just encoded.

## Encrypt

You can use this function to encrypt an archive file after the encode has finished using 192-bit AES encryption.

The first time you use this function you will need to create a license file. This is the file that will be also be used to decrypt the file. Enable the Encrypt function and click the Encrypt button.





Click the “Create a new package encryption license file” button. Type in a file name and click the Save button. You will then be asked to enter a password. This password is used to create the license file (it is not used to decrypt the file). Should you ever need to recreate the license file you will need to enter in the same password. You will be asked to confirm your password, and then the license file will be created.

If you already have a license file you would like to reuse, you can browse to this license file instead of creating a new one.

Enter the name of the file to be encrypted. Note that you must enter in the FULL PATH of the file to be encrypted (e.g., C:\Program Files\Digital Rapids\Stream\OutputMedia\MyFile.avi) or you may simply enter in a tag that includes the full path, i.e., %PROF.ARCHIVE.FILENAME%.

Enter an output file name including the file extension (e.g., avi, mpg, etc.). If you do not include the file extension, the decrypted file will not have a file extension. If you do not give a path for the output file it will go into the main Stream directory by default. If you would like it to go into the OutputMedia sub-folder be sure to include that in the path name, or use the browse button to select the encrypted file location.

Optionally, you may choose to “delete the original file once the encrypted file has been created”. That way the original, unencrypted file will not be accidentally left on the hard drive, and only the encrypted copy will be in the Output media folder.

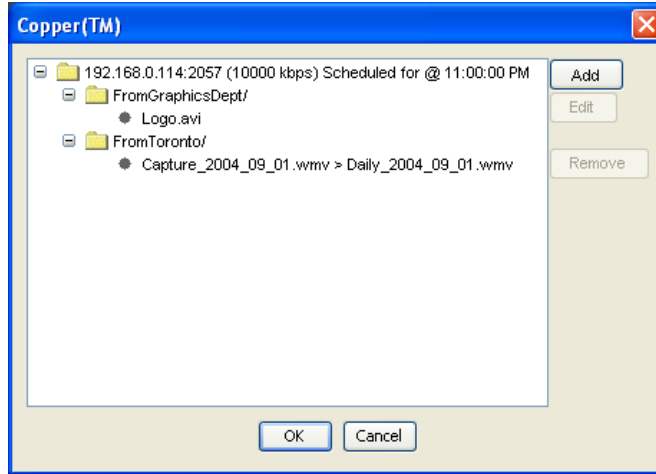
To decrypt the file choose Tools > Launch Package Decryptor. On the Package Decryptor window choose File > Package Decrypt. This will open a window that will prompt you to select the file you want to decrypt. Once you have selected an encrypted file, a second window will open that will prompt you to open the license file needed to decrypt the file. This is the same license file that was used to encrypt the file.

## Copper (Optional)

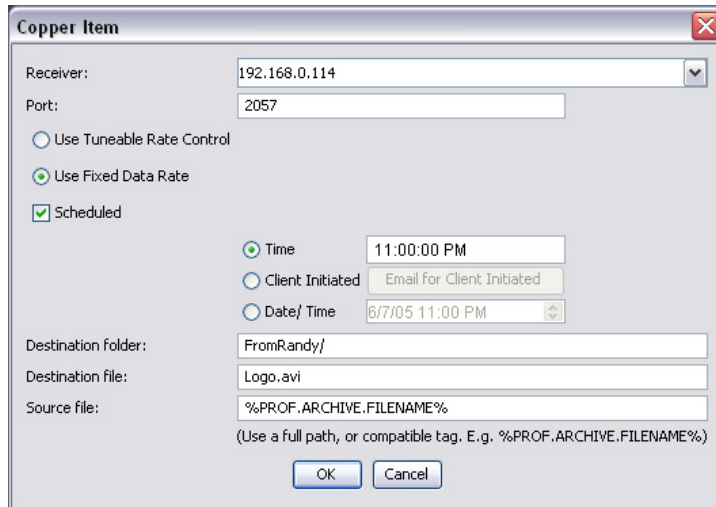
Use the Digital Rapids Copper plugin (an optional upgrade) to send the file.

The setup used to transmit a File using Copper is very similar to the setup when you are using FTP. However, the receiver must have a Copper Receiver running, and the sender must have a Copper Transmit license.

When you click on the Copper button the following window will open:



Click the Add button to add a Copper Item.



Fill in the IP Address of the Copper Receiver and the port that is open on the Copper Receiver. Choose between "Use tuneable rate control" and "Use fixed data rate". The maximum data rate that will be used for either of these options

is set in the Batch Processor window. To open the Batch Processor window double click on the gray Digital Rapids Batch Processor icon found in the system tray (in the lower right corner of your desktop). On the Batch Processor window select Options > Preferences.

If you want to schedule the transfer you can pick Time, Date/Time or Client Initiated. If you pick Client Initiated you must click the Email button and set up the e-mail information required to e-mail the client. If you are using Client Initiated you must also set the Transmitter IP Address in Stream's Options > Preferences on the Copper tab.

By default the Copper Receiver will place files in a "Received" folder. You can also set a destination sub-folder. Specify the Destination file name and the Source file name.

## Statistics

The Statistics tab displays real-time feedback **during** encoding. The display is context sensitive to the codec profile chosen in the codec profile list. Some codecs provide statistics during encoding and some do not. For example, you will see statistics when using Windows Media and Real Helix, but not during MPEG encoding.

Note that during encoding you will see the CPU usage and Buffer usage go up. Should the CPU usage exceed 100% the buffer will start to fill. When the CPU usage drops under 100% the buffer usage should drop back down. Should the buffer usage also reach 100% you will start to see the Dropped Frames counter go up.

If the CPU usage does not reach 100% but you still see the Buffer usage go up, your drives may not be able to keep up with the output data. If you have an HD board, make sure you are directing HD file outputs to the RAID and not to the C drive.

## Starting and Stopping Encoding

You can start and stop encoding using the buttons found in the lower right hand side of the interface. After you have clicked the Start button it will change to a Pause button. If you click the Pause button, it will change to a Resume button. If you click the Resume button it will continue recording to the same file.

You may also use triggers to start and stop encoding. To select which trigger you want to use click the Trigger button found directly above the Start button. You may start encoding based on a GPI trigger, a keystroke or LTC from a Deck (LTC trigger is a StreamPro feature). You may stop encoding based on a GPI trigger, duration or a keystroke.

For more information on setting up a GPI trigger and making GPI cables, please see “Using GPI Triggers” on page 55.

## Remote Control

You can use your Stream software to remotely control other **StreamEnterprise** systems. When you start the Stream software you will be in Local mode. Click the Local/Remote toggle button found in the upper right hand corner of the window to switch to Remote Control mode.

Your Stream control software can also be installed on any Java 1.4 enabled machine, including one with a Microsoft Windows XP, Mac OS X, or Linux operating system.

### Setting up the Remote Machine

The remote machine must have a StreamEnterprise software license. On the remote machine use the Start > Programs > Digital Rapids folder to start the following 3 programs:

- Stream Encoder Process

- Stream Server

- DR Batch Server

You will see 3 Digital Rapids icons in your system tray.

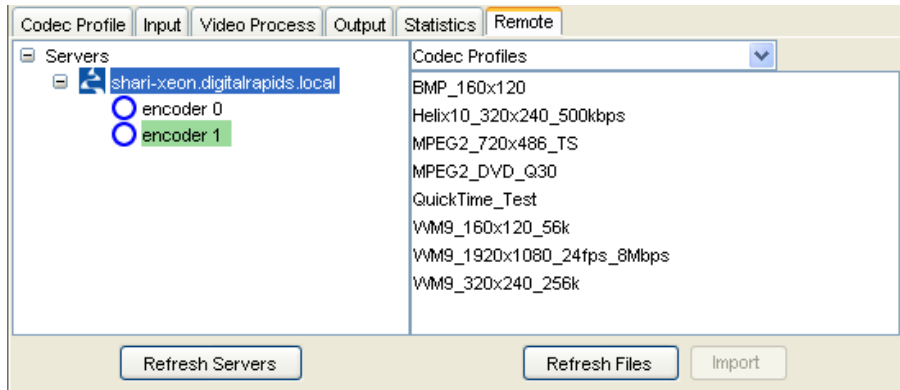
Your system is now in “remote mode” and ready to be controlled.

### Connecting to a Remote Server

Start the Stream control software and then click the Remote/Local toggle button to put the software into Remote Control mode.

Use the main menu to select Servers > Find Servers. When you see the server you want to connect to, highlight it in the list and click the Add button. This will close the Find Servers window.

The server you just added will appear on the Remote tab. Right click on the server name and select Update/Refresh. You will see a + mark next to the server name. Click on this + mark and you will see the encoders available for that server. (For a DRC-2500 or DRC-2000 you will see 2 encoders. For other DRC boards you will see one encoder.)



Right click on an encoder and select Connect. You will be asked for a password. The default password is password. Once you have entered the correct password the upper right hand corner of the window will show "Connected - Controlling server". You will also see the files in the server's default directories on the right hand side of the Remote panel.

## Using Remote Control

### Loading an existing project

Once you have connected to the remote server use the drop-down box on the right hand side of the Remote tab to select Projects. Then click on the project you want to use. All of the files and settings that were used when the project was created will be loaded.

If you adjust any of these settings, or you click on the Monitor Source button, you may see the status area at the upper right of the Stream window change from Connected to Project Modified and a Synchronize button will appear. Click on the Synchronize button to update the remote server with the remote control's settings.

## Creating and uploading a new project

You can use the codec profiles, source profiles, and other information that has been saved on the remote server to create a new project. If you are using a Windows OS you can also create codec profiles and upload them to the remote server (codec profiles for Stream can only be created on a Windows OS, not on a Mac).

## Video Preview

When you are using the remote control mode you will be able to preview a live video source or a video clip using the Monitor Source button. To adjust the settings, use the main menu to select Options > Preferences and click on the Remote Mode tab. You will be able to control the frame rate of the video preview along with other monitoring settings.

You will not be able to use the Stream interface to preview your video during encoding. If you want to preview the video during encoding you can set up a Broadcast stream and you can open the appropriate media player to monitor the stream as it is being encoded.

# Stream Software Feature Chart

Features are subject to change without notice.

<b>Input Functionality</b>	Stream 2.0	Stream Pro 1.5	Stream Pro 2.0	Stream Ent 2.0
Live Video Inputs	•	•	•	•
Live Audio Inputs (multi-channel)	•	•	•	•
AVI	•	•	•	•
MPEG1 & 2* and MPEG4	•	•	•	•
QuickTime File and Reference	•	•	•	•
Windows Media	•	•	•	•
WAV and MP3	•	•	•	•
Timecode (user or time of day)	•	•	•	•
Deck Control		•	•	•
Batch Mode (live capture, auto transcode)		•	•	•
Image sequence input (SD, HD, Film)		•	•	•
Multi-clip in to multi output (clip list)			2.0	2.0
Multi-clip in to single output (concatenate)			2.1	2.0
Watch Folder for clips to multi output			2.0	2.0
Watch Folder for clips to single output (concatenate)			2.1	2.0
OMF			2.2	2.2
MXF, AAF				2.2

\* MPEG1 & 2 optional for DRC-500, standard for higher boards

<b>Audio Feature Set</b>	Stream 2.0	Stream Pro 1.5	Stream Pro 2.0	Stream Ent 2.0
Multiple channel audio inputs	•	•	•	•
7-Band Parametric EQ	•	•	•	•
Dynamic Range Exp/Comp	•	•	•	•
Volume	•	•	•	•
Bass/Treble	•	•	•	•
Sample rate conversion	•	•	•	•

<b>Video Processing Controls</b>	Stream 2.0	Stream Pro 1.5	Stream Pro 2.0	Stream Ent 2.0
Hardware and Software Scaling	•	•	•	•
Hardware and Software Cropping	•	•	•	•
Graphic Overlay	•	•	•	•
Scaling and positioning of overlay	2.1		2.1	2.1
Horizontal & Vertical Filtering	•	•	•	•
Spatial noise reduction (2D) *	•	•	•	•
Temporal noise reduction (3D)	•	•	•	•
Hardware Proc Amp controls	•	•	•	•
Gamma Correction	•	•	•	•
Hardware deinterlacing	•	•	•	•

\* For DRC-500 to DRC-2500 boards





<b>Output Formats</b>	<b>Stream 2.0</b>	<b>Stream Pro 1.5</b>	<b>Stream Pro 2.0</b>	<b>Stream Ent 2.0</b>
Microsoft WM7, WM9	•	•	•	•
Real, Real Helix 9 & 10	•	•	•	•
QuickTime 6	•	•	•	•
MPEG 1 & 2* (4:2:0 and 4:2:2 to 80 Mbps)	•	•	•	•
MPEG4 **	•	•	•	•
WAV	•	•	•	•
Image Sequence		•	•	•
Thumbnail at in-point			2.0	2.0
AVI	•	•	•	•
AVI (DivX)	o	o	o	o
Multiple channel audio (WM9, WAV, AVI)	2.1		2.1	2.1
AC-3 (Dolby Digital)	o		o	o
MPEG2 streaming	o	o	2.0	2.0
Sorenson ACE: MP4, AVC (H.264), MOV, Flash (swf and flv), MP3 ***	o	o	2.0	2.0
Image Sequence at deck in-points			2.0	2.0
MPEG: force I-Frame at deck in-points			2.0	2.0
MXF, AAF				2.1

\* MPEG1 & 2 optional for DRC-500, standard for higher boards

\*\* MPEG4 With QuickTime or with Sorenson ACE in 2.0 StreamPro or StreamEnterprise

\*\* MPEG4 file creation only, not live streaming

\*\*\* File creation only, not live streaming

<b>Triggers and External Control</b>	Stream 2.0	Stream Pro 1.5	Stream Pro 2.0	Stream Ent 2.0
Duration Encode	•	•	•	•
GPI Trigger	•	•	•	•
Keystroke trigger	•	•	•	•
Java based remote interface				•
LTC Timecode trigger (Deck Listen)			2.0	2.0
VDCP (clip based deck emulation)				2.2

<b>Publishing</b>	Stream 2.0	Stream Pro 1.5	Stream Pro 2.0	Stream Ent 2.0
Template based publishing interface	•	•	•	•
Per codec simple log publishing	•	•	•	•
Per project log publishing (all codecs)		•	•	•
Persistent log publish file with Project tags				•
DVD Publishing *			2.0	2.0
E-mail notification			2.0	2.0
FTP distribution list			2.0	2.0
Copper distribution plugin for Stream	o		o	o

\* For DRC-500 requires the MPEG1 & 2 option (MPEG 1 & 2 standard for higher boards)



<b>Project Control</b>	Stream 2.0	Stream Pro 1.5	Stream Pro 2.0	Stream Ent 2.0
Multi-card control				•
Multi-card/server project monitoring				•
Live remote input video/audio monitoring				•
Remote deck timecode monitoring				2.0
SNMP monitoring of System Tags				2.2

<b>Other Functionality</b>	Stream 2.0	Stream Pro 1.5	Stream Pro 2.0	Stream Ent 2.0
WDM (Windows Driver Model)	•	•	•	•
VBI capture (Closed Caption Support)*	•	•	•	•
High level API	•	•	•	•
Copper Receiver (2 Mbps)**	2.0		2.0	2.0
Encrypt/Decrypt			2.1	2.1

\* With DRC-1000 board or higher

\*\* Copper Receiver at higher data rates optional

- = feature in version 1.5
- 2.0 = feature in version 2.0
- 2.1 = feature in version 2.1
- o = optional feature

**Features are subject to change without notice.**



# System Tags

Tags can be used to add automatically generated text strings into file names, reports, html pages, etc.

System Tags are pre-programed tags that can use data that is available from the system at the end of an encode, such as the date, time, file name, CPU usage, number of dropped frames, etc.

Filename example: C:\Output\%BN%-%R%-%T\_%.wmv uses the tags for Project name (%BN%), resolution (%R%), and time (%T\_%). The output file name would look like C:\Output\MyProject-320x240-4\_10\_51\_PM.wmv

Encoding a second file without changing any settings within the Stream app would generate a unique filename encoded with the current time. By using a combination tags you can create a default output filename which will automatically generate a unique filename.

There is a sample VideoEncodingReport.html in the Stream\PublishTemplates folder that uses system tags to generate a report.

There is a sample Player\_WM\_Template.html in the Stream\PublishTemplates folder that uses system tags to generate a web page that includes an embedded WM Player that will automatically link to the archived WMV file.

Profile-level Tags (Stream-StreamPro)	Project-Level Tags (StreamEnterprise)	Description
<b>System</b>		
%SYS.IPADDR.COUNT%	%SYS.IPADDR.COUNT%	Number of NICs
%SYS.IPADDR.##%	%SYS.IPADDR.##%	IP address (# represents NIC)
%SYS.USER%	%SYS.USER%	User logged in
<b>Profile</b>		
%D%		Start date (locale dependant)
%D_%		(safe for use in filenames)

%PROF.SDATE%	%PROF.#.SDATE%	Start date (ISO-8601 YYYY-MM-DD)
%PROF.EDATE%	%PROF.#.EDATE%	End date (ISO-8601 YYYY-MM-DD)
%T%		Start time (locale dependant)
%T_%		(safe)
%PROF.STIME%	%PROF.#.STIME%	Start time (ISO-8601 HH:MM:SS)
%PROF.STIME_%	%PROF.#.STIME_%	(safe)
%PROF.ETIME%	%PROF.#.ETIME%	End time (ISO-8601 HH:MM:SS)
%PROF.ETIME_%	%PROF.#.ETIME_%	(safe)
%PROF.DUR %	%PROF.#.DUR %	Duration of clip
%R%, %PROF.RES%	%PROF.#.RES%	Output resolution
%PROF.RES.VERT%	%PROF.#.RES.VERT%	Output vertical resolution
%PROF.RES.HOR%	%PROF.#.RES.HOR%	Output horizontal resolution
%BR%, %PROF.BIT%	%PROF.#.BIT%	Encoder Bitrate
%PN%, %PROF.NAME%	%PROF.#.NAME%	Profile Name
%OD%, %PROF.ARCHIVE.FILENAME.DIR%	%PROF.#.ARCHIVE.FILENAME.DIR%	Output Directory
%OF%, %PROF.ARCHIVE.FILENAME.FILE%	%PROF.#.ARCHIVE.FILENAME.FILE%	Output Filename
%OE%, %PROF.ARCHIVE.FILENAME.EXT%	%PROF.#.ARCHIVE.FILENAME.EXT%	Output Extension
%FILENAME.NUMBER.#%		Auto incrementing number for archive filename. Start at '#', include leading '0's

%PROF.ARCHIVE.FILENAME%	%PROF.#.ARCHIVE.FILENAME%	Output filename with full path and extension
%PROF.ARCHIVE.DISKSPACE%	%PROF.#.ARCHIVE.DISKSPACE%	Free disk space
%PROF.BROADCAST.SERVER%	%PROF.#.BROADCAST.SERVER%	Format will be specific to codec
%PROF.BROADCAST.PORTS%	%PROF.#.BROADCAST.PORTS%	Format will be specific to codec (could be list of many ports or port ranges,etc.)
%PROF.BROADCAST.MODE%	%PROF.#.BROADCAST.MODE%	Format will be specific to codec (PUSH, PULL, MULTICAST, etc.)
%PROF.AUD.SRC.CH.COUNT%	%PROF.#.AUD.SRC.CH.COUNT%	Number of audio channels
%PROF.AUD.SRC.NAME.#%	%PROF.#.AUD.SRC.NAME.#%	Name of audio source
%PROF.AUD.SRC.VOL.#%	%PROF.#.AUD.SRC.VOL.#%	Volume Gain
%PROF.AUD.SRC.SAT%	%PROF.#.AUD.SRC.SAT%	Audio Saturation
%PROF.AUD.SRC.BASS%	%PROF.#.AUD.SRC.BASS%	Bass Gain
%PROF.AUD.SRC.TREB%	%PROF.#.AUD.SRC.TREB%	Treble Gain
%PROF.PUBLISH.TEMPLATE%	%PROF.#.PUBLISH.TEMPLATE%	Publishing template filename
%PROF.PUBLISH.OUTPUT%	%PROF.#.PUBLISH.OUTPUT%	Publishing output filename
<b>Project</b>		
%PROJ.PROFCOUNT%	%PROJ.PROFCOUNT%	Number of profiles
%BN%, %PROJ.NAME%	%PROJ.NAME%	Project Name
%PROJ.SDATE%	%PROJ.SDATE%	Project Start Date (ISO-8601 YYYY-MM-DD)

	%PROJ.EDATE%	Project End Date (ISO-8601 YYYY-MM-DD)
%PROJ.STIME%	%PROJ.STIME%	Start time (ISO-8601 HH:MM:SS)
%PROJ.STIME_%	%PROJ.STIME_%	(safe)
	%PROJ.ETIME%	End Time (ISO-8601 HH:MM:SS)
	%PROJ.ETIME_%	(safe)
	%PROJ.CPU.PEAK%	Peak CPU usage
	%PROJ.CPU.AVG%	Average CPU usage
	%PROJ.PUBLISH.TEMPLATE%	Publishing template filename
	%PROJ.PUBLISH.OUTPUT%	Publishing output filename
<b>Deck</b>		
%DECK.IP%, %DIP%	%DECK.IP%	Deck InPoint
%DECK.IP_%, %DIP_%	%DECK.IP_%	(safe)
%DECK.OP%, %DOP%	%DECK.OP%	Deck OutPoint
%DECK.OP_%, %DOP_%	%DECK.OP_%	(safe)
%DECK.TNAME%, %DTN%	%DECK.TNAME%	Deck Tape Name
%DECK.CNAME%, %DCN%	%DECK.CNAME%	Deck Clip Name
%DECK.COMMENT%, %DCM%	%DECK.COMMENT%	Deck Comment
%DECK.COMPORT%	%DECK.COMPORT%	Deck Com Port
<b>Input</b>		
%SRC.TYPE%	%SRC.TYPE%	Source type (live, deck control, file, etc.)
%AUD.SRC.FILENAME%	%AUD.SRC.FILENAME%	Audio source filename





%AUD.SRC.FILENAME.DIR%	%AUD.SRC.FILENAME.DIR%	Directory of audio source file
%AUD.SRC.FILENAME.FILE%	%AUD.SRC.FILENAME.FILE%	Name portion of audio source file
%AUD.SRC.FILENAME.EXT%	%AUD.SRC.FILENAME.EXT%	Audio source file extension
%AUD.SRC.RATE%	%AUD.SRC.RATE%	Audio sample rate
%VID.SRC.INPUT%	%VID.SRC.INPUT%	Video source (component x, composite x, etc.)
%VID.SRC.FILENAME%	%VID.SRC.FILENAME%	Video source filename
%VID.SRC.FILENAME.DIR%	%VID.SRC.FILENAME.DIR%	Directory of video source file
%VID.SRC.FILENAME.FILE%	%VID.SRC.FILENAME.FILE%	Name portion of video source file
%VID.SRC.FILENAME.EXT%	%VID.SRC.FILENAME.EXT%	Video source filename extension
%VID.SRC.LOCK%	%VID.SRC.LOCK%	Lock to video state (True / False)
%VID.SRC.STD%	%VID.SRC.STD%	Video standard
%VID.SRC.COLOR%	%VID.SRC.COLOR%	Colorspace
%VID.SRC.ASPECT%	%VID.SRC.ASPECT%	Aspect Ratio
	%VID.SRC.FRAMESDROP%	Video source frames dropped
	%VID.SRC.BUFF.PEAK%	Video source buffer usage (peak)
	%VID.SRC.BUFF.AVG%	Video source buffer usage (average)
<b>Video</b>		
%VID.DEINT%	%VID.DEINT%	De-interlace True / False
%VID.CROP.TOP%	%VID.CROP.TOP%	Crop (top)

%VID.CROP.BOT%	%VID.CROP.BOT%	Crop (bottom)
%VID.CROP.LEFT%	%VID.CROP.LEFT%	Crop (left)
%VID.CROP.RIGHT%	%VID.CROP.RIGHT%	Crop (right)
%VID.BRIGHT%	%VID.BRIGHT%	Brightness
%VID.CONT%	%VID.CONT%	Contrast
%VID.HUE%	%VID.HUE%	Hue
%VID.CGAIN.BLUE%	%VID.CGAIN.BLUE%	Color gain (blue)
%VID.CGAIN.RED%	%VID.CGAIN.RED%	Color gain (red)
%VID.CBAL.BLUE%	%VID.CBAL.BLUE%	Color balance (blue)
%VID.CBAL.RED%	%VID.CBAL.RED%	Color balance (red)
%VID.FILT.VERT%	%VID.FILT.VERT%	Vertical filtering
%VID.FILT.HOR%	%VID.FILT.HOR%	Horizontal filtering
%VID.NR.SP%	%VID.NR.SP%	Spatial noise reduction
%VID.NR.TEMP%	%VID.NR.TEMP%	Temporal noise reduction
%GRAPHIC.FILENAME%	%GRAPHIC.FILENAME%	Filename
%GRAPHIC.FADE.TIME%	%GRAPHIC.FADE.TIME%	Auto fade duration
%GRAPHIC.FADE.AMT%	%GRAPHIC.FADE.AMT%	Overlay transparency
<b>Misc</b>		
	APP.HARDWARE.DEVICE	The device number (0-based) controlled by the encoder
	APP.HARDWARE.STREAM	The stream number (0-based) on the device controlled by the encoder
%User Defined%	%User Defined%	User Defined



# Troubleshooting

## **Checking SD hardware**

If you suspect that you have a problem with your Digital Rapids board, you can run the Test App that was installed with your Stream software. Open the Stream folder (by default it is in C:\Program Files\Digital Rapids\Stream). If you have a DRC-500 board run the DRIdahoTest.exe file. If you have a DRC-1000, 1500, 2000 or 2500 run the DRColoradoTest.exe file. Run the automated test, and if you see any failures then please contact Digital Rapids Support.

## **Unable to select live source as an input type**

Your DRC hardware has not been properly installed or drivers have not been properly installed. To check on the Digital Rapids drivers in Windows XP, right click on My Computer and choose Manage. Click Device Manager. Click the + symbol next to Digital Rapids Devices. Right click on the Digital Rapids device and choose Properties. The Device Status will be displayed on the Device Properties window.

## **Codec Profile > Create only shows Windows and Real as options**

Additional options such as Quicktime, Direct Show and any purchased options will only be enabled once the product has been registered. You can register your product on line from the Digital Rapids web site by selecting Tools > Register Online from the Stream menu.

## **When starting Stream software, a message appears saying that the hardware is disabled.**

The product has not been registered within 30 days of the software installation and your grace period has expired. You can register your product on line from the Digital Rapids web site by selecting Tools > Register Online from the Stream menu.

## **Dropping frames when encoding video**

Not all codecs perform well in a real time environment. Codec factors include file resolution (width x height), data rate, encoder complexity, and codec type. System factors include CPU, memory PCI bandwidth and hard drive speed.

You should be able to encode a full sized (720x480 or 720x576) uncompressed AVI on most systems. Other efficient codecs include WM9 and MPEG1 and MPEG2 (MainConcept).

Less efficient codecs include QuickTime, Real Helix, MPEG4 and Flash (with Sorenson ACE). With these less efficient codecs you should be able to encode to a 320x240 sized file in real time on most systems.

Should you need to encode to a full sized clip on a system that cannot encode to the file format you want in real time, encode to an uncompressed AVI in real time, and then transcode to your final output format.

When encoding the CPU status at the bottom of the Stream window will climb up as you put more demands on the system. If the CPU usage reaches 100% then the buffer will start to fill. If the buffer reaches 100% then the encoded file will start to drop frames.

### **Can't preview the audio**

You will not be able to previewing the audio until you have at least one codec profile in your list. If you have more than one audio channel enabled in your source profile, each codec profile in your list can be assigned an audio channel independent of the other codec profiles using the Audio drop-down box on the input tab.

### **Video preview is not updating**

Occasionally you will change a setting and the video preview will not update correctly. If this happens toggle the Monitor Source button off then on again.

### **Video preview stops during encoding**

Check to make sure you have selected Video Preview > Source. The Video Preview > Encoder option only works for some codecs.

### **Buffer usage is higher than normal during encoding**

Check to make sure you have selected Video Preview > Source. The Video Preview > Encoder option requires some buffering so it will increase your Buffer usage.

### **Can't encode: check codec profile**

When you can't encode you will normally see a red X next to the codec profile. Double click the profile to open an error window or hover your mouse over the codec profile to see the message as a tool tip. Common problems are no archive file name or other output modes selected, or trying to encode only video with a codec that is expecting video and audio.

### **Unable to use MPEG files as a DirectShow Media Files Input source**

A DirectShow filter for MPEG has not been installed on the system. Note that if you have install the MainConcept option with your Digital Rapids Stream you will have an MPEG codec. If you have purchased a DRC-500 without the MPEG option you can download codecs that include a DirectShow filter for MPEG from [http://www.free-codecs.com/Video\\_Codecs.htm](http://www.free-codecs.com/Video_Codecs.htm).

### **Can't connect to the deck or can't start the deck capture**

The Logger and Deck Control window have changed slightly from Stream 1.5.

When you run the Logger as a stand-alone app you will see a Configuration button that will allow you to create a deck configuration file (with port, timecode type, etc. specified). When you run the Logger from the Deck Control window the Logger will use the deck configuration you set in the Deck Control window (Options > Configure).

You now start the capture using the Start button on the main interface.



# Real Time Encoding

When you have selected Live Source or Deck Control as your Media Selection type, you will be using them to do a live, real time encode from a video input.

You will find that some formats use more CPU and Buffer space than others. Keep an eye on the status bar at the bottom of your window. Once your CPU and Buffer space has reached 100% you will start dropping frames.

The following results were obtained using a system with dual Xeon 2.80 GHz CPUs with 1 GB of RAM:

720 x 480	MPEG2 for DVD add WM9 @ 1500 kbps	CPU@ 14% CPU@ 70%
720 x 480	Uncompressed AVI Add MPEG2 for DVD	CPU@ 10% CPU@ 25%
320x240	512 kbpsWM9 add RM Helix 9 add QuickTime add MP4 (Sorenson)	CPU@ 30% CPU@ 60% CPU@ 80%
WM9	720x480 @1500 kbps 320x240 @ 300 kbps	CPU@ 70%
MPEG1	720x480, 3 Mbps 320x240, 512 kbps	CPU@ 17%
RealMedia	320x240 512kbps 176x144 176 kbps	CPU@ 30%
RealMedia Helix 9	720x480 cannot encode in real time	
QuickTime Sorenson	720x480cannot encode in real time	

**NOTE:** Results **will vary** depending on the specific footage being encoded.

The following results were obtained using a system with dual Xeon 3.6 GHz CPUs, 2 GB of RAM and Ultra320 SCSI drives.

<u>Single Codec</u>	CPU Ave (Peak)	Buffer Ave (Peak)
WM9 (720x480, 1500k CBR)	31 (49)	14 (16)
QuickTime, Codec: None (RGB) (640x480) (Note: Depth: millions of colors)	17 (42)	12 (32)
Sorenson ACE MOV (720x480, 1250kbps VBR)	79 (95)	1 (16)
Sorenson ACE MPEG4 (536x402, 512kbps, VBR)	51 (59)	10 (63)
Sorenson ACE AVC H.264 (320x240, 800kbps, VBR)	51 (89)	0 (5)
Sorenson ACE SWF (560x420, 950kbps, VBR)	49 (67)	2 (24)
Sorenson ACE FLV (560x420, 1024kbps, VBR)	52 (60)	10 (50)
Helix 10 (720x480, 1500kbps VBR) (note: encoding complexity set to Low)	45 (69)	1 (3)
Helix 9 (720x480, 1500kbps VBR) (Note: Helix default only uses one cpu; In Tools>Real Media – Helix > Settings uncheck option to restrict Helix to one cpu)	57 (91)	0 (2)
<u>Multiple Codecs</u>	CPU Ave (Peak)	Buffer Ave (Peak)
WM9 (720x480, 1500kbps CBR)	76 (100)	13 (19)
WM9 (480x360, 750kbps CBR)		
WM9 (320x240, 512kbps CBR)		
MPEG2 for DVD (720x480, 6000kbps VBR)	70 (82)	19 (75)
WM9 (720x480, 1500kbps CBR) (Note: MPEG2 encoder quality set to 40)		
Helix 10 (480x360, 768kbps CBR)	81 (100)	0 (12)
Helix 10 (320x240, 512kbps CBR) (Note: encoder processes complexity set to medium)		
WM9 (320x240, 512kbps CBR)	82 (99)	2 (4)
Helix 10 (320x240, 512kbps CBR)		
Sorenson MOV (320x240, 512kbps VBR)		





# Using Telnet

```
Telnet NET-SERVER 43770
DRC RS1
> password password
OK:Authentication accepted.
> help
```

Commands available:

```
about <app#> : get hardware info
brand <app#> : get application brand
hardwarename <deviceId#> : gets the name of a given hardware device
isencoding <app#> : determines if an application instance is encoding
islaunched <app#> : determines if the application # is running on the server
```

The following commands require authentication:

```
audiotime - get current audio time
captureprofiles - list available capture profiles
chooseprofile - selects a profile within the project for preview
getcapturetime - sends the timestamp of a capture profile
getgpiptime - sends the timestamp of a GPI profile
getoverlaytime - sends the timestamp of an overlay file
getsourceduration - returns the duration of the source media, if known
gettemplatetime - sends the timestamp of an publishing template file
gpiprofiles - list GPI profiles available on the server
graphicfadedown - decreases graphic overlay opacity
graphicfadeup - increases the graphic overly opacity
loadcaptureprofile - download a capture profile
loadcodeprofile - downloads a codec profile file
loadgpiprofile - downloads a GPI profile
loadoverlay - downloads an overlay file
loadproject - downloads a project file
loadtemplate - downloads a template file
overlays - returns the list of overlay files on the server
projects - list available projects
reboot - reboot the server
savecaptureprofile - upload a capture profile
savegpiprofile - Uploads a GPI profile to the server
saveoverlay - uploads an overlay to the server
saveproject - Upload a project to the server (see command response for
details)
savetemplate - uploads a template to the server
```

setbass - sets the bass level  
setbluebalance - Sets video procamp blue balance control  
setbluegain - Sets video procamp blue gain control  
setbrightness - Sets video procamp brightness control  
setchromagain - Sets video procamp chroma gain (saturation) control  
setcontrast - Sets video procamp contrast (luma gain) control  
setcropping - adjusts the cropping of the video frame  
setdeinterlace - turns de-interlacing on or off  
setdrce - sets the dynamic range compression/expansion  
seteq - sets eq parameters  
setgraphicenable - sets the graphic overlay  
setgraphicfadedur - set the fade duration for graphics  
setgraphicmixer - sets the transparency of the graphics overlay  
sethorzfilt - sets the amount of horizontal filtering  
sethue - Sets video procamp hue control  
setpreview - starts or stops preview mode - frames can be polled on the  
    preview port  
setpreviewq - adjusts the quality (datarate) used for monitoring  
setredbalance - Sets video procamp red balance control  
setredgain - Sets video procamp red gain control  
setspatialnr - sets the amount of spatial noise reduction  
settemporalnr - sets the amount of temporal noise reduction  
settreble - sets the treble level  
setvertfilt - sets the amount of vertical filtering  
setvolume - set the volume level of an audio channel  
templates - returns the list of publishing template files on the server  
videotime - get current video time  
codeprofiles - list available codec profiles  
loadprofile <file> - downloads an input profile file  
saveprofile <file> - uploads an input profile to the server  
isprofileencoding <app#> <prof#> - determines if the given profile is encoding  
getproject <app#> - get the currently loaded project file on the server  
setproject <app#> <filename> - load the given project file on the server  
start <app#> - start encoding  
stop <app#> - stop encoding  
error <app#> <prof#> - get error info for profile #  
stats <app#> <prof#> - get statistics for profile #  
dropped <app#> - get number of dropped frames  
fps <app#> - get current frame per second  
getnexttape <app#> - get the tape name the encoder is waiting for  
iswaitingfortape <app#> - return YES if encoder is witing for a tape change  
tapeready <app#> <tapename> - signals a tape change  
bye - disconnect

OK

```
> stats 0
Timestamp    Frames Locked
00:04:39    8
Media Target Bitrate Current Bitrate Average Bitrate Dropped Sample Count
V      210 kbps      0 kbps 0 kbps 0
```

```
OK
> bye
Disconnected.
```

Connection to host lost.

```
C:\>
```



# Using GPI Triggers

GPI triggers are physical connections between two pieces of equipment. Typically GPI triggers are based on a change of state on a monitored pin of the serial port. For instance you could create a GPI trigger which was operated by the alarm closure of an alarm system, or a port on a piece of broadcast equipment.

Because of the variety of configurations possible, each GPI cable should be custom manufactured by someone who understands both pieces of equipment to be connected. If you are not comfortable reading electrical schematics, and building custom cables you should provide the included schematic to a qualified technical engineer. (See the end of this section for a GPI Schematic.)

## GPI Configuration

Stream supports GPI inputs which can be configured in a variety of ways. Both COM ports are supported and the state of the trigger pins can be configured to match most situations.

To configure your GPI input select the Trigger button from the lower right of the main interface. Click on the GPI tab. Create a new GPI profile by clicking on the New Profile button (at the end of the drop-down box). You will be asked to set your Com Port, GPI Switch (CTS or DSR) and the Trigger State (Closed or Open). You can then use the Save As button to save the GPI profile.

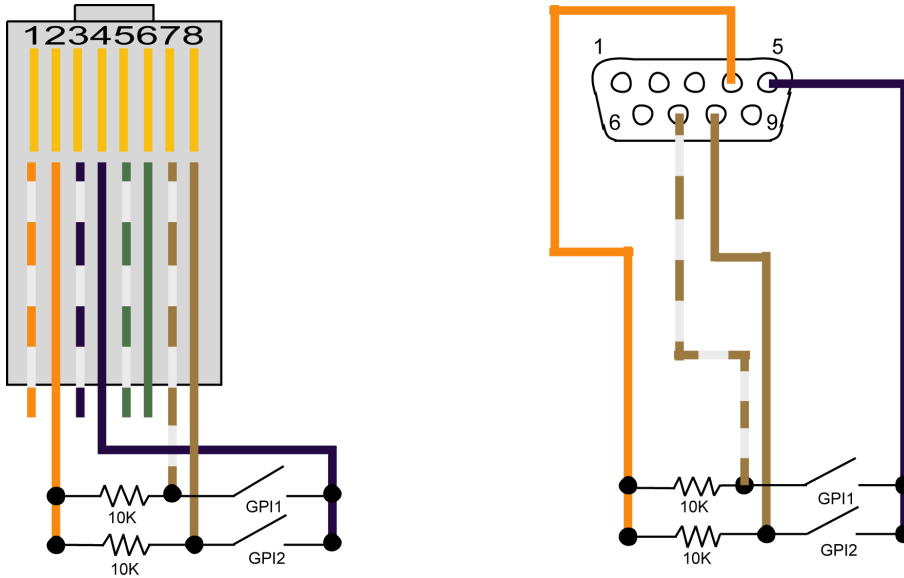
The GPI profile settings will be displayed under the drop-down box. Note that there are separate GPI settings for Starting and Stopping encoding. Set up both states. Choosing 'Okay' on the Trigger Settings window will arm the system for GPI triggering.

If you do not want to use GPI triggers return to the GPI tab and use the drop-down box to choose Disabled from the GPI profile list.

Once you have created GPI profiles you will be able to choose an existing GPI profile using the drop-down profile list. After you have selected an existing GPI profile choose OK to arm the GPI trigger.

## GPI Schematic

Note: GPI requires the installation of a 10k ohm resistor between DSR and DTR and between CTS and DTR. This can be installed in-line in the cable where it is convenient.



Signal Name	Signal Color	RJ45	DB9	Miranda Little Red LTC Reader
SIN	Green/White	6	2	N/C
SOut	White/Green	3	3	N/C
DTR	Orange/White	2	4	N/C
GRND	Blue/White	4	5	White/Violet
DSR	White/Brown	7	6	Violet
RTS	White/Orange	1	7	N/C
CTS	Brown/White	8	8	White/Orange
RIN	White/Blur	5	9	N/C

# Stream System Requirements

## **System with Digital Rapids SD Hardware and Stream 2 Software**

CPU: Minimum Pentium 4 Intel processor

Recommended CPU: Dual Intel processors at 2 GHz or higher  
(newer Celerons and PentiumM are also acceptable)

Note: The number of streams that you can encode in real time (and their resolution/bit rate) is dependant on the speed of your CPU.

Memory: 512MB PC-133 SDRAM

PCI slot: Recommended: 64 bit 66MHz PCI slot.

Digital Rapids boards will also work in 32 bit 33MHz PCI slots or PCI-X slots.  
If used in a PCI-X slot, the bus speed will fall back to 66MHz.

Hard Drive: 7200 RPM IDE hard drive (or higher RPM drive)

Graphics Display card: VGA card supporting Direct Show with Minimum: 32MB RAM, Recommended: 128MB RAM or higher; Minimum: 1024 x 768 resolution

Operating System: Recommended: Windows XP or Windows Server 2003  
(Digital Rapids boards will also work on Microsoft Windows 2000.)

DirectX:

Windows XP: DirectX 8.1 or higher is required. Note: Windows XP includes DirectX 8.1. DirectX 9 or higher recommended.

## **If you are using Windows 2000 with Digital Rapids Hardware**

**BEFORE** you install the Digital Rapids hardware drivers:

You must install Service Pack 4. You can download it from Microsoft.

You **MUST** install DirectX 9 or higher **BEFORE** you install the Digital Rapids hardware. It is on the Digital Rapids CD or you can download it from Microsoft.





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