Matrox DigiSuite

Getting the Most from DigiSuite

July 31, 1999
10502-301-0400
PDF

matrox
Digital Video Solutions

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Welcome to DigiSuite

This chapter presents an overview of Matrox DigiSuite, the contents of this manual, and an introduction to DirectShow and Video for Windows.

Chapter

1

Introducing the Matrox DigiSuite product family

The Matrox DigiSuite product family, which now includes DigiSuite, DigiSuite LE, and DigiSuite DTV, offers a range of high-performance hardware and software tools to make your Windows NT workstation the ideal platform for realtime nonlinear editing, digital compositing, paint, titling, 3D animation recording, audio sweetening, and DVD authoring.

All three platforms share an award-winning realtime feature set, a variety of unique productivity tools, and seamless support for all the leading Windows NT content creation applications. Seamless software integration is insured through support for the Microsoft-standard enhanced AVI file format compatible with DirectShow and Video for Windows (VFW) applications.

About this manual

This manual explains how to use the free software included with DigiSuite.

- Chapter 1, "Welcome to DigiSuite," provides an overview of DigiSuite and the contents of this manual. It also explains some basic differences between DirectShow and Video for Windows.
- Chapter 2, "Displaying Video in a Window with Matrox DigiView," explains how to use the Matrox DigiView program to display video in a window on your computer's monitor.
- Chapter 3, "Working with Clips Using DigiTools," describes how to use the DigiTools software to capture and play back clips, record clips onto tape, and perform conversions between file formats.
- Chapter 4, "Enhancements to 3D Studio MAX," explains how to create high-quality alpha-keyed animations with the DigiSuite 3DS MAX plug-in.
- Chapter 5, "Enhancements to LightWave 3D," explains how to create high-quality alpha-keyed animations with the DigiSuite plug-in for LightWave 3D (version 5.5 or later).
- Chapter 6, "Enhancements to Adobe After Effects," explains how to use the Adobe After Effects plug-in that comes with DigiSuite so that you can display the contents of your Composition window on your NTSC or PAL Program monitor.
- Chapter 7, "Creating DigiSuite Effects," explains how to use the DigiSuite Effects plug-in with your nonlinear editing program.
- Chapter 8, "Using DigiSuite with Video for Windows Programs," provides information you need to know when using Video for Windows programs to render, capture, and play back material on DigiSuite.

- Appendix A, “DigiSuite Data Rates and Disk Space Requirements,” provides the approximate disk space requirements for capturing or rendering material at various video and audio qualities.
- Appendix B, “Editing in 16:9 Format on DigiSuite,” explains how to create a production in the wide screen 16:9 format on DigiSuite.
- Appendix C, “DigiSuite Glossary,” serves as a reference for many of the basic terms in the DigiSuite documentation.
- Appendix D, “Customer Support,” lets you know how to contact us for customer support.

Assumptions

This manual assumes the following:

- You are familiar with video editing and how to use VTRs.
- You know how to use a mouse and perform basic operations in Windows NT.
- You have installed all required DigiSuite hardware and software as explained in the installation manual for your DigiSuite system.

Conventions

You should be aware of the following style conventions in this manual:

- Menus and commands that you need to choose are displayed in the form **Menu | Command**. For example, **File | Save** means click **File** in the menu bar, then click **Save** in the menu that appears.
- The names of keys are displayed in small capital bold letters, such as the **CTRL** key.
- A plus (+) sign is used to indicate combinations of keys and/or mouse operations. For example, **CTRL+C** means to hold down the **CTRL** key while pressing the **C** key, and **SHIFT+click** means to hold down the **SHIFT** key while you click an item with the mouse.
- The names of manuals, files, and folders are shown in *italics*.

Overview of DirectShow and Video for Windows

DigiSuite harnesses the power of DirectShow, while remaining compatible with Video for Windows. Although it is not essential to understand these technologies, you may be able to make better use of DigiSuite if you read the following sections.

What is DirectShow?

DirectShow is Microsoft's new multimedia architecture for the Windows NT operating system. DigiSuite uses DirectShow's advanced technology to create and play back broadcast-quality video with effects on your PC in real time.

What is Video for Windows?

Video for Windows (VFW) is Microsoft's original multimedia architecture that introduced the AVI (Audio/video Interleaved) file format in the Windows 3.1 environment. This file format is used by Windows editing programs that capture, edit, and play back audio/video sequences.

VFW has now been superseded by DirectShow. Since VFW is such a widely used architecture, Microsoft maintained and built on the AVI file format to allow existing files to be playable in DirectShow environments.

About .avi files and the Microsoft standard

The AVI file format is used by both VFW and DirectShow editing programs. What needs to be understood about the **original** AVI file format is that not all of the files were playable on all systems.

The *.avi* files you create on your DigiSuite system adhere to the Microsoft standard for VFW and DirectShow files, meaning you can edit and play back your *.avi* files on any other compatible system, without conversions and without compromises.

Video codecs

Video editing programs and hardware use codecs (compressor-decompressors) to create and play back *.avi* files. DigiSuite's powerful codecs allow you to capture video at various qualities, sample audio in Wave format, and edit and play back those files on any compatible system.

Motion-JPEG compression

On a full DigiSuite system (that is, a system equipped with DigiMix and DigiMotion cards), you can capture video using Motion-JPEG *mathematically lossless compression*. With this compression method, the quality of the video is **identical** to uncompressed video, but requires less disk space. This is comparable to files compressed with PKZIP, a program commonly used to save disk space on computers. Although the

compressed files take up less space than the originals, they don't lose any digital information.

When you capture video using mathematically lossless compression, you get the same quality as your source video (that is, uncompressed quality), but with the added benefit of reducing your storage requirements.

Although DigiSuite LE does not support uncompressed-quality video, you can capture broadcast-quality video on DigiSuite LE at data rates up to about 15 megabytes (MB) per second, giving you compressed video that's virtually lossless.

DV and MPEG-2 formats

On DigiSuite DTV, you can capture video to various DV formats, such as DVCAM, DVCPRO, and DVCPRO50, or MPEG-2 intra-frame 4:2:2P@ML format. You can also choose to export video to an *.avi* file using the MPEG-2 inter-frame (IBP) MP@ML format, which is suitable for broadcast transmission and distribution on DVD, such as for use with Sonic Solutions' DVDit! authoring program.

Benefits of DigiSuite and DirectShow

Some of the benefits of using DigiSuite, DirectShow, and the extended AVI file format include:

- Compatibility with all software and hardware that use the Microsoft standard for VFW and DirectShow *.avi* files.
- Real-time capture and playback of broadcast-quality video.
- Unlimited *.avi* file size.

Notes

Displaying Video in a Window with Matrox DigiView

This chapter explains how to use the Matrox DigiView program to display video in a window on your computer's monitor. This feature is available if you have DigiDesktop, or you have DigiSuite LE or DigiSuite DTV with any other Matrox display card (such as Millennium, G400, etc).

Chapter

2

Using the Matrox DigiView program

If your system includes DigiDesktop, or you have DigiSuite LE or DigiSuite DTV with any other Matrox display card (such as Millennium, G400, etc.), you can run the Matrox DigiView program to display a live video window on your computer's monitor. You can use this window instead of a Program monitor to display your DigiDesktop analog video input, or display video clips and effects played back from DigiTools or an editing program such as Speed Razor RT.

Important Before running Matrox DigiView, run **Matrox Display Properties** in the Windows NT Control panel and set your display properties as follows:

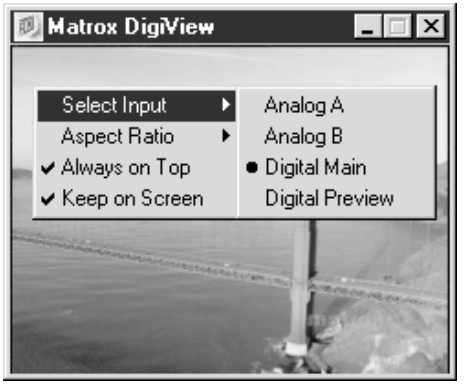
- If you have DigiDesktop, set the color palette to **True Color (24-bit)**.
- If you have DigiSuite LE or DigiSuite DTV with a Matrox display card other than DigiDesktop, set the color palette to either **High Color (16-bit)** or **True Color (32-bit)**.

If you don't have DigiDesktop, you must also select a supported display area resolution as shown in the "Table of maximum resolutions for Matrox DigiView" on page 10.

➢ To display the Matrox DigiView window:

1. Choose **Start | Programs | Matrox DigiSuite Utilities | DigiView**.

   You configure the video window by choosing commands from a pop-up menu. To display this menu, right-click anywhere within the window.



2. To ensure that the video window will always appear on top of other windows on your screen, select **Always on Top**. If you want to be prevented from moving the video window off your screen, select **Keep on Screen**.

3 If you have DigiDesktop, you can select the video source you want displayed in the window. To do this, choose **Select Input** from the pop-up menu, then click one of the following:

- **Analog A** or **Analog B** Displays your input A or B video source as defined for DigiDesktop in the DigiSuite Configuration program.
- **Digital Main** Displays the Main (Program) output from DigiSuite. Select this to display video clips played back from DigiTools or your nonlinear editing program.
- **Digital Preview** Displays the Preview output from DigiSuite. Select this only if you're running a program that's configured to use the Preview output signal.

Note On DigiSuite LE or DigiSuite DTV **without** DigiDesktop, the Main output is always displayed in the Matrox DigiView window. Therefore, no input selections will be provided.

4 To specify the video window's aspect ratio, choose **Aspect Ratio | 4:3** or **16:9**. When you resize the window, such as by dragging one of its sides, your selected aspect ratio will be maintained. If you'd like to resize the window without maintaining its aspect ratio, choose **Aspect Ratio | Not Maintained**.

Table of maximum resolutions for Matrox DigiView

The following table shows the maximum display area resolutions supported by the Matrox DigiView window based on the amount of memory of your Matrox display card and the color palette you're using.

Note If you have DigiDesktop, Matrox DigiView requires the 24-bit color palette, but supports **all** available display area resolutions. For other Matrox display cards, you must use either the 16-bit or 32-bit color palette.

Color Palette	Resolution	4 MB Card	8 MB Card	12 MB+ Card
16-bit	800×600	Yes	**Yes**	**Yes**
16-bit	1024×768	**Yes**	**Yes**	**Yes**
16-bit	1152×864	**Yes**	**Yes**	**Yes**
16-bit	1280×1024	**Yes**	**Yes**	**Yes**
16-bit	1600×1200	**No**	**Yes**	**Yes**
32-bit	800×600	**Yes**	**Yes**	**Yes**
32-bit	1024×768	**No**	**Yes**	**Yes**
32-bit	1152×864	**No**	**Yes**	**Yes**
32-bit	1280×1024	–	**Yes**	**Yes**
32-bit	1600×1200	–	**No**	**Yes**

Working with Clips Using DigiTools

This chapter describes the DigiTools software that comes with DigiSuite. It also explains how to connect your VTR for RS-422 device control with DigiTools.

Chapter

3

What can you do with DigiTools?

DigiTools is a suite of tools that, together with your DigiSuite hardware, lets you:

- Capture high-quality video and audio clips from a VTR into DirectShow *.avi* and *.wav* files on your computer.
- Convert a sequence of *.tga* files to one *.avi* file, or vice versa. You can also change the compression type of a Matrox *.avi* file (such as to convert a Motion-JPEG lossless *.avi* file to a lossy *.avi* file for use with other lossy clips in your editing program), or convert Matrox Video for Windows *.avi* files to DirectShow files.
- Play back and record onto tape the *.avi* and *.wav* files you create on your DigiSuite system. Alpha-keyed animations created using the 3D Studio MAX plug-in, LightWave 3D plug-in, or the DigiTools Convert tool are automatically keyed over a selected video source.
- Sequence clips in a playlist that you can play back and record onto tape.

You can choose to either control your VTR manually, or set it up and configure it so that you'll have device control in DigiTools, as explained in the next section.

Setting up for device control

If your VTR supports RS-422 device control, it can be controlled with DigiTools through your computer's serial port using an RS-232 to RS-422 adapter, or you can install an RS-422 controller card. Only one VTR can be controlled, but it can be used alternately as your video source or video recorder.

The following sections describe:

- The benefits of having device control.
- How to connect your VTR for device control.
- How to prepare your source and record tapes.

Note DigiTools supports Insert mode recording only. Assemble mode is **not** supported.

Benefits of device control

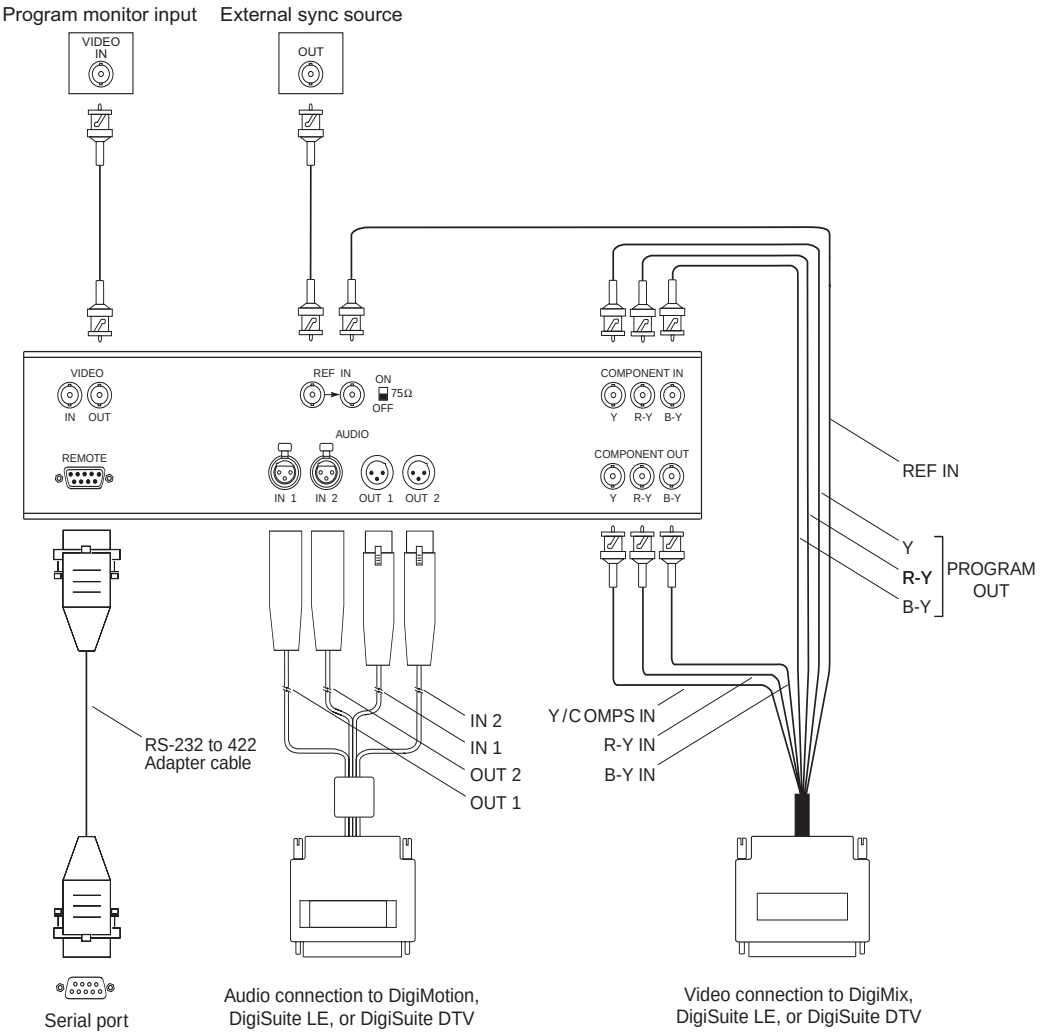
Some of the benefits of having device control are:

- You can control your VTR from your computer screen instead of having to manually press buttons on your VTR.
- You can perform frame-accurate capture of clips by selecting each clip's In and Out points on your source tape.
- You can perform frame-accurate recording between preselected In and Out points on your record tape.

Connecting your VTR

The following is a sample illustration of how to connect an analog component VTR to your computer so that you'll have device control in DigiTools. Connections for VTRs that use other signal types, such as S-Video, are similar.

Important If your computer has more than one DigiSuite card set, make sure you connect your VTR to Card Set 1 (that is, the **first** card set installed in your computer).


Program monitor input
External sync source
VIDEO IN
OUT
VIDEO
IN OUT
REF IN
ON
75Ω
OFF
COMPONENT IN
Y R-Y B-Y
AUDIO
REMOTE
COMPONENT OUT
IN 1 IN 2 OUT 1 OUT 2
Y R-Y B-Y
REF IN
Y
R-Y
B-Y
PROGRAM OUT
RS-232 to 422
Adapter cable
IN 2
IN 1
OUT 2
OUT 1
Y/COMPS IN
R-Y IN
B-Y IN
Serial port
Audio connection to DigiMotion, DigiSuite LE, or DigiSuite DTV
Video connection to DigiMix, DigiSuite LE, or DigiSuite DTV

Once you've connected your devices, run DigiUtils Setup to install DigiTools and the VTR driver, then use the DigiSuite Configuration program (located in the Windows NT Control Panel) to configure your VTR settings. For details, see your DigiSuite, DigiSuite LE, or DigiSuite DTV installation manual.

Preparing your tapes

To ensure frame accuracy, you should stripe your source and record tapes with continuous and consecutive time code. You should also stripe your tapes with a video signal such as a solid color or color bars.

You can stripe your tapes using the capabilities of your VTR as explained in your VTR's manual, or you can use the Stripe Tape utility included with the DigiSuite Configuration program. For instructions on how to use the Stripe Tape utility, see the installation manual for your DigiSuite system.

Starting DigiTools

If you plan to use device control, then before you start DigiTools, make sure that your VTR is:

- Properly connected.
- Turned on.
- Set to "Remote" mode.
- Loaded with a striped, recordable tape.

➢ **To start DigiTools:**

1. Close any DirectShow program that uses DigiSuite, such as Speed Razor RT or 3D Studio MAX.
2. Choose **Start | Programs | Matrox DigiSuite Utilities | DigiTools**.

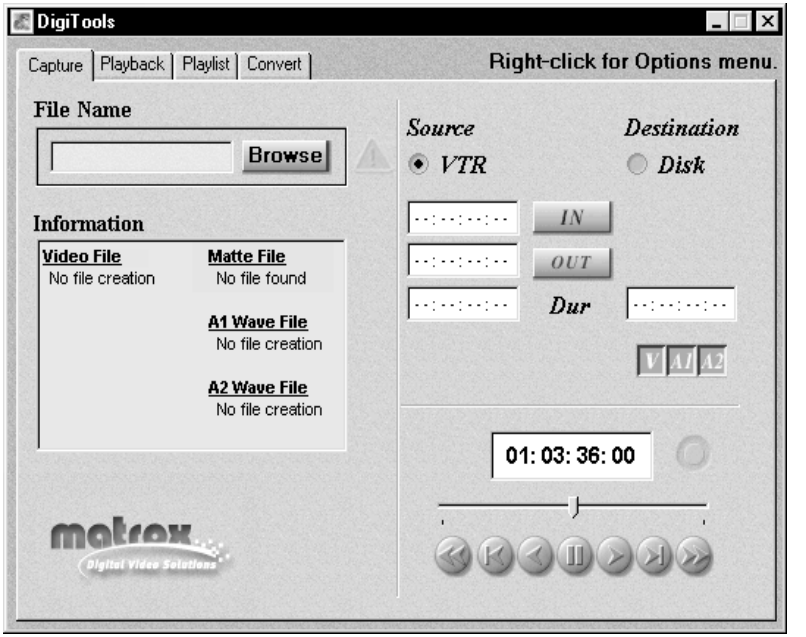
Obtaining online Help

The online Help provides an easy and convenient way to learn about DigiTools as you use it. After you've started DigiTools, you can obtain online Help by pressing the **F1** key.

Click the **Contents** tab to find topics grouped by subject, or click the **Index** tab to search for topics, subjects, and words listed alphabetically. Use the **Find** tab to search for topics containing a particular word or phrase.

Using the DigiTools interface

When you start DigiTools, a dialog box similar to the following appears:



The following sections describe how to use some common controls in the DigiTools interface.

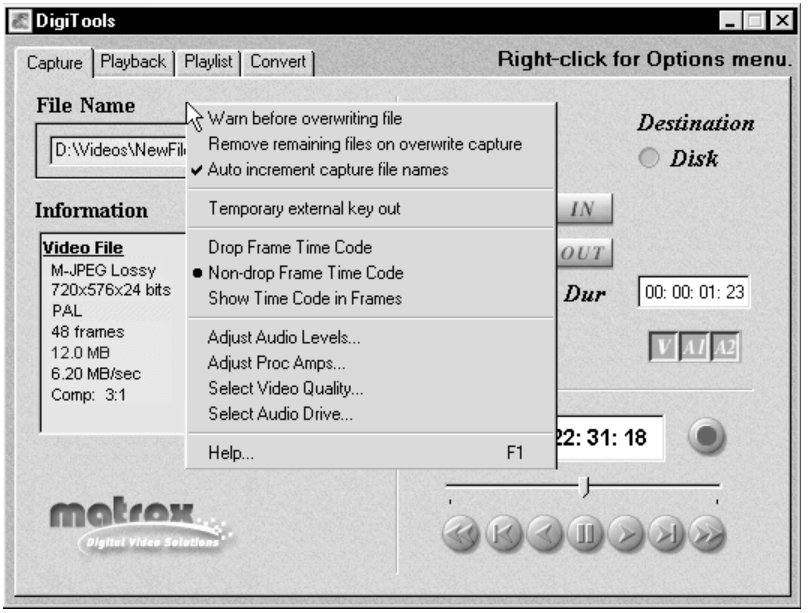
Accessing the tools

DigiTools is made up of four tools, each accessible by clicking its corresponding tab:

- **Capture** Use this tool to capture material from a VTR.
- **Playback** Use this tool to play back clips from disk and print them to tape.
- **Playlist** Use this tool to create and edit a sequence of clips.
- **Convert** Use this tool to do conversions between file formats.

Using the DigiTools pop-up menus

When you right-click the background of the **Capture**, **Playback**, **Playlist**, or **Convert** dialog box, a pop-up menu appears containing options and commands for working with DigiTools.



The contents of the pop-up menu depend on which dialog box you're using. For example, the **Auto increment capture file names** option is present only in the pop-up menu for the **Capture** dialog box. Many other options and commands are common to all the menus, such as the **Adjust Audio Levels** command that lets you adjust the level and pan settings for capturing and playing back audio.

All options and commands present in the DigiTools pop-up menus are described in this chapter.

Selecting and saving files

Select your files as you normally would in Windows NT programs, using the **File Name** box or **Browse** button:

Each file in a TGA sequence must have a frame number before its *.tga* extension. For example, *Anim00001.tga* and *Anim00006.tga* represent frames 1 and 6 in the same TGA sequence.

If you select an existing file name for the purpose of creating a file, a warning icon next to the **Browse** button will be activated.

To ensure the best capture and playback performance for your files, save them on one of your A/V drives. The audio portions of your video clips can be saved on a separate drive as explained in the next section, "Selecting an audio drive." For details on other options available to you when creating files, see "Options for working with files" on page 58.

Selecting an audio drive

If your system is set up to use a separate audio drive, you can choose to have DigiTools store the *.wav* files for your captured video clips onto that drive. To select an audio drive, right-click the background of any DigiTools dialog box, then choose **Select Audio Drive** from the pop-up menu. In the provided dialog box, select the A/V drive on which you want DigiTools to store your *.wav* files.

You can select the audio drive letter only, such as drive G, or a folder on your audio drive, such as *G:\Music Videos*. Be aware that if you select a folder, it will be used as the root (main) folder for all your audio clips.

When you capture a video clip, DigiTools will automatically create a corresponding folder on your selected audio drive for the clip's *.wav* files. For example, if you selected drive G as your audio drive and captured a stereo clip named *Demo.avi* to the *Demo Projects* folder on your video drive, the clip's audio files (named *Demo.A1.wav* and *Demo.A2.wav*) will be saved to *G:\Demo Projects*.

A word about Video for Windows files

When working with Video for Windows *.avi* files that include audio, you need to consider the following:

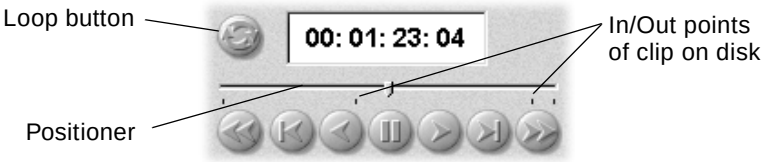
- The duration reported by DigiTools may be inaccurate. This is because the file may not use the standard frame rate (29.97 fps for NTSC video, or 25 fps for PAL video).
- DigiTools **can't** play back audio stored in an *.avi* file—you need to use an editing program to extract the left and right tracks into separate mono *.wav* files. Give the files the same name as your *.avi* file, but precede the *.wav* extension with *.A1* for the left audio file, and *.A2* for the right audio file. For example, if your *.avi* file is named *Demo.avi*, name the associated left and right audio files *Demo.A1.wav* and *Demo.A2.wav*, respectively.

Navigating through clips with the transport controls

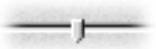
DigiTools includes a common set of transport controls for navigating through clips on disk and, if you have device control, material on your VTR.

You indicate the type of material you wish to control by selecting **VTR** or **Disk** at the top of the dialog box in which you are working:

The transport controls are much like those on your VTR:



Most of these controls perform standard transport functions, but some can be used for special tasks:



- **Shuttle/seek** Drag the slider on the **Positioner** to shuttle through your tape or move interactively through your file. **SHIFT+drag** the slider to make it easier to move only one frame at a time.

  The tick marks below the **Positioner** indicate the current In and Out points of a clip on disk with respect to the length of the file.

- **Cue to In or Out point on disk** Click the **Rewind** or **Fast Forward** button to cue to the In or Out point, respectively, of a clip on disk using

the Playback tool. If you didn't define a new In or Out point for the clip, the file will be cued to its beginning or end. For more information, see "Marking In and Out points" on page 21.

- **Bypass In and Out points on disk** By default, all clips on disk are played within their defined In and Out points when using the Playback tool. To bypass these limits, do one of the following:
  - **SHIFT+click** a control, or click the control again once you've reached a clip's In or Out point.
  - Right-click the background of the **Playback** dialog box and make sure that **Pause at trim points during playback** is **not** selected. The transport controls will now ignore the In/Out points during playback.

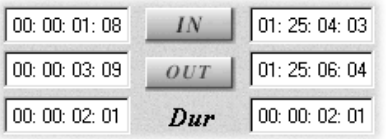
- **View frame-by-frame** Click the **Frame Reverse** or **Advance** button. To move ten frames at a time, **SHIFT+click** the button.

- **Play a clip on disk repeatedly** Click the **Loop** button, then click the **Play** or **Play Reverse** button.

Keyboard Shortcuts	
Source	**K**
Destination	**L**
Play	b
Play Reverse	**C**
Rewind	**Z**
Fast Forward	**X**
Frame Advance	**'** (apostrophe)
Frame Reverse	**;** (semicolon)
Pause	**V**
Loop	**A**

Using the time code fields

The time code fields display the In and Out points and duration of your clips.



The following sections describe how to:

- Mark In and Out points.
- Edit the time code fields.
- Change the time code fields' format.

Marking In and Out points

To define a clip's In and Out points, you can either mark them as explained in this section, or you can type the In and Out points directly into the time code fields as explained in the next section.

To mark the In and Out points of your clip, do one of the following:

- Play your material and click the **In** or **Out** button when you see the frame where you want your clip to start or end, respectively.
- For increased precision, pause your clip at the appropriate frame and click the **In** or **Out** button.

You can cue to your In or Out point by **SHIFT+clicking** the **In** or **Out** button, or, in the case of a clip on disk in the **Playback** dialog box, by clicking the **Rewind** or **Fast Forward** button.

Keyboard Shortcuts	
Mark **In**	**M**
Mark **Out**	**,** (comma)
Cue **In**	**SHIFT+M**
Cue **Out**	**SHIFT+,** (comma)

Editing the time code fields

When you type a time code in an empty or highlighted time code field, the numbers fill each section sequentially from right to left (frames, seconds, minutes, and hours), and separators are placed for you between the sections.

If you enter a value that exceeds the two-digit limit for a section, the appropriate time code will be calculated when you press the **TAB** key. For example, if you type **9005** (90 seconds, five frames) and press **TAB**, it will be calculated as 00:01:30:05 (one minute, 30 seconds, five frames) on an NTSC system.

When at least two time code fields are defined, DigiTools automatically calculates the remaining field. For example, once you've defined the In and Out points for a clip, its duration will be calculated for you.

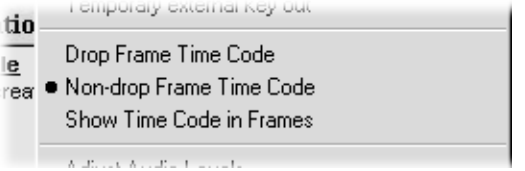
To clear a field, double-click inside it to highlight its value, then press the **DELETE** key.

Changing the time code format

A value in a time code field can be displayed and entered as a time code or a specific number of frames. The first time you run DigiTools, the fields display time codes. To toggle between the two formats, press **CTRL+SHIFT** while the insertion point (flashing vertical bar) is in a time code field.

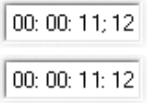
For example, on an NTSC system, you could change a value of 24:04 (24 seconds, 4 frames) to 724 frames by pressing **CTRL+SHIFT**. You could then edit the field in frames and switch back to time codes again by pressing **CTRL+SHIFT**.

To select a default format (the format you want DigiTools to use on startup), right-click the background of any DigiTools dialog box and select the format you want from the pop-up menu:



Select **Show Time Code in Frames** to display edit points as a number of frames.

If you are using an NTSC system, you can select **Drop Frame Time Code** or **Non-drop Frame Time Code** to match the time code format of your tape. The format used is indicated by the separator between the seconds and frames digits in the time code fields as follows:



- A semicolon (;) indicates drop frame.
- A colon (:) indicates non-drop frame.

Using the Channel Selectors

To indicate which channels you wish to work with, click the Channel Selectors:

 - Video channel of your clip.

 - Alpha-key (*.matte.avi)* file, such as that created by the DigiSuite 3D Studio MAX plug-in, or the alpha-key channel of a *.tga* file.

 - First audio channel.

 - Second audio channel.

Associated channels play back simultaneously. For example, when you select a stereo clip that you captured in DigiTools and saved as *MyFile.avi*, DigiTools automatically detects the corresponding audio files, *MyFile.A1.wav* and *MyFile.A2.wav*, that are in the same folder (either on the same drive as the *.avi* file, or on your selected audio drive as explained on page 18). When you click the **Play** button, DigiTools plays back all the files simultaneously. You can prevent DigiTools from playing the audio files by deselecting the **A1** and **A2** buttons. The buttons switch from brown to gray when deselected.

Keyboard Shortcuts	
Video Channel	**T**
Alpha-key Channel	**Y**
A1 Channel	**U**
A2 Channel	**I**

Capturing clips

The following sections explain:

- What to do before you start capturing clips, such as how to select your capture source and video quality.
- How to capture clips.

Before you start capturing

Before you start capturing, you may need to:

- Select the device from which you want to capture material.
- Change the proc amp settings of your incoming analog video.
- Select your video capture quality.
- Adjust audio levels and pan settings.

Note Captured audio is sampled at a rate of 48 kHz. If you want to save your audio files on a separate audio drive, you must select the drive as explained in the section “Selecting an audio drive” on page 18.

Selecting your capture source

DigiTools captures material from the default video source you select for Card Set 1 in the DigiSuite Configuration program. To select this source:

1. Close DigiTools.
2. In the Windows Control Panel, double-click the **DigiSuite** icon. This starts the DigiSuite Configuration program.
3. Click the **DigiMix**, **DigiSuite LE**, or **DigiSuite DTV** tab, then the **Input** or **Video In** tab.
4. From the **Video Source** box, select the source you want to use. For example, select **Y/C (S-Video) 1** to capture material from your S-Video VTR connected to Y/C IN 1.

   If you selected an analog source, you can use the other controls in the dialog box to configure your source’s input signal. For example, you can define the default proc amp settings.

   Note If you plan to use device control, make sure you select the VTR you connected for this purpose as shown in the section “Connecting your VTR” on page 13.

5. Click **OK** to save your settings.

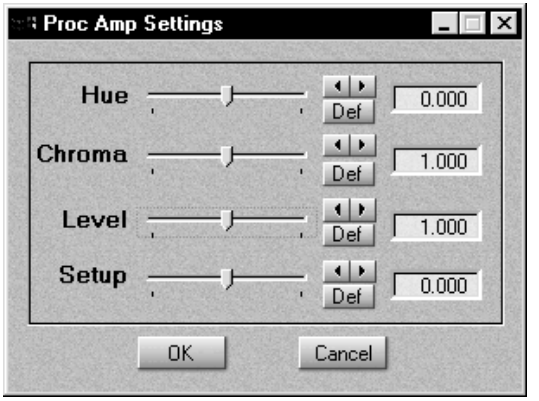
For complete details on using the DigiSuite Configuration program, refer to your DigiSuite, DigiSuite LE, or DigiSuite DTV installation manual.

Changing your capture source's proc amps

When you start your computer, the proc amp settings defined for DigiMix, DigiSuite LE, or DigiSuite DTV in the DigiSuite Configuration program are applied to your capture source's incoming analog video signal.

If you'd like to use different proc amp settings for the analog video you'll be capturing:

1. Right-click the background of any DigiTools dialog box.
2. Choose **Adjust Proc Amps** from the pop-up menu. This displays the **Proc Amp Settings** dialog box:



3. Use the proc amp controls as needed to adjust the incoming video signal before starting the capture. To return a control to its default setting as defined in the DigiSuite Configuration program, click the **Def** button. To restore a control to its factory default setting, **SHIFT+click** the slider.

You can leave this dialog box open while preparing your material for capture in the **Capture** dialog box later on.

Note Your proc amp changes will be retained until you reboot your computer.

Selecting your capture video quality (DigiSuite or DigiSuite LE)

To select the video quality you want for your captured material on a DigiMix-DigiMotion or DigiSuite LE system:

1. Right-click the background of any DigiTools dialog box.
2. Choose **Select Video Quality** from the pop-up menu. This displays the **Video Quality** dialog box:

3. You can either select one of several preset video qualities, or select a custom quality using the data rate slider. The quality of your captured video depends on the data rate at which it's captured — higher data rates provide better quality video.

Select a preset quality

– To select one of the following preset video qualities, click the arrows beside the **Quality** box. The approximate data rates for the preset qualities are:

- **Preview** 0.1 MB/sec
- **Industrial** 3 MB/sec
- **Broadcast** 5 MB/sec
- **Digital** 7 MB/sec
- **Uncompressed** Lossless (about 13 MB/sec, but varies depending on the complexity of the video). This quality is **not** available on DigiSuite LE. To select the highest possible quality on DigiSuite LE, select **Best Quality**.

Select a custom quality

– To select a custom video quality, drag the slider. For example, to select a broadcast quality at a data rate of approximately 6.0 MB/sec, simply drag the slider until that value is displayed in the **Data rate** box.

Only the uncompressed (lossless) quality **guarantees** identical quality to your source video. You can, however, achieve results that are virtually lossless by selecting a digital quality at a high data rate.

You can leave the **Video Quality** dialog box open while preparing your material for capture in the **Capture** dialog box later on. Changing the video quality does not affect a capture that is already in progress. The new video quality will be used for the next capture.

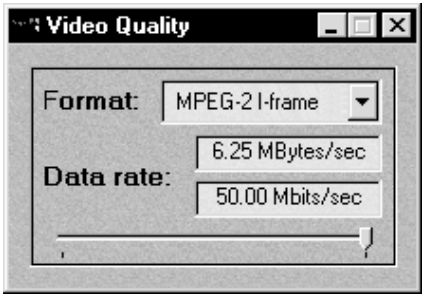
Keep in mind that you'll need more disk space to capture video at a high quality than at a lower quality setting. For a table of various video qualities with corresponding data rates and disk space requirements, see Appendix A, "DigiSuite Data Rates and Disk Space Requirements."

Important DigiTools does not allow frames to be dropped during capture. If your system isn't able to sustain the data rate needed for the video quality you've specified, DigiTools will terminate the video capture. If this happens, experiment by capturing at progressively lower video qualities until you get acceptable results.

Selecting your capture video quality (DigiSuite DTV)

To select the video quality you want for your captured material on DigiSuite DTV:

1. Right-click the background of any DigiTools dialog box.
2. Choose **Select Video Quality** from the pop-up menu. This displays the **Video Quality** dialog box:



Select a video format

3. From the **Format** box, select the format (quality) to which you want your video to be captured. The formats available depend on whether you're using an NTSC or PAL system.
   - On an NTSC system, you can select any of the following:
     - **DV 4:1:1** Captures video to DV, DVCAM, or DVCPRO format.
     - **DV50 4:2:2** Captures video to DVCPRO50 or Digital-S format.
     - **MPEG-2 I-frame** Captures video to MPEG-2 intra-frame format using the 4:2:2 Profile @ Main Level at a selected data rate.
   - On a PAL system, you can select any of the following:
     - **DV 4:2:0** Captures video to DV or DVCAM format.
     - **DV 4:1:1** Captures video to DVCPRO format.
     - **DV50 4:2:2** Captures video to DVCPRO50 or Digital-S format.
     - **MPEG-2 I-frame** Captures video to MPEG-2 intra-frame format using the 4:2:2 Profile @ Main Level at a selected data rate.

Select an MPEG-2 data rate

4 To select your MPEG-2 data rate, drag the slider until the desired data rate is displayed. The higher the data rate you select, the better the video quality will be.

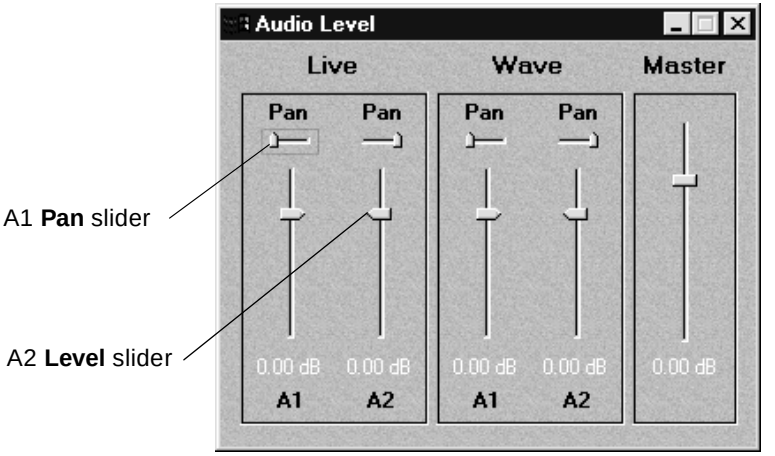
You can leave the **Video Quality** dialog box open while preparing your material for capture in the **Capture** dialog box later on. Changing the video quality does not affect a capture that is already in progress. The new video quality will be used for the next capture.

Keep in mind that you'll need more disk space to capture video at a high quality than at a lower quality setting. For a table of various video qualities with corresponding data rates and disk space requirements, see Appendix A, "DigiSuite Data Rates and Disk Space Requirements."

Important DigiTools does not allow frames to be dropped during capture. If your system isn't able to sustain the data rate needed for the video quality you've specified, DigiTools will terminate the video capture. If this happens, experiment by capturing at progressively lower video qualities until you get acceptable results.

Adjusting audio levels and pan settings

If your material includes audio, you may want to adjust the level and pan settings at which it will be captured to disk. To do so, right-click the background of any DigiTools dialog box, then choose **Adjust Audio Levels** from the pop-up menu. The following dialog box appears:



The **Live** controls affect your audio input level. They work much like those on a standard mixer, with the following added capabilities:

- To adjust the A1 and A2 levels simultaneously, simply drag either of the **Level** sliders.

- To adjust the A1 and A2 levels separately from one another, **CTRL+drag** either of the **Level** sliders.
- To restore levels to your default audio gain setting as defined in the DigiSuite Configuration program, **SHIFT+click** the **Level** sliders.

  The decibel value below a **Live Level** slider indicates the **difference** between your current setting and the DigiSuite Configuration program default setting. For example, if your default setting is 3.00 dB and you set a **Live Level** slider to 5.00 dB, your current level setting will actually be 3.00 dB + 5.00 dB = 8.00 dB.
- To pan to center, **SHIFT+click** a **Pan** slider.

If you are capturing mono material (one channel only), you'll usually want to set the appropriate **Pan** slider to the middle.

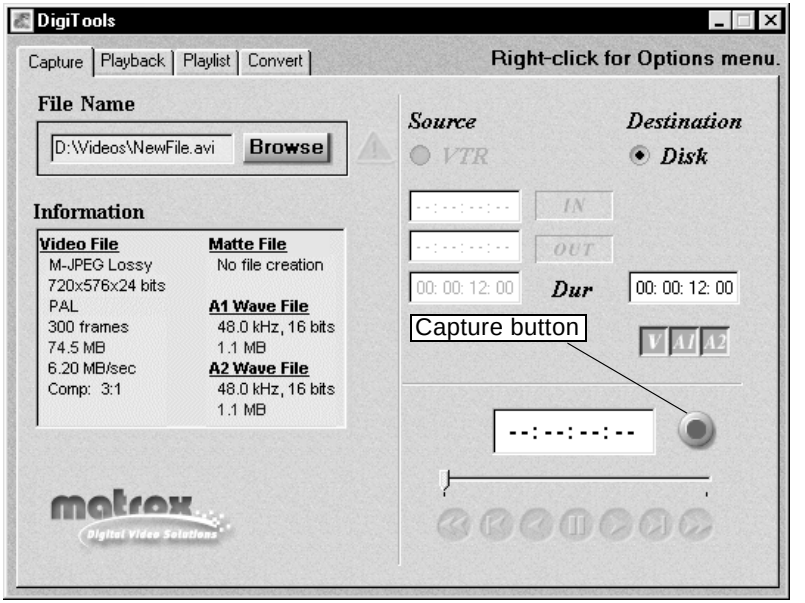
To adjust your controls with more accuracy, use the arrow keys or the **PAGE UP** and **PAGE DOWN** keys.

You can leave the **Audio Level** dialog box open while setting up your capture in the **Capture** dialog box, in order to test your levels. You may need to experiment to find a satisfactory input level.

Capturing without device control

➢ **To capture without device control:**

1. Click the **Capture** tab in DigiTools. The **Capture** dialog box appears, similar to the following:

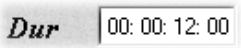


Without device control, the time code fields and transport controls are unavailable for use with your VTR.

2 Select the file to which you want your clip to be saved.

3 Indicate which channels you wish to capture by clicking the Channel Selectors.

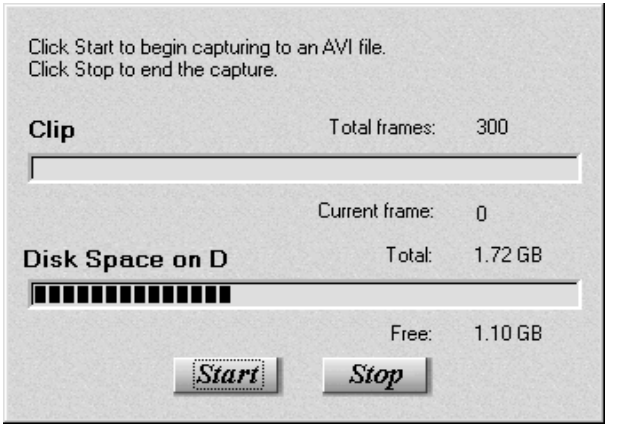
Captured audio will be saved as separate *.wav* files. For example, if you specify *MyFile.avi* as your capture file, the audio channels of a stereo clip will be saved as *MyFile.A1.wav* and *MyFile.A2.wav* when you perform your capture.



4 If you know how long you want your clip to be, you can type this amount into the file's **Dur** time code field. DigiTools will stop capturing when this length is reached.

DigiTools calculates the approximate file size for the clip and displays it in the **Information** box. The calculation is based on the duration of your clip and its video quality setting.

5 Click the **Capture** button or press the **Q** key. A dialog box similar to the following appears:

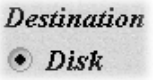


6 Press the Play button on your VTR a few seconds before you start capturing to let the tape get up to speed. You will see the video play back on your Program monitor.

7 To start capturing, click the **Start** button in the provided dialog box. DigiTools displays the capture's progress.

8 To manually stop the capture before the clip's length is reached, or if you left the length undefined, click **Stop** or press the **ESC** key.

Don't forget to stop your tape after you complete your capture.

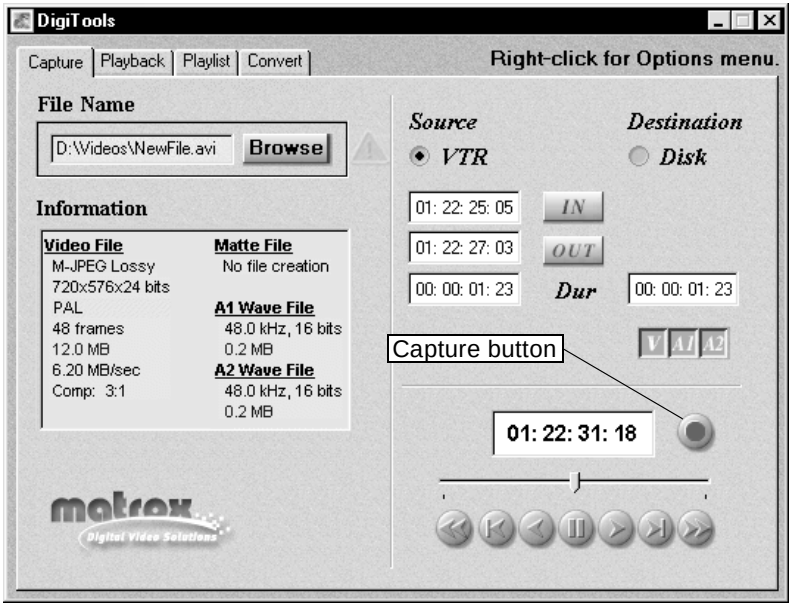


To play back your captured clip, select the **Disk** option, then click the **Play** button. The clip plays back on the Program monitor.

Capturing with device control

➢ To capture with device control:

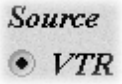
1 Click the **Capture** tab in DigiTools. The **Capture** dialog box appears, similar to the following:



2 Select the file to which you want your clip to be saved.

3 Indicate which channels you wish to capture by clicking the Channel Selectors.

Captured audio will be saved as separate *.wav* files. For example, if you specify *MyFile.avi* as your capture file, the audio channels of a stereo clip will be saved as *MyFile.A1.wav* and *MyFile.A2.wav* when you perform your capture.



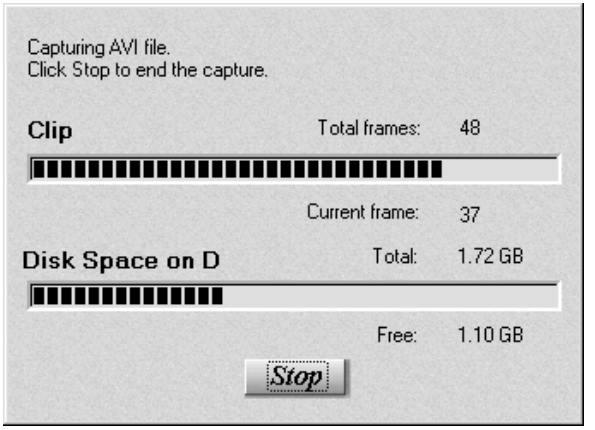
4 Make sure that the **VTR** option is selected and that your device is set to "Remote" mode.

5 Mark or type in the In and Out points of your clip.

DigiTools calculates the approximate file size for the clip and displays it in the **Information** box. The calculation is based on the duration of your clip and its video quality setting.

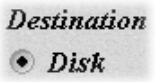
Note If you don't set an In or Out point for your clip, you can manually start or stop your capture in the next step.

6 Click the **Capture** button or press the **Q** key to start capturing. DigiTools cues your VTR and starts capturing at the In point you specified in step 5. A dialog box displays the capture's progress:



Note If you didn't set an In point in step 5, then your tape will have started playing when you clicked the **Capture** button, and the preceding dialog box will include a **Start** button. Click **Start** when you want to begin capturing material.

7 To manually stop the capture before the Out point is reached, or if you left the Out point undefined, click **Stop** or press the **ESC** key.



To play back your clip, select the **Disk** option, then click the **Play** button. The clip plays back on the Program monitor.

Printing to tape

The following sections explain:

- What to do before you print to tape, such as how to adjust the audio output levels for your *.wav* files, if needed.
- How to print to tape.

Note You can print to tape individual clips or a playlist. For details on how to sequence clips in a playlist, see “Creating a playlist” on page 44.

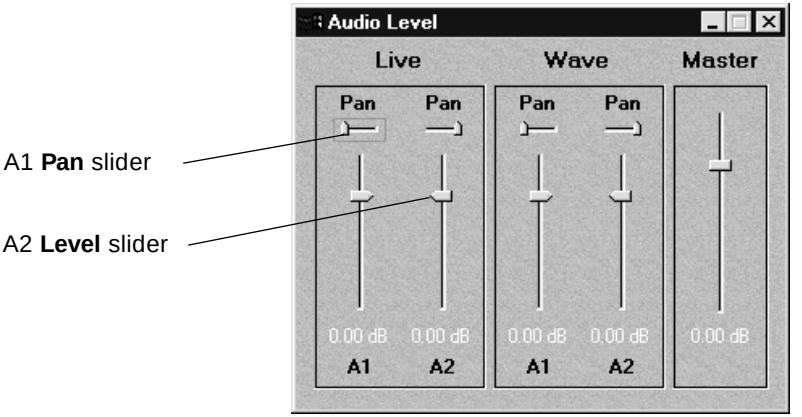
Before you start printing to tape

If you want to print files to tape using device control, you should first prepare your record tape as described in “Preparing your tapes” on page 15. If you want to print audio to tape, you may want to adjust the level and pan settings as described in the following section.

Important To record an alpha-keyed animation over video, you need to connect your video and audio outputs to a second (destination) VTR. Then, after adjusting audio levels (if necessary), skip ahead to the section “Recording an alpha-keyed animation without device control” on page 40, or “Recording an alpha-keyed animation with device control” on page 41.

Adjusting audio levels and pan settings

If your clip includes *.wav* files, or if you are recording an animation keyed over video that contains audio, you may want to adjust the level and pan settings at which your audio will be recorded to tape. To do so, right-click the background of any DigiTools dialog box, then choose **Adjust Audio Levels** from the pop-up menu. The following dialog box appears:



The dialog box’s controls affect your audio channels as follows:

- The **Live** controls affect the audio channels of an alpha-keyed animation's underlying video.
- The **Wave** controls affect the playback of *.wav* files.
- The **Master** control affects the output mix of Live and Wave audio to your destination VTR.

The controls work much like those on a standard mixer, with the following added capabilities:

- To adjust the A1 and A2 levels simultaneously, simply drag either of the **Level** sliders.
- To adjust the A1 and A2 levels separately from one another, **CTRL+drag** either of the **Level** sliders.
- To set the **Wave** or **Master** levels to 0.00 decibels, **SHIFT+click** the **Wave** or **Master Level** sliders.
- To restore **Live** levels to your default audio gain setting as defined in the DigiSuite Configuration program, **SHIFT+click** the **Live Level** sliders.

  The decibel value below a **Live Level** slider indicates the **difference** between your current setting and the DigiSuite Configuration program default setting. For example, if your default setting is 3.00 dB and you set a **Live Level** slider to 5.00 dB, your current level setting will actually be 3.00 dB + 5.00 dB = 8.00 dB.
- To pan to center, **SHIFT+click** a **Pan** slider.

Remember that if you are working with a mono clip (one *.wav* file only) or mono live audio (one audio channel only), you'll usually want to set the appropriate **Pan** slider to the middle.

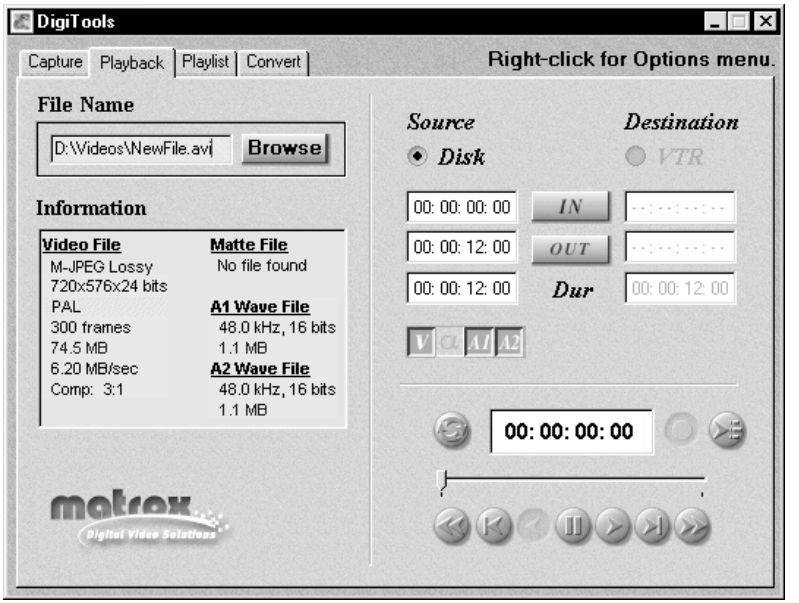
To adjust your controls with more accuracy, use the arrow keys or the **PAGE UP** and **PAGE DOWN** keys.

You can leave the **Audio Level** dialog box open while setting up your recording in the **Playback** dialog box, in order to test your levels. You may need to experiment to find an output level that matches the input requirements of your VTR.

Recording without device control

➢ **To record a file to tape without device control:**

1 Click the **Playback** tab in DigiTools. The **Playback** dialog box appears, similar to the following:



Without device control, the time code fields and transport controls are unavailable for use with your VTR.

2 Select the file you want to print to tape. You can play back this file to view it on your Program monitor. Make sure that the file you select is in the same folder as any corresponding channel files.

For example, if you select a file named *MyFile.avi*, it must be in the same folder as its corresponding audio files, *MyFile.A1.wav* and *MyFile.A2.wav*, for DigiTools to play them all back together.

Note Your audio files can be on the same drive as your *.avi* file, or on your separate audio drive as explained in the section "Selecting an audio drive" on page 18.

3 Indicate which channels you wish to record by clicking the Channel Selectors. By default, DigiTools selects channels for you, based on whatever files are detected (for example, *.avi* and/or *.wav* files).

4 If you don't want to record the entire clip, mark or type in the desired Source In and Out points.

5 Press the Record button on your VTR a few seconds before you start playing your clip to let the tape get up to speed.

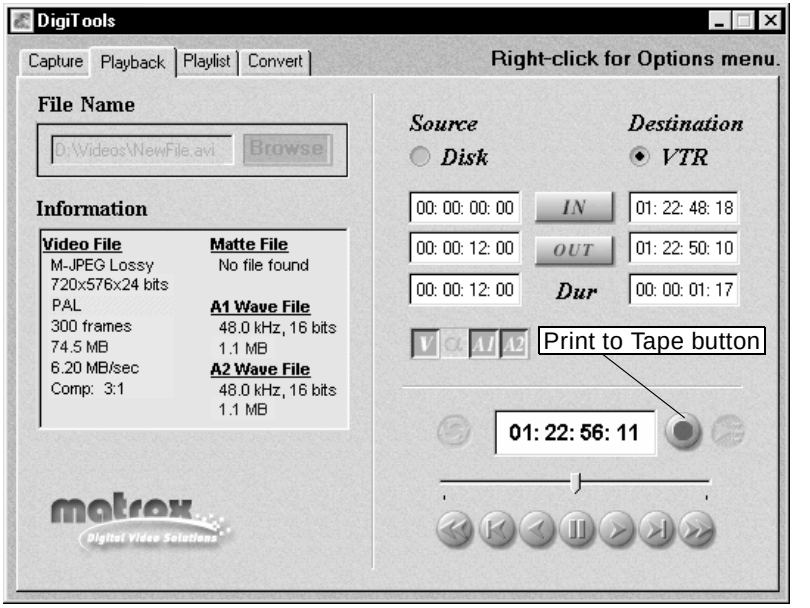
6 Click the **Play** button in DigiTools to start playing your clip.

7 Press the Stop button on your VTR to end the recording.

Recording with device control

➢ **To record a file to tape with device control:**

1 Click the **Playback** tab in DigiTools. The **Playback** dialog box appears, similar to the following:



2 Right-click the background of the dialog box and make sure that the **Print to Tape** option is selected in the pop-up menu.

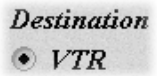
3 Select the file you want to print to tape. You can play back this file to view it on your Program monitor. Make sure that the file you select is in the same folder as any corresponding channel files.

For example, if you select a file named *MyFile.avi*, it must be in the same folder as its corresponding audio files, *MyFile.A1.wav* and *MyFile.A2.wav*, for DigiTools to play them all back together.

Note Your audio files can be on the same drive as your *.avi* file, or on your separate audio drive as explained in the section "Selecting an audio drive" on page 18.

4 Indicate which channels you wish to record by clicking the Channel Selectors. By default, DigiTools selects channels for you, based on whatever files are detected (for example, *.avi* and/or *.wav* files).

5 If you don't want to record the entire clip, mark or type in the desired Source In and Out points.

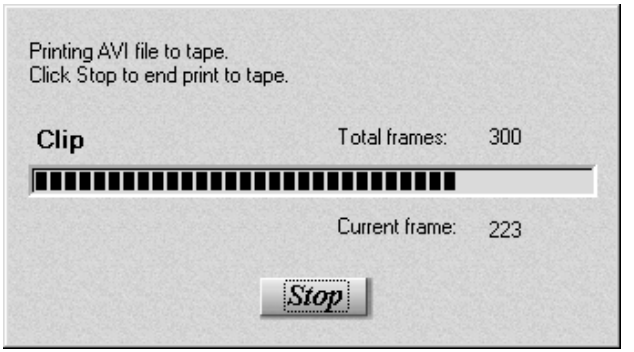


6 Make sure that the **VTR** option is selected and that your device is set to "Remote" mode.

7 Use DigiTools' transport controls to find the region on your tape where you wish to record your clip, then mark or type in your Destination In and Out points.

Should your **Source** and **Destination** durations differ, the shorter of the two will take precedence when you record. For example, if your clip is one minute long and the region you've selected on your VTR is two minutes long, DigiTools will stop recording when the clip finishes after one minute.

8 Click the **Print to Tape** button or press the **Q** key to start printing your clip to tape. DigiTools cues your VTR and starts recording at the In point you specified in step 5. A dialog box indicates the progress of the recording:



9 To manually stop printing to tape before the Out point is reached, or before the clip is finished, click **Stop** or press the **ESC** key.

Recording an alpha-keyed animation without device control

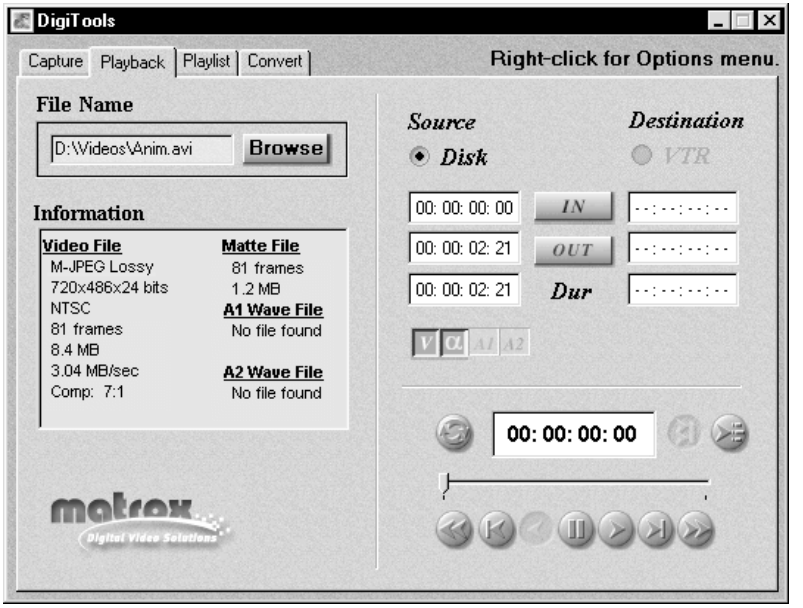
You can use DigiTools to record *.avi* animations keyed over video. These *.avi* animations and their corresponding alpha-key (*.matte.avi)* files can be created using any of the following:

- The DigiSuite 3D Studio MAX plug-in, as described in Chapter 4, “Enhancements to 3D Studio MAX.”
- The DigiSuite LightWave 3D plug-in, as described in Chapter 5, “Enhancements to LightWave 3D.”
- The DigiTools Convert tool, as described in “Converting files” on page 49.

Before you begin, you must connect your video and audio outputs to a second (destination) VTR.

➢ To record an animation keyed over video without device control:

1 Click the **Playback** tab in DigiTools. The **Playback** dialog box appears, similar to the following:



Without device control, the time code fields and transport controls are unavailable for use with your VTR.

2 Select the animation you want to key over video. Make sure that the file you select is in the same folder as its corresponding *.matte.avi* file (for example, *Anim.matte.avi*).

You can play back and view your animation on your Program monitor, where it is automatically keyed over your source video.

3 Indicate which channels you wish to record by clicking the Channel Selectors. DigiTools detects that this is an alpha-key animation and selects the video and alpha-key channels for you.

4 If you don't want to record the entire animation, mark or type in the desired Source In and Out points of your clip.

5 Use the controls on your VTRs to locate the required source and destination regions on your tapes.

6 Press the Play button on your source VTR and the Record button on your destination VTR a few seconds before you start playing your animation to let the tapes get up to speed.

7 Click the **Play** button in DigiTools to start playing your animation.

8 Press the Stop button on your destination VTR to end the recording, then press Stop on your source VTR.

Recording an alpha-keyed animation with device control

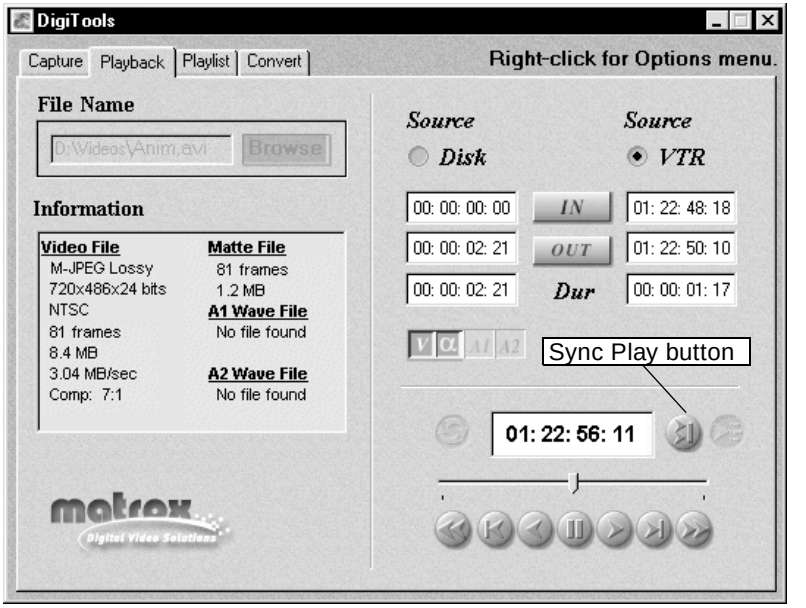
You can use DigiTools to record *.avi* animations keyed over video. These *.avi* animations and their corresponding alpha-key (*.matte.avi)* files can be created using any of the following:

- The DigiSuite 3D Studio MAX plug-in, as described in Chapter 4, "Enhancements to 3D Studio MAX."
- The DigiSuite LightWave 3D plug-in, as described in Chapter 5, "Enhancements to LightWave 3D."
- The DigiTools Convert tool, as described in "Converting files" on page 49.

Before you begin, you must connect your video and audio outputs to a second (destination) VTR.

➢ **To record an animation keyed over video with device control:**

1 Click the **Playback** tab. The **Playback** dialog box appears, similar to the following:



2 Right-click the background of the dialog box and make sure that the **Sync Play** option is selected in the pop-up menu.

3 Select the animation you want to key over video. Make sure that the file you select is in the same folder as its corresponding *.matte.avi* file (for example, *Anim.matte.avi*).

You can play back and view your animation on your Program monitor, where it is automatically keyed over your source video.

4 Indicate which channels you wish to record by clicking the Channel Selectors. DigiTools detects that this is an alpha-key animation and selects the video and alpha-key channels for you.

5 If you don't want to record the entire animation, mark or type in the desired Source In and Out points of your clip.

6 Make sure that the **VTR** option is selected and that your source VTR is set to "Remote" mode.

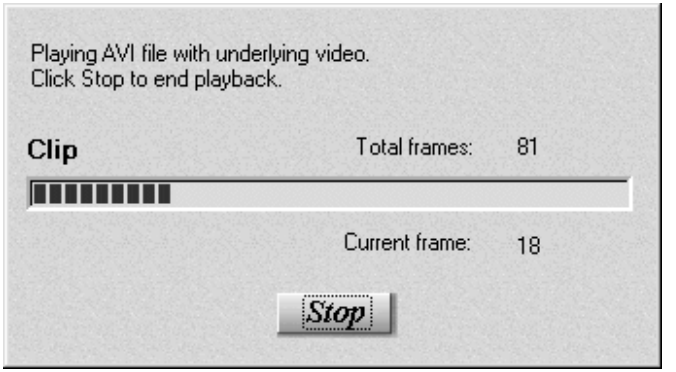
7 Use DigiTools' transport controls to find the region of video over which you want to key your clip, then mark or type in the video's In and Out points.

Should the length of your animated clip and underlying video clip differ, the shorter of the two will take precedence when you play them back. For example, if your animation is one minute long and the underlying

video clip is two minutes long, DigiTools will stop playing them both when the animation finishes after one minute.

8 Press the Record button on your destination VTR a few seconds before you start playing your keyed animation. This lets the tape get up to speed.

9 Click the **Sync Play** button or press the **Q** key to start playing your keyed animation together with your selected underlying video. DigiTools displays the progress in a dialog box:



10 To manually stop your animation and underlying video from playing, click **Stop** or press the **ESC** key.

11 Press the Stop button on your destination VTR to end the recording.

Using an external keyer

To send your animation's video and alpha-key channels to an external keyer instead of performing the keying internally on DigiSuite, you must first connect the video and key outputs from DigiMix, DigiSuite LE, or DigiSuite DTV to your external keyer. Then follow the appropriate procedure for recording alpha-keyed animations while making sure that:

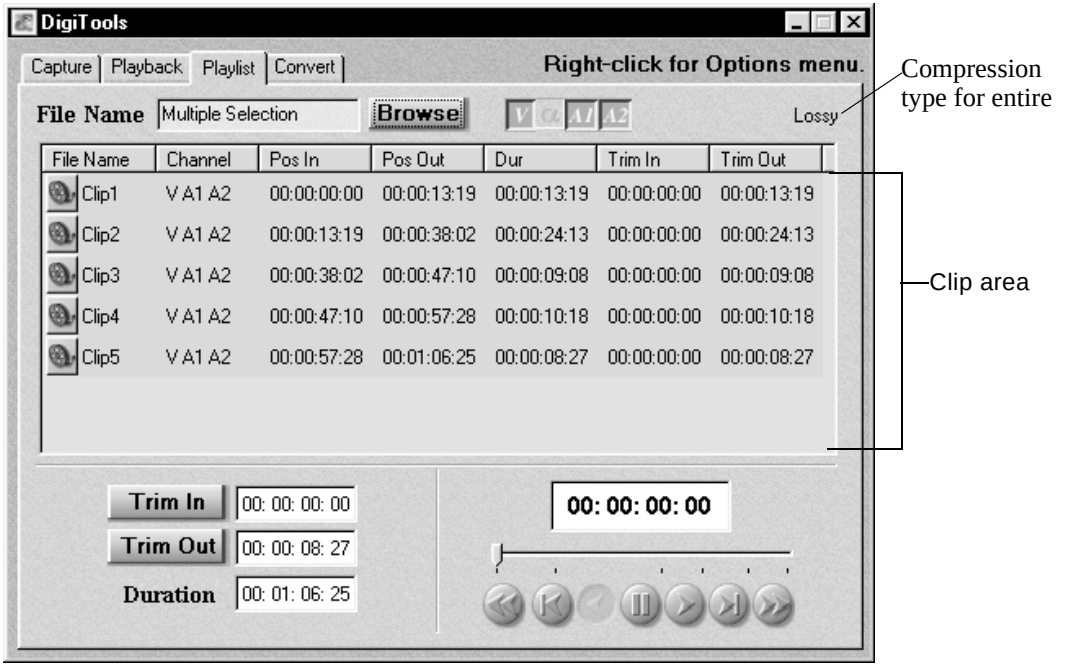
- The video and alpha-key channels are selected in the **Playback** dialog box.
- **Temporary external key out** is selected in the DigiTools pop-up menu.

Note You can choose to have **Temporary external key out** selected by default when you start DigiTools. To do so, just select **Graphic (external key)** as your **Display Source** in the DigiSuite Configuration program. Otherwise, the **Temporary external key out** option will be cleared each time you start DigiTools.

Creating a playlist

The Playlist tool lets you create a sequence of clips that you can edit and save to a file.You can then use the Playback tool to play back the playlist file and print the clip sequence to tape.

To display the Playlist tool, click the **Playlist** tab in DigiTools. The **Playlist** dialog box appears, similar to the following:



The following sections explain how to set up, edit, save, and load a playlist.

Note A playlist doesn't actually contain your source material, but rather provides **references** to each clip's location, In and Out points, and channels. The edits you make in the playlist will therefore have no effect on your source clips.

Adding clips to a playlist

You can add a clip or series of clips (*.avi* or *.wav* files) to the playlist using any of the following methods:

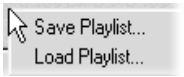
- Drag an *.avi* or *.wav* file selection from a file management program (such as Windows Explorer) to the Playlist clip area. If you are adding clips to an existing playlist, you can drag them to the bottom of the playlist, or place them in a specific position using the method described in the section "Moving clips" on page 46.
- Click the **Browse** button in the **Playlist** dialog box, then select the clips you want from the provided dialog box. You can select clips in any order using **CTRL+click**, or select a range of clips using **SHIFT+click**.

- Click the **Add to Playlist** button when working with a clip in the **Playback** dialog box. Only the channels and edit points currently selected for the clip in the **Playback** dialog box will be added to the playlist.

When you drag an *.avi* file to a playlist or add an *.avi* file using the **Browse** button, DigiTools automatically detects its corresponding *.wav* and *.matte.avi* files that are in the same folder and activates the appropriate channels in the playlist. Clips are always placed at the bottom of the playlist when using the **Browse** or **Add to Playlist** button.

Important When building a playlist, you can't mix Motion-JPEG lossless clips with clips created at any of the lossy video qualities. Similarly, you can't mix DV and MPEG-2 clips in the same playlist. The first clip you add to the playlist determines the compression type for the entire list. For example, if the first clip you add to an empty playlist was captured using Motion-JPEG lossy compression (the method used for the preview, industrial, broadcast, and digital qualities on DigiSuite or DigiSuite LE), then all subsequent clips added to the playlist must also be lossy. The playlist's compression type (lossy, lossless, DV, or MPEG-2) appears in the top right corner of the **Playlist** dialog box. If needed, you can use the Convert tool to change an *.avi* file's compression type as explained in "Changing the compression type of an .avi file" on page 55.

Saving and loading a playlist

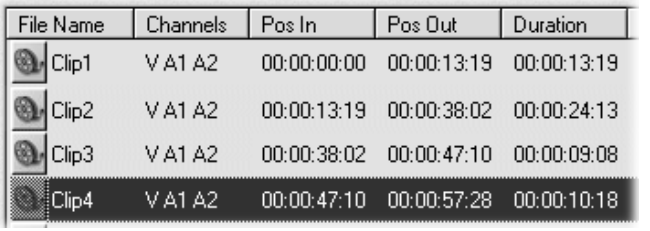


To save a playlist, right-click anywhere within the **Playlist** dialog box. Choose **Save Playlist** from the pop-up menu to save your current playlist as an *.mpl* file. To load a playlist, choose **Load Playlist** from the pop-up menu and select the *.mpl* file you want to load. If you load an *.mpl* file to a playlist that already contains clips, it will be added to the bottom of the playlist and will **not** overwrite any of your current clips.

Moving clips

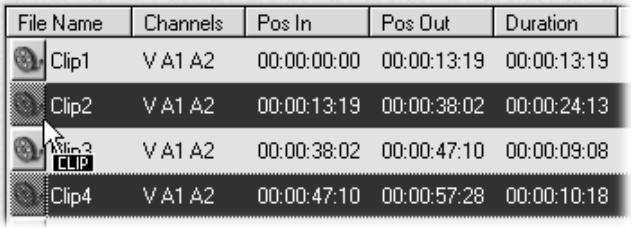
You can change the order of clips by dragging a clip to a new position. This ripples the position of all subsequent clips in the playlist. To move a clip to a new position:

1. Select the clip you want to move. In the following example, we want to move ‘Clip4’.



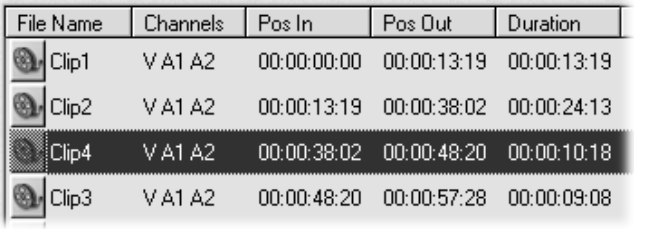
File Name	Channels	Pos In	Pos Out	Duration
Clip1	V A1 A2	00:00:00:00	00:00:13:19	00:00:13:19
Clip2	V A1 A2	00:00:13:19	00:00:38:02	00:00:24:13
Clip3	V A1 A2	00:00:38:02	00:00:47:10	00:00:09:08
Clip4	V A1 A2	00:00:47:10	00:00:57:28	00:00:10:18

2. Drag the clip until your mouse pointer is resting at the desired position. For example, to place ‘Clip4’ before ‘Clip3’, drag ‘Clip4’ until your mouse pointer is resting between ‘Clip2’ and ‘Clip3’. The word “clip” is added to your mouse pointer until you release the mouse button.



File Name	Channels	Pos In	Pos Out	Duration
Clip1	V A1 A2	00:00:00:00	00:00:13:19	00:00:13:19
Clip2	V A1 A2	00:00:13:19	00:00:38:02	00:00:24:13
Clip3	V A1 A2	00:00:38:02	00:00:47:10	00:00:09:08
Clip4	V A1 A2	00:00:47:10	00:00:57:28	00:00:10:18

3. Release the mouse button. ‘Clip4’ is now the third clip in the playlist. Notice how the Pos In and Pos Out time codes for ‘Clip4’ and ‘Clip3’ have been adjusted accordingly.



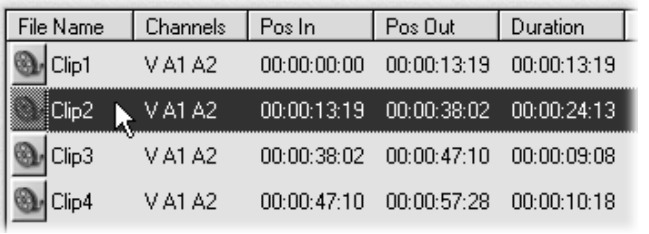
File Name	Channels	Pos In	Pos Out	Duration
Clip1	V A1 A2	00:00:00:00	00:00:13:19	00:00:13:19
Clip2	V A1 A2	00:00:13:19	00:00:38:02	00:00:24:13
Clip4	V A1 A2	00:00:38:02	00:00:48:20	00:00:10:18
Clip3	V A1 A2	00:00:48:20	00:00:57:28	00:00:09:08

To move a clip to the first or last position in the list, drag the clip to the top or bottom of the list, respectively. To move a range of consecutive clips, **SHIFT+click** the selection and drag it to the desired position.

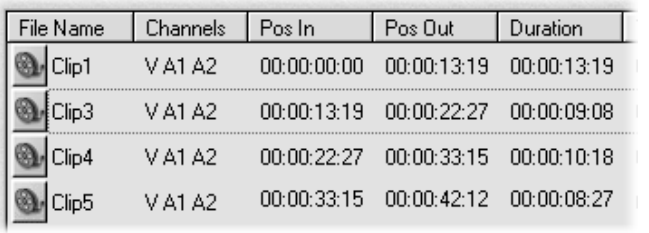
Deleting clips

To delete clips from the playlist, select the clips you want to delete, then press the **DELETE** key. This ripples the position of all subsequent clips in the playlist. You can select individual clips in any order using **CTRL+click**, or select a range of clips using **SHIFT+click**.

In the following example, we want to delete ‘Clip2’ from the playlist.

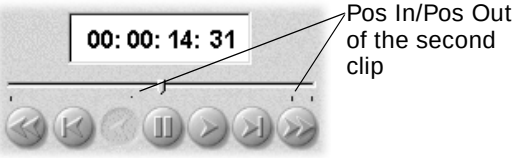


After pressing the **DELETE** key to delete ‘Clip2’, the subsequent clips move up to fill the gap as shown in the following illustration:



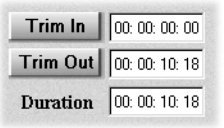
Previewing clips

With the Playlist transport controls, you can preview a selected clip, range of consecutive clips, or the entire playlist. When multiple clips are selected, the tick marks below the **Positioner** represent the Pos In and Pos Out of each clip as shown in the following illustration:



To view selected clips, use the transport controls as described in “Navigating through clips with the transport controls” on page 19. If no clips are selected, DigiTools will play back the entire playlist. Selecting nonconsecutive clips will disable the transport controls.

Editing the Trim In and Trim Out points



You can edit the Trim In and Trim Out points of selected clips in the playlist. The Trim In and Out points are the In and Out time codes for the section of material you want to use from the source *.avi* or *.wav* file. The edits you make apply only to the playlist and not to the *.avi* or *.wav* file itself. Changing the Trim In and Trim Out points of a clip in the playlist ripples the Pos Out of the selected clip and the Pos In and Pos Out of all subsequent clips.

To change the Trim In or Trim Out of a selected clip or range of clips, do one of the following:

- Drag the slider on the **Positioner** or play the clip to the desired Trim In or Out point, then click the **Trim In** or **Trim Out** button. For more details on moving through clips, see "Navigating through clips with the transport controls" on page 19.
- Type the Trim In or Trim Out point directly into an empty or highlighted time code field as explained in "Editing the time code fields" on page 22.

To reset the Trim In or Trim Out point of a clip to the limit of its source file, **CTRL+click** the **Trim In** or **Trim Out** button. For example, if the Out point for a clip's source file is 00:00:10:18, **CTRL+clicking** the **Trim Out** button will set the Trim Out to that time code.

Note When editing several clips at once, your Trim In and Trim Out points must be within the limits of the first and last clips in the group, respectively.

Selecting channels

The Channel Selectors indicate which channels are present in individual clips. For example, if a clip doesn't have any associated audio, the **A1** and **A2** buttons won't be available. You can deactivate any of the available channels by deselecting the appropriate buttons. The **Channels** column of the playlist displays only the currently active channels for each clip.

Changing the order and width of the playlist columns

You can change the order and width of the columns of the playlist to suit your needs. To change a column's order, such as **Channels**, drag it to the desired position. To resize a column, place your mouse pointer on the column's **right** border (the pointer will change to a double-headed arrow), then drag the border as needed. The changes made to the appearance of the playlist are associated with the Playlist tool and are automatically saved when you close DigiTools.

Printing a playlist to tape

Once you've saved your playlist to an *.mpl* file (see "Saving and loading a playlist" on page 45), you can select the *.mpl* file in the **Playback** dialog box to play back your playlist and print it to tape. Your playlist will be treated as a single clip in the **Playback** dialog box.

If you'd like to add a background audio track or narration to a playlist, create another playlist with the audio on **A2** only. For example, in one playlist sequence your video clips with associated audio on **A1,** and create another playlist with your voice-over narration on **A2** only. You can then record the two playlists onto tape in two passes. For details on how to print clips to tape, see "Printing to tape" on page 35.

Converting files

You can convert a TGA sequence to an *.avi* file, or vice versa, as well as change the compression type of an *.avi* file using DigiTools' Convert tool as explained in the following sections.

Important When you render your animation in your editing program, make sure that you:

- Render to fields rather than frames.
- Choose to dither true color, if possible. This can reduce any undesirable "banding" effect on gradients in your images.
- Use the appropriate field dominance (field order) for your system. Animations rendered using the wrong field dominance will play back jerky. If you're unsure of the correct setting for your system, render a short animation (about one second), and play it back in your editing program. If the playback is jerky, change the field dominance, such as odd field to even field, and try the render again.

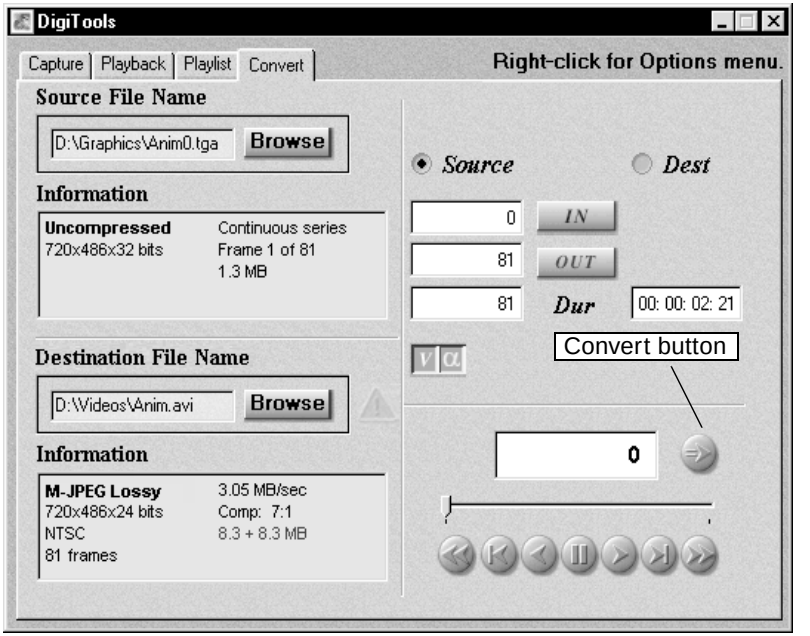
If you're unable to re-render a TGA sequence that was created using the wrong field dominance, you can have DigiTools invert the fields during the TGA to AVI conversion as explained in the next section.

Converting a TGA sequence to an .avi file

Before you start your conversion, you can select a video quality for your *.avi* file using the **Video Quality** dialog box as explained on page 27 for DigiSuite or DigiSuite LE, or on page 28 for DigiSuite DTV.

➢ To convert a TGA sequence to an *.avi* file:

1 Click the **Convert** tab to display a dialog box similar to the following:



2 In the **Source File Name** box, select any *.tga* file from the sequence you want to convert to AVI format. The file's name must include a frame number before its *.tga* extension. DigiTools displays the file's image on your Program monitor, detects the other frames in the sequence, and displays the duration in the **Dur** field.

3 If your TGA sequence was created using the wrong field dominance (ordering) for your system, right-click the background of the dialog box and select **Invert TGA field dominance** from the pop-up menu. This option will invert the TGA fields to create your *.avi* file, but will

not fix your TGA sequence. Before converting a sequence having the correct field dominance, make sure you deselect this option.

4 If you don't want to convert the entire TGA sequence, use DigiTools' transport controls to step through the sequence and find the portion you wish to convert, then mark or type in the required Source In and Out points.

5 Indicate which channels you wish to convert by clicking the Channel Selectors. By default, DigiTools selects channels for you, based on whatever information is detected in the TGA sequence.

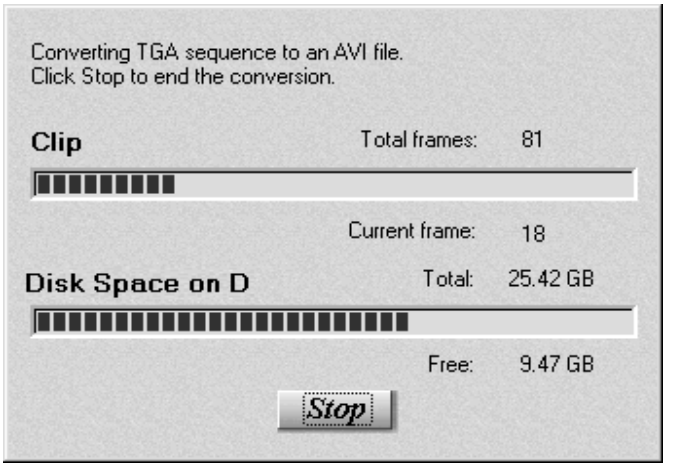
6 In the **Destination File Name** box, select the *.avi* file to which you want to convert your TGA sequence. Alpha-key information in the TGA sequence will be converted to a separate *.matte.avi* file. For example, if you choose to convert an alpha-key TGA sequence to a file named *Anim.avi*, the alpha-key information will be converted to *Anim.matte.avi*.

7 If you want your *.avi* file's duration to differ from that of your TGA sequence, type the required value in the Destination **Dur** field. The *.avi*'s duration will take precedence when you do your conversion.

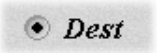
For example, if your TGA sequence is five frames long and you set your *.avi*'s duration to ten frames, DigiTools will create an *.avi* file that is ten frames long, with the last five frames consisting of the final image in the TGA sequence.

DigiTools calculates the approximate file size of the *.avi* and its associated *.matte.avi* file and displays it in the Destination **Information** box. The calculation is based on the duration of the *.avi* and its video quality setting.

8 Click the **Convert** button or press the **Q** key to start converting your TGA sequence. DigiTools displays the progress in a dialog box:



9 To manually stop your conversion before your *.avi*'s duration is reached, click **Stop** or press the **ESC** key.

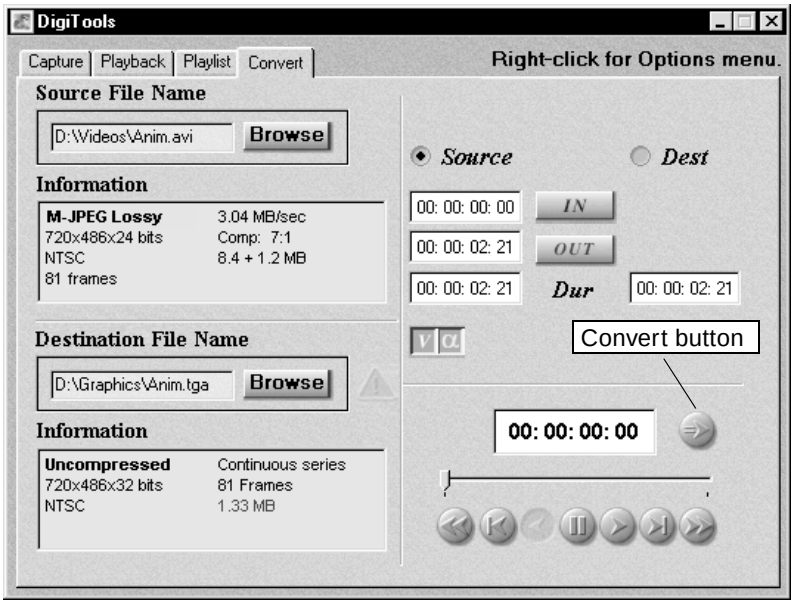


To play back the *.avi* file and its associated *.matte.avi* file, make sure that the **Dest** option is selected, then click the **Play** button in DigiTools.

Converting an .avi file to a TGA sequence

➢ **To convert an *.avi* file to a TGA sequence:**

1 Click the **Convert** tab in DigiTools. The **Convert** dialog box appears, similar to the following:



2 In the **Source File Name** box, select the *.avi* file you want to convert to a TGA sequence. If this is an alpha-key animation, make sure that the file you select is in the same folder as its corresponding *.matte.avi* file (for example, *Anim.matte.avi*).

3 Indicate which channels you wish to convert by clicking the Channel Selectors. By default, DigiTools selects channels for you, based on whatever files are detected.

4 If you don't want to convert the entire *.avi* file, mark or type in the desired Source In and Out points of your clip.

5 In the **Destination File Name** box, specify the name of the TGA sequence to which you want to convert your *.avi* file. A series of *.tga* files will be created with frame numbers corresponding to your source frames. For example, if your sequence name is *Anim.tga* and you convert frames 10 to 15 from your *.avi* file, a series of files will be created named *Anim00010.tga* up to *Anim00015.tga*.

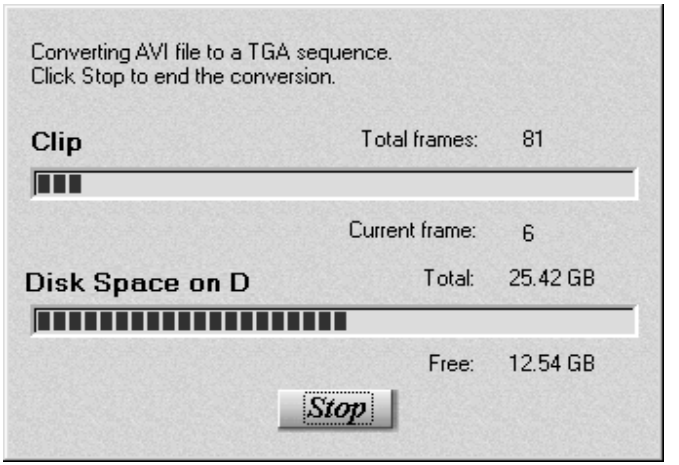
If your *.avi* file has a corresponding *matte.avi* file, then the *.tga* files will include the alpha-key information.

6 If you want your TGA sequence's duration to differ from that of your *.avi* file, type the required value in the Destination **Dur** field. The TGA duration will take precedence when you do your conversion.

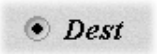
For example, if your *.avi* file is five frames long and you set your TGA duration to ten frames, DigiTools will create a TGA sequence that is ten frames long, with the last five frames consisting of the final image in your *.avi* file.

DigiTools calculates the size of each file in the TGA sequence and displays it in the Destination **Information** box. The size depends on whether you are working in NTSC or PAL.

7 Click the **Convert** button or press the **Q** key to start converting your *.avi* file. DigiTools displays the progress in a dialog box:



8 To manually stop your conversion before your TGA sequence's duration is reached, click **Stop** or press the **ESC** key.



To step through the TGA sequence, make sure that the **Dest** option is selected, then click the **Play** button in DigiTools.

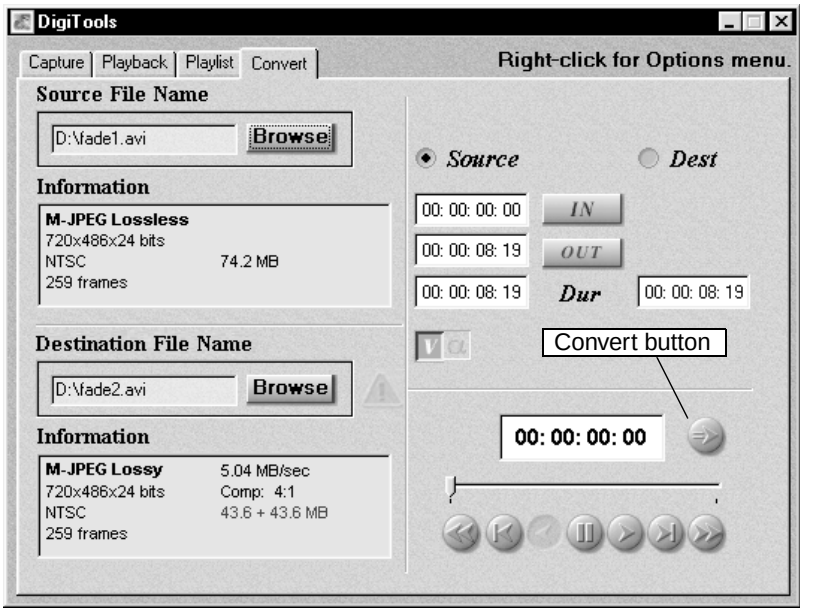
Changing the compression type of an .avi file

You can use the DigiTools Convert tool to change the compression type of a Matrox *.avi* file to any compression type your particular DigiSuite system supports for capturing clips. On a DigiMix-DigiMotion system, for example, you can convert Motion-JPEG lossless clips, DV clips, or MPEG-2 clips to Motion-JPEG lossy *.avi* files for use with other lossy clips in the DigiTools playlist or your nonlinear editing program.

Because DigiTools creates DirectShow *.avi* files, you can also use the Convert tool to convert Matrox Video for Windows *.avi* files to DirectShow *.avi* files. For a list of the *.avi* conversion formats supported by each type of DigiSuite system, see "Supported DigiSuite "AVI to AVI" conversion formats" on page 57.

➢ To change the compression type of an *.avi* file:

1 Click the **Convert** tab in DigiTools. The **Convert** dialog box appears, similar to the following:



2 In the **Source File Name** box, select the *.avi* file you want to convert.

3 Indicate which channels you wish to convert by clicking the Channel Selectors. By default, DigiTools selects channels for you, based on whatever files are detected.

4 If you don't want to convert the entire *.avi* file, mark or type in the desired Source In and Out points of your clip.

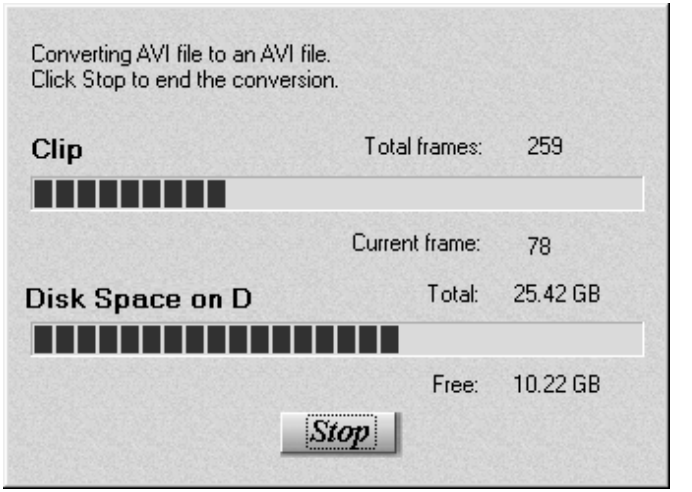
5 In the **Destination File Name** box, specify the name of the *.avi* file to which you want to convert your source *.avi* file. This name must be different from your source *.avi* file name.

6 To select a compression type for the destination file, right-click the background of the dialog box, then choose **Select Video Quality** from the pop-up menu. Select a video quality as explained on page 27 for DigiSuite or DigiSuite LE, or on page 28 for DigiSuite DTV.

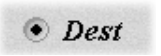
For example, selecting any quality other than the uncompressed video quality on a DigiMix-DigiMotion system will create a Motion-JPEG lossy *.avi* file.

Important Increasing the data rate of your *.avi* file will **not** improve the file's video quality beyond the quality at which it was created. You can, however, choose to lower the video quality to save storage space.

7 Click the **Convert** button or press the **Q** key to start converting your *.avi* file. DigiTools displays the progress in a dialog box.



8 To manually stop the conversion before your *.avi*'s duration is reached, click **Stop** or press the **ESC** key.



To play back your converted *.avi* file (and associated *.matte.avi* file, if applicable), make sure that the **Dest** option is selected, then click the **Play** button in DigiTools.

Supported DigiSuite “AVI to AVI” conversion formats

The following tables show the *.avi* file conversion formats DigiTools supports according to the particular DigiSuite system you’re using.

Note If your source *.avi* file is a Matrox Video for Windows file, it will be converted to a DirectShow *.avi* file.

Converting with DigiSuite (DigiMix-DigiMotion)

Source file	Destination file
Motion-JPEG lossless Motion-JPEG lossy DV (including DV50) MPEG-2 I-frame	Motion-JPEG lossless Motion-JPEG lossy

Converting with DigiSuite LE

Source file	Destination file
Motion-JPEG lossless Motion-JPEG lossy DV (including DV50) MPEG-2 I-frame	Motion-JPEG lossy

Converting with DigiSuite DTV

Source file	Destination file
Motion-JPEG lossless Motion-JPEG lossy DV (including DV50) MPEG-2 I-frame	DV (including DV50) MPEG-2 I-frame

Options for working with files

The pop-up menus for the **Capture** and **Convert** dialog boxes include options that let you customize the way you want DigiTools to create files. Here's a description of these options:

- **Warn before overwriting file** Select this option if you want DigiTools to display a warning message whenever you are about to overwrite a file. Deselecting this option does not disable the warning icon beside the **Browse** buttons in the **Capture** and **Convert** dialog boxes.
- **Remove remaining files on overwrite capture** Select this option if you want to delete any *.wav* or *.matte.avi* files when you overwrite their associated *.avi* file in a capture. The *.wav* or *.matte.avi* files will be deleted even if you capture video only.

  Usually, you'll want to leave this option deselected. For example, you may decide that you want to recapture a clip to improve its video quality, but want to leave the clip's *.wav* files untouched. Deselecting this option allows you to recapture your *.avi* file without deleting the *.wav* files.
- **Auto increment capture file names** Select this option if, after you complete a capture, you want DigiTools to numerically increment the file name for the next capture (for example, *capture1.avi*, *capture2.avi*, etc.). This is useful for preventing files from being overwritten and for capturing multiple clips from a common scene or tape.
- **Invert TGA field dominance** Select this option only if you're converting a TGA sequence whose field dominance (ordering) does not match that of your system. Animations that have been created using the wrong field dominance will play back jerky in your editing program.

  We recommend that instead of using this option, you perform your conversion after re-rendering your source TGA files with the appropriate field dominance for your system.

Note The **Invert TGA field dominance** option is available only when a source TGA file is selected in the **Convert** dialog box.

Keyboard shortcuts

The following table provides a complete list of keyboard shortcuts available for using the DigiTools transport controls and performing various other operations.

Keyboard Shortcuts	
Source	**K**
Destination	**L**
Play	**B**
Play Reverse	**C**
Rewind	**Z**
Fast Forward	**X**
Frame Advance	**’** (apostrophe)
Frame Reverse	**;** (semicolon)
Pause	**V**
Loop	**A**
Mark In	**M**
Mark Out	**,** (comma)
Cue In	**SHIFT+M**
Cue Out	**SHIFT+,** (comma)
Video Channel	**T**
Alpha-key Channel	**Y**
A1 Channel	**U**
A2 Channel	**I**
Capture/Print to Tape/ Sync Play/Convert	**Q**

Notes

Enhancements to 3D Studio MAX

This chapter explains how to create .avi files with the 3DS MAX plug-in that comes with DigiSuite.

Chapter

4

About the DigiSuite 3D Studio MAX plug-in

The DigiSuite 3D Studio MAX plug-in, together with the innovative technology of your DigiSuite hardware, lets you render high-quality alpha-keyed animations in 3D Studio MAX. The plug-in can be used for rendering scenes or Video Post sequences.

The plug-in renders your alpha-keyed animation to two DirectShow *.avi* files. One file is your animation, the other is alpha-key (matte) information stored as a grayscale animation. When you play back your animation using DigiTools, both files are played together in real time and are keyed over a selected video source.

When you installed the plug-in, it incorporated itself into 3DS MAX to keep the *.avi* rendering process quick and easy. The slight changes the plug-in makes to the process are documented in this chapter.

Note All files you create with the plug-in can be used for any 3DS MAX procedure or effect that uses *.avi* files.

Adjusting your render settings

The DigiSuite 3DS MAX plug-in requires some minor changes to the settings you choose when working with the Render Scene or Video Post capabilities of 3DS MAX. For details on how to render scenes and use Video Post, refer to your 3DS MAX documentation.

➢ **Before setting up your render:**

1. Choose **File | Preferences | Rendering**.
2. Set **Pixel Size Limit** to 2.0, and select **True Color** under **Output Dithering**.
3. If you are working on an NTSC system, set **Field Order** to **Odd**. If you are working in PAL, set it to **Even**.

Note Like many 3D rendering programs, 3DS MAX outputs pre-multiplied alpha when rendering images. This results in double attenuation when you alpha-key your animation, causing a darkening of transparent regions of the image and anti-aliased edges.

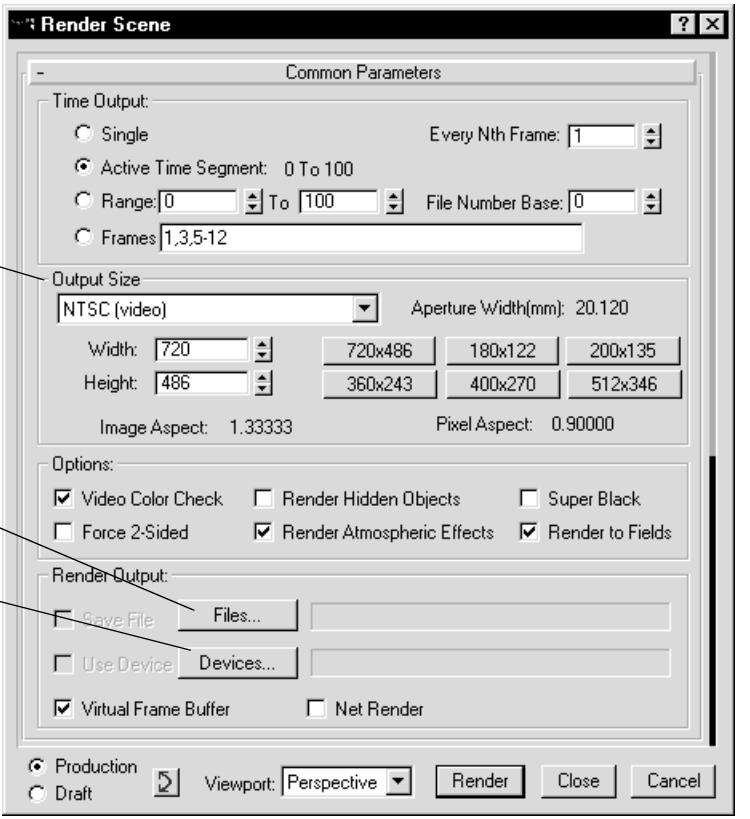
Render Scene settings

1. Open the **Render Scene** dialog box (either by clicking the **Render Scene** button on the toolbar or by choosing **Rendering | Render** from the main menu).

To render to an *.avi* with the plug-in, set **Output Size** to full-screen resolution for your system

Click **Files** to select your *.avi* file

Click **Devices** to enable rendering to your Program monitor



2 Adjust your settings as you normally would when rendering to an *.avi* file, except:

– To render a DigiSuite DirectShow animation, you must set the **Output Size** to full-screen resolution according to your system:

- On DigiSuite or DigiSuite LE, set the **Output Size** to 720×486 for an NTSC animation, or 720×576 for a PAL animation.
- On DigiSuite DTV, set the **Output Size** to 720×480 for an NTSC animation, or 720×576 for a PAL animation.

– For a better render, set **Pixel Aspect Ratio** to one of the following:

- If you're editing in the standard 4:3 screen format, set **Pixel Aspect Ratio** to 0.9 for an NTSC animation, or 1.067 for a PAL animation.
- If you're editing in the wide screen 16:9 format, set **Pixel Aspect Ratio** to 1.185 for an NTSC animation, or 1.422 for a PAL animination.

Note You may want to right-click one of the preset resolution buttons to change its **Width**, **Height**, and **Pixel Aspect Ratio** values to match your needs.

3 To greatly increase the quality of your animation, select **Render to Fields**, then open the **MAX Default Scanline A-Buffer** rollout and set **Pixel Size** under **Anti-Aliasing** to 2.0 (keep in mind that this will increase render time).

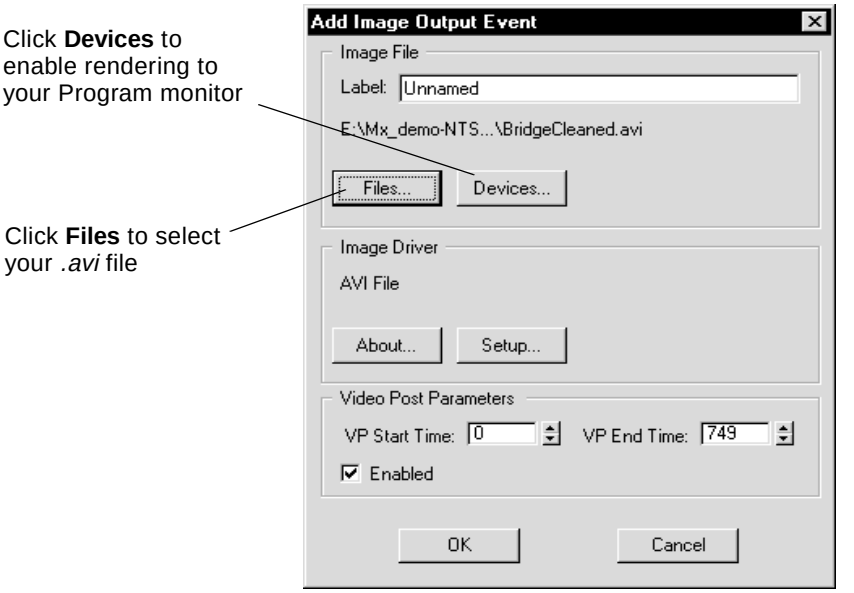
4 If you want to preview the rendering of your animation on your Program monitor, click **Devices** and select **Matrox DigiSuite Program Monitor** in the **Select Image Output Device** dialog box.

5 Click **Files** to select and configure your *.avi* file (see "Selecting and configuring your .avi file" on page 66).

Video Post settings

When using the Video Post dialog box to render a Video Post sequence to an *.avi* file, do the following:

1 Add an Image Output Event to your Video Post sequence by clicking the **Add Image Output Event** button. This opens a dialog box similar to the following:

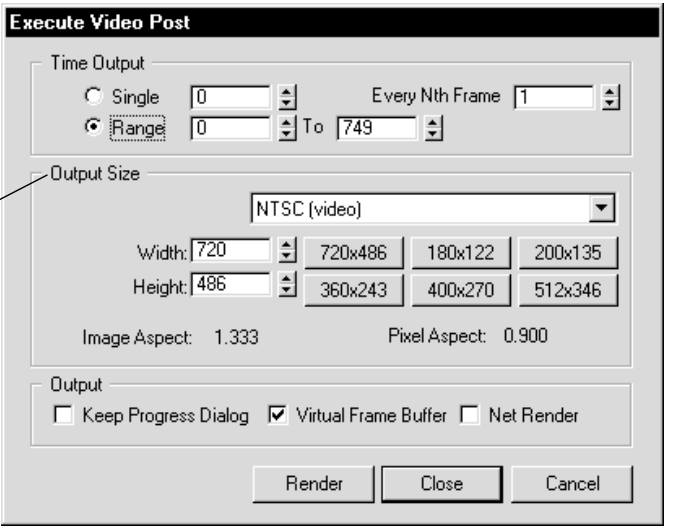


2 If you want to preview the rendering of your animation on your Program monitor, click **Devices** and select **Matrox DigiSuite Program Monitor** in the **Select Image Output Device** dialog box.

3 Click **Files** to open the **Browse Images for Output** dialog box. From there, you can select and configure your *.avi* file, as explained in the section "Selecting and configuring your .avi file" on page 66.

4 When you're ready to execute your Video Post sequence, click the **Execute Sequence** button in the **Video Post** dialog box. This opens a dialog box similar to the following:

To render to an *.avi* with the plug-in, set **Output Size** to full-screen resolution for your system



5 Adjust your Video Post settings as you normaly would, except:

– If you chose to create a DigiSuite DirectShow animation, set the **Output Size** to full-screen resolution according to your system:

- On DigiSuite or DigiSuite LE, set the **Output Size** to 720×486 for an NTSC animation, or 720×576 for a PAL animation.
- On DigiSuite DTV, set the **Output Size** to 720×480 for an NTSC animation, or 720×576 for a PAL animation.

– For a better render, set **Pixel Aspect Ratio** to one of the following:

- If you're editing in the standard 4:3 screen format, set **Pixel Aspect Ratio** to 0.9 for an NTSC animation, or 1.067 for a PAL animation.
- If you're editing in the wide screen 16:9 format, set **Pixel Aspect Ratio** to 1.185 for an NTSC animation, or 1.422 for a PAL animination.

Note You may want to right-click one of the preset resolution buttons to change its **Width**, **Height**, and **Pixel Aspect Ratio** values to match your needs.

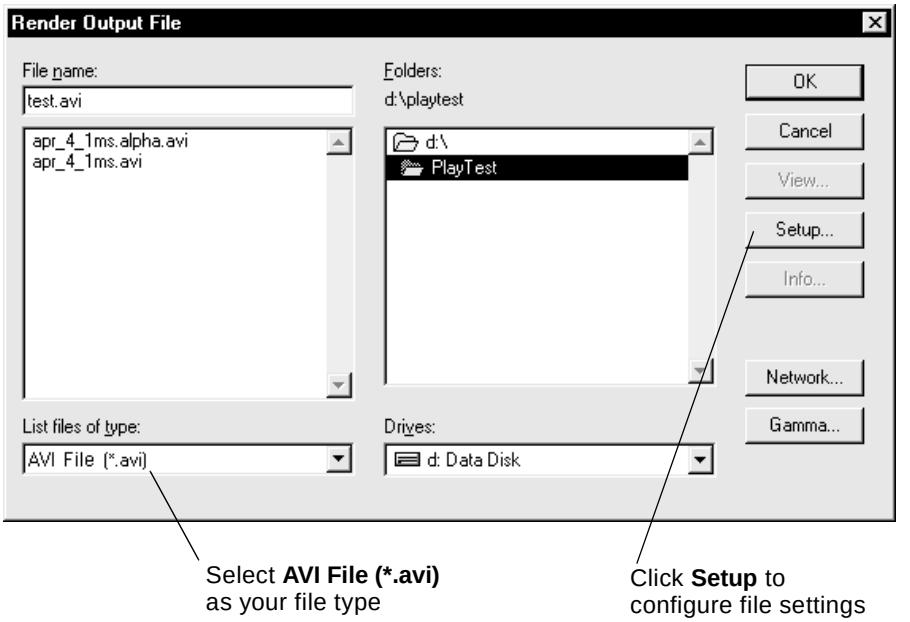
6 Click **Render** to execute the sequence.

Selecting and configuring your .avi file

The DigiSuite 3DS MAX plug-in allows you to render alpha-keyed animations to DirectShow *.avi* files while maintaining the ability to create the kind of *.avi* files you may have produced in the past without the plug-in. The following sections explain how to select and configure either type of *.avi* file.

Selecting your file type

To select the file in which you want to store your rendered animation (scene or Video Post sequence), click **Files** in either the **Render Scene** or **Add Image Output Event** dialog box. A dialog box similar to the following appears:



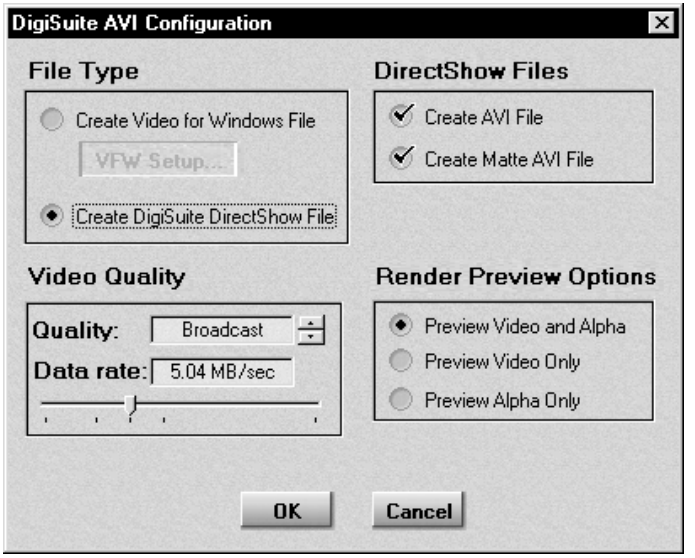
1 Select **AVI File (*.avi)** as your file type.

2 Specify the name and location of the *.avi* file you wish to create. The file should be saved on one of your A/V hard drives.

3 Click **Setup** to go to the **DigiSuite AVI Configuration** dialog box, where you can configure your *.avi* file settings. The following sections explain how to do this according to the particular DigiSuite system you're using.

Configuring your .avi file (DigiSuite or DigiSuite LE)

To configure your *.avi* file on a DigiMix-DigiMotion or DigiSuite LE system, click **Setup** in either the **Render Output File** or **Browse Images for Output** dialog box. The **DigiSuite AVI Configuration** dialog box appears:



From this dialog box, you can choose to create a DigiSuite DirectShow animation or a standard Video for Windows animation.

Creating a DigiSuite DirectShow animation

➢ **To create a DigiSuite DirectShow animation:**

1 Under **File Type**, select **Create DigiSuite DirectShow File**.

2 Under **DirectShow Files**, select the file(s) you want to create:

– **Create AVI File** Select this option to render your animation to a DirectShow *.avi* file. This file will not contain any alpha-key information. It will be given the name *yourfilename.avi*.

– **Create Matte AVI File** Select this option to create a grayscale DirectShow *.avi* file that contains **only** the alpha-key information for your animation. This file will be given the name *yourfilename.matte.avi*.

3 Select the video quality you want for your animation by choosing from one of several preset qualities, or by selecting a custom quality with the data rate slider.

Select a preset quality

– To select one of the following preset video qualities, click the arrows beside the **Quality** box. The approximate data rates for the preset qualities are:

- **Preview** 0.1 MB/sec
- **Industrial** 3 MB/sec
- **Broadcast** 5 MB/sec
- **Digital** 7 MB/sec
- **Uncompressed** Lossless (about 13 MB/sec, but varies depending on the complexity of the video). This quality is **not** available on DigiSuite LE. To select the highest possible quality on DigiSuite LE, select **Best Quality**.

Select a custom quality

– To select a custom video quality, drag the slider. For example, to select a broadcast quality at a data rate of approximately 6.0 MB/sec, simply drag the slider until that value is displayed in the **Data rate** box.

Only the uncompressed (lossless) quality **guarantees** identical quality to your source material. You can, however, achieve results that are virtually lossless by selecting a digital quality at a high data rate.

4 If you chose to preview the rendering of your animation on your Program monitor, select one of the following preview types:

– **Preview Video and Alpha** Select this to view your animation keyed over a live video background.

– **Preview Video Only** Select this to view your animation without the alpha-key information.

– **Preview Alpha Only** Select this to view only your animation's grayscale alpha-key information (*matte.avi* file).

Important The render preview options are applicable **only** if you set your preview device to **Matrox DigiSuite Program Monitor**.

5 Click **OK** to save your settings.

Now that your *.avi* file is configured, continue with your render.

Note If you synchronized your animation to a sound file using the 3DS MAX sound tracks, the DigiSuite plug-in will not include the audio when rendering to a DirectShow *.avi* file. However, you can play back your

DirectShow *.avi* along with a *.wav* file using DigiTools, as described in Chapter 3, “Working with Clips Using DigiTools.”

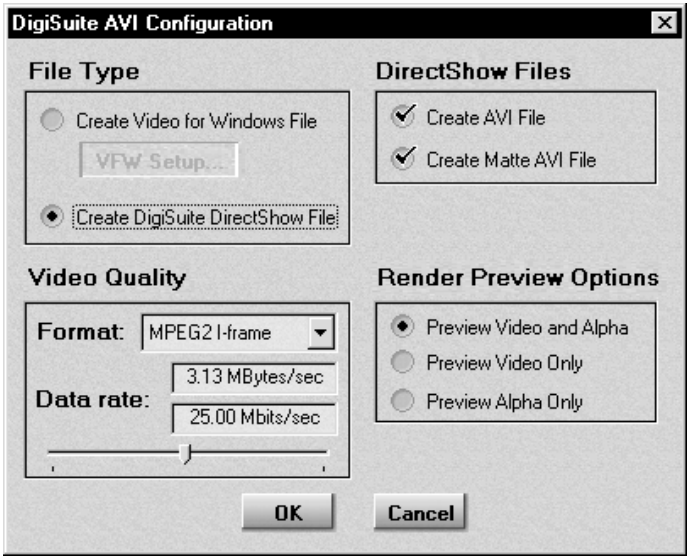
Creating a Video for Windows animation

To create a Video for Windows *.avi* file (the kind you would have created without the DigiSuite plug-in):

1. Under **File Type**, select **Create Video for Windows File**. This will disable the DirectShow controls in the dialog box. Select this only if you do **not** want to create a DirectShow *.avi* file. For example, you may want to use a Microsoft or Intel Indeo software compressor to create your animation.
2. Click **VFW Setup** to select the Video for Windows compressor for rendering the animation. Refer to your 3DS MAX documentation for details on rendering to a Video for Windows *.avi* file.

Configuring your .avi file (DigiSuite DTV)

To configure your *.avi* file on DigiSuite DTV, click **Setup** in either the **Render Output File** or **Browse Images for Output** dialog box. The **DigiSuite AVI Configuration** dialog box appears:



From this dialog box, you can choose to create a DigiSuite DirectShow animation or a standard Video for Windows animation.

Creating a DigiSuite DirectShow animation

➢ **To create a DigiSuite DirectShow animation:**

1. Under **File Type**, select **Create DigiSuite DirectShow File**.
2. Under **DirectShow Files**, select the file(s) you want to create:
   - **Create AVI File** Select this option to render your animation to a DirectShow *.avi* file. This file will not contain any alpha-key information. It will be given the name *yourfilename.avi*.
   - **Create Matte AVI File** Select this option to create a grayscale DirectShow *.avi* file that contains **only** the alpha-key information for your animation. This file will be given the name *yourfilename.matte.avi*.

Select a video format

3. From the **Format** box, select the format (video quality) you want for your animation. The formats available depend on whether you're using an NTSC or PAL system:
   - On an NTSC system, you can select any of the following:
     - **DV 4:1:1** Renders video to DV, DVCAM, or DVCPRO format.
     - **DV50 4:2:2** Renders video to DVCPRO50 or Digital-S format.
     - **MPEG-2 I-frame** Renders video to MPEG-2 intra-frame format using the 4:2:2 Profile @ Main Level at a selected data rate.
   - On a PAL system, you can select any of the following:
     - **DV 4:2:0** Renders video to DV or DVCAM format.
     - **DV 4:1:1** Renders video to DVCPRO format.
     - **DV50 4:2:2** Renders video to DVCPRO50 or Digital-S format.
     - **MPEG-2 I-frame** Renders video to MPEG-2 intra-frame format using the 4:2:2 Profile @ Main Level at a selected data rate.

Select an MPEG-2 data rate

4. To select your MPEG-2 data rate, drag the slider until the desired data rate is displayed. The higher the data rate you select, the better the video quality will be.
5. If you chose to preview the rendering of your animation on your Program monitor, select one of the following preview types:
   - **Preview Video and Alpha** Select this to view your animation keyed over a live video background.
   - **Preview Video Only** Select this to view your animation without the alpha-key information.
   - **Preview Alpha Only** Select this to view only your animation's grayscale alpha-key information (*matte.avi* file).

Important The render preview options are applicable **only** if you set your preview device to **Matrox DigiSuite Program Monitor**.

6. Click **OK** to save your settings.

Now that your *.avi* file is configured, continue with your render.

Note If you synchronized your animation to a sound file using the 3DS MAX sound tracks, the DigiSuite plug-in will not include the audio when rendering to a DirectShow *.avi* file. However, you can play back your DirectShow *.avi* along with a *.wav* file using DigiTools, as described in Chapter 3, "Working with Clips Using DigiTools."

Creating a Video for Windows animation

To create a Video for Windows *.avi* file (the kind you would have created without the DigiSuite plug-in):

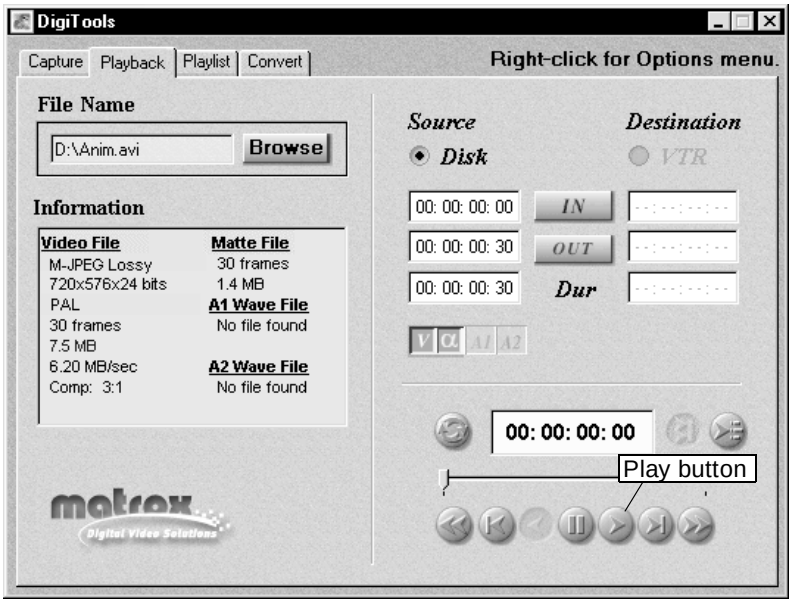
1. Under **File Type**, select **Create Video for Windows File**. This will disable the DirectShow controls in the dialog box. Select this only if you do **not** want to create a DirectShow *.avi* file. For example, you may want to use a Microsoft or Intel Indeo software compressor to create your animation.
2. Click **VFW Setup** to select the Video for Windows compressor for rendering the animation. Refer to your 3DS MAX documentation for details on rendering to a Video for Windows *.avi* file.

Playing back your DigiSuite DirectShow animation

When you choose **File | View File** from the main menu to view a DigiSuite DirectShow animation, the 3DS MAX plug-in will start the DigiTools Playback tool instead of Media Player.

Note If DigiTools is not installed, Media Player will be used to play back the animation.

The DigiTools **Playback** dialog box appears, similar to the following:

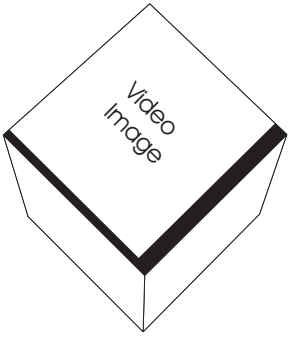


Click the **Play** button to start playing your animation on your Program monitor. If this is an alpha-keyed animation, it will automatically be keyed over your source video. For more information about playing back files using DigiTools, see Chapter 3, "Working with Clips Using DigiTools."

Note After playing your animation, you should close DigiTools if you intend to return to 3DS MAX to render more DigiSuite animations.

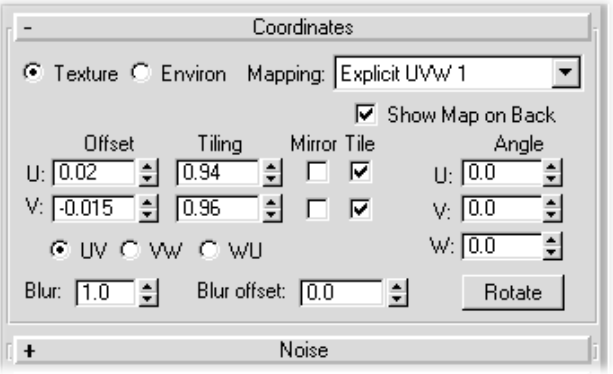
Mapping an .avi file to a surface

Because of the difference in blanking duration between analog and digital video, a thin black border will appear along the edges of video that's been captured from an analog source. Typically, the black borders appear at the right and bottom edges. When you map one of these *.avi*'s to a surface (for example, a side of a cube), the result can be illustrated as follows:



➢ **To remove the black bands:**

1. In the Material Editor, open the **Coordinates** rollout. This looks similar to the following:



2. Set the appropriate **Tiling** value to slightly less than 1. For example, a **U** value of 0.94 stretches 94% of the *.avi*'s frame across the width of the surface.
3. Set the appropriate **Offset** value to slightly more or less than 0 to shift the black band off the surface. For example, a **U** value of 0.02 shifts the tiled frame to the right by 2% of the surface's width.
4. Experiment with the **Offset** and **Tiling** values until the black bands are gone and only the image portion of the *.avi* is mapped to the surface.

Note To ensure that your *.avi* file is mapped with full opacity, open the **Bitmap Parameters** rollout in the Material Editor. Then make sure that **None (opaque)** is selected under **Alpha source**.

For details on mapped materials, refer to your 3DS MAX documentation.

Notes

Enhancements to LightWave 3D

This chapter explains how to create .avi files with the LightWave 3D plug-in that comes with DigiSuite.

Chapter

5

About the DigiSuite LightWave 3D plug-in

The DigiSuite LightWave 3D plug-in, together with your DigiSuite hardware, lets you render high-quality alpha-keyed animations in LightWave 3D (version 5.5 or later).

The plug-in renders your alpha-keyed animation to two DirectShow *.avi* files. One file is your animation, the other is alpha-key (matte) information stored as a grayscale animation. When you play back your animation using DigiTools, both files are played together in real time and are keyed over a selected video source.

When you installed the plug-in using DigiUtils Setup, it incorporated itself into LightWave 3D to keep the *.avi* rendering process quick and easy. This chapter explains the slight variations the plug-in makes to this process.

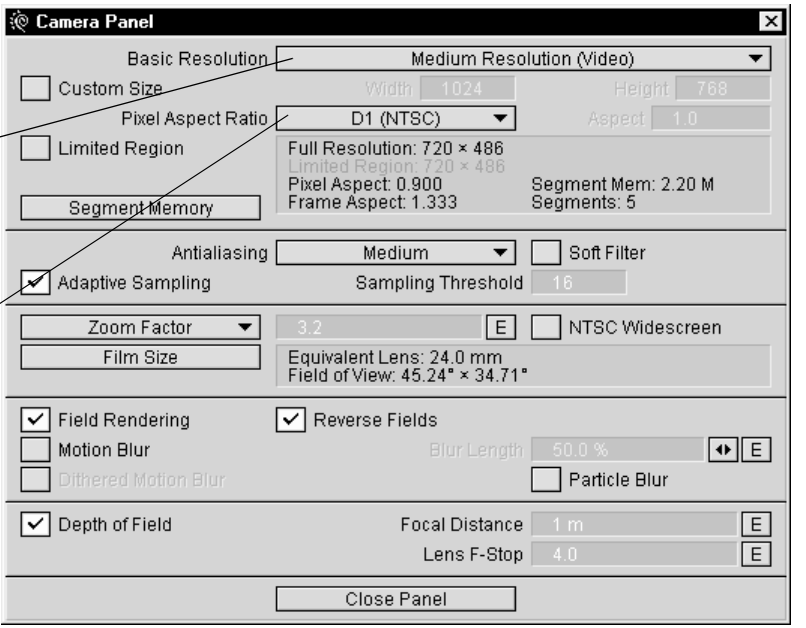
Adjusting your render settings

➢ **Before setting up your render:**

1 Click the **Camera** button on the toolbar to display the **Camera Panel**:

To render to an .avi with the plug-in, select **Medium Resolution (Video)**

To render to an .avi with the plug-in, set **Pixel Aspect Ratio** to D1 (NTSC), D1 (PAL), or Custom



2 Set **Basic Resolution** to **Medium Resolution (Video)**.

3 If you're using DigiSuite DTV, select the **Custom Size** option, then set the frame size as follows:

– For an NTSC animation, set **Width** to **720** and **Height** to **480**.
– For a PAL animation, set **Width** to **720** and **Height** to **576**.

4 Set the **Pixel Aspect Ratio** to one of the following:
– If you're editing in the standard 4:3 screen format, set the **Pixel Aspect Ratio** to **D1 (NTSC)** for an NTSC animation, or **D1 (PAL)** for a PAL animation.
– If you're editing in the wide screen 16:9 format, set the **Pixel Aspect Ratio** to **Custom**. In the **Aspect** box, enter 1.185 for an NTSC animation, or 1.422 for a PAL animation.

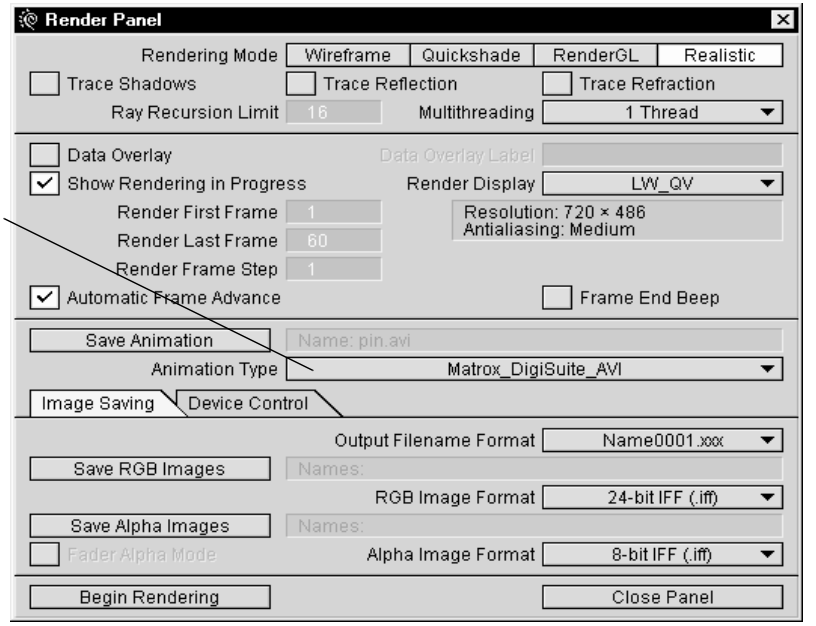
5 Select the **Field Rendering** option. On an NTSC system, also select **Reverse Fields**. (On a PAL system, make sure that **Reverse Fields** is **not** selected.)

Note Like many 3D rendering programs, LightWave 3D outputs pre-multiplied alpha when rendering images. This results in double attenuation when you alpha-key your animation, causing a darkening of transparent regions of the image and anti-aliased edges.

Render Panel settings

Open the **Render Panel** by clicking the **Render** button on the toolbar.

To render a DigiSuite DirectShow animation, select Matrox_DigiSuite_AVI



To render a DigiSuite DirectShow animation, select **Matrox_DigiSuite_AVI** from the **Animation Type** pull-down menu. Then adjust your settings as you always would when rendering to an *.avi* file.

The following sections explain how to select and configure your DigiSuite DirectShow *.avi* file. The way you configure your *.avi* file depends on the particular DigiSuite system you're using.

Selecting your file type

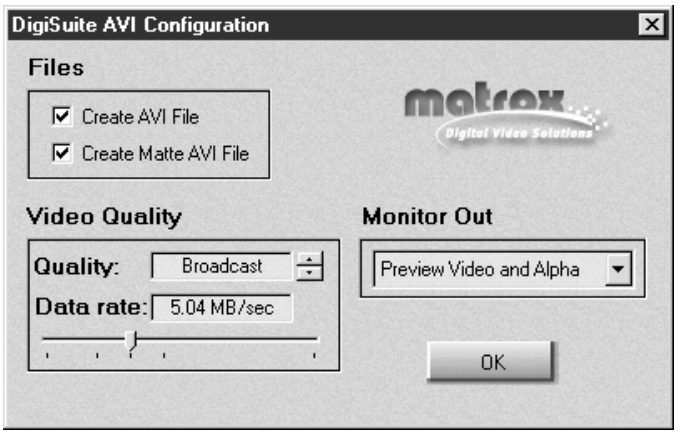
➢ **To select the file in which to store your rendered animation:**

1. Click **Save Animation** in the **Render Panel**.
2. Specify the name and location of the *.avi* file you wish to create. Be sure to include the *.avi* extension in your file name.
3. Click **Save** to close the **Save Animation** dialog box.

Configuring your DigiSuite DirectShow .avi file (DigiSuite or DigiSuite LE)

➢ **To configure your *.avi* file on a DigiMix-DigiMotion or DigiSuite LE system:**

1. Click **Begin Rendering** in the **Render Panel**. The **DigiSuite AVI Configuration** dialog box appears:



2. Under **Files**, select the type of file(s) you want to create:
   - **Create AVI File** Select this option to render your animation to a DirectShow *.avi* file. This file will not contain any alpha-key information. It will be given the name *yourfilename.avi*.

– **Create Matte AVI file** Select this option to create a grayscale DirectShow *.avi* file that contains **only** the alpha-key information for your animation. This file will be given the name *yourfilename.matte.avi*.

3 Select the video quality you want for your animation by choosing from one of several preset qualities, or by selecting a custom quality with the data rate slider.

Select a preset quality

– To select one of the following preset video qualities, click the arrows beside the **Quality** box. The approximate data rates for the preset qualities are:

- **Preview** 0.1 MB/sec
- **Industrial** 3 MB/sec
- **Broadcast** 5 MB/sec
- **Digital** 7 MB/sec
- **Uncompressed** Lossless (about 13 MB/sec, but varies depending on the complexity of the video). This quality is **not** available on DigiSuite LE. To select the highest possible quality on DigiSuite LE, select **Best Quality**.

Select a custom quality

– To select a custom video quality, drag the slider. For example, to select a broadcast quality at a data rate of approximately 6.0 MB/sec, simply drag the slider until that value is displayed in the **Data rate** box.

Only the uncompressed (lossless) quality **guarantees** identical quality to your source material. You can, however, achieve results that are virtually lossless by selecting a digital quality at a high data rate.

4 Under **Monitor Out**, select one of the following options for previewing the rendering of your animation on your Program monitor:

– **Preview Video and Alpha** Select this to view your animation keyed over a live video background.

– **Preview Video Only** Select this to view your animation without the alpha-key information.

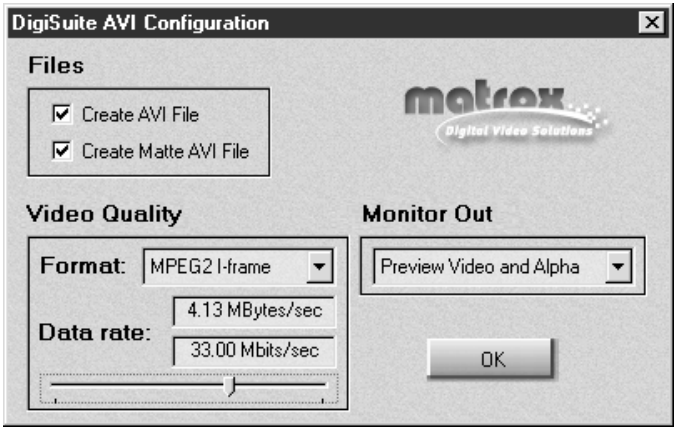
– **Preview Alpha Only** Select this to view only your animation's grayscale alpha-key information (*matte.avi* file).

5 Click **OK** to begin rendering your animation.

Configuring your DigiSuite DirectShow .avi file (DigiSuite DTV)

➢ **To configure your *.avi* file on DigiSuite DTV:**

1 Click **Begin Rendering** in the **Render Panel**. The **DigiSuite AVI Configuration** dialog box appears:



2 Under **Files**, select the type of file(s) you want to create:

– **Create AVI File** Select this option to render your animation to a DirectShow *.avi* file. This file will not contain any alpha-key information. It will be given the name *yourfilename.avi*.

– **Create Matte AVI file** Select this option to create a grayscale DirectShow *.avi* file that contains **only** the alpha-key information for your animation. This file will be given the name *yourfilename.matte.avi*.

Select a video format

3 From the **Format** box, select the format (video quality) you want for your animation. The formats available depend on whether you're using an NTSC or PAL system:

– On an NTSC system, you can select any of the following:

- **DV 4:1:1** Renders video to DV, DVCAM, or DVCPRO format.
- **DV50 4:2:2** Renders video to DVCPRO50 or Digital-S format.
- **MPEG-2 I-frame** Renders video to MPEG-2 intra-frame format using the 4:2:2 Profile @ Main Level at a selected data rate.

– On a PAL system, you can select any of the following:

- **DV 4:2:0** Renders video to DV or DVCAM format.
- **DV 4:1:1** Renders video to DVCPRO format.
- **DV50 4:2:2** Renders video to DVCPRO50 or Digital-S format.

- **MPEG-2 I-frame** Renders video to MPEG-2 intra-frame format using the 4:2:2 Profile @ Main Level at a selected data rate.

Select an MPEG-2 data rate

4 To select your MPEG-2 data rate, drag the slider until the desired data rate is displayed. The higher the data rate you select, the better the video quality will be.

5 Under **Monitor Out**, select one of the following options for previewing the rendering of your animation on your Program monitor:

– **Preview Video and Alpha** Select this to view your animation keyed over a live video background.

– **Preview Video Only** Select this to view your animation without the alpha-key information.

– **Preview Alpha Only** Select this to view only your animation's grayscale alpha-key information (*matte.avi* file).

6 Click **OK** to begin rendering your animation.

Playing back your DigiSuite DirectShow animation

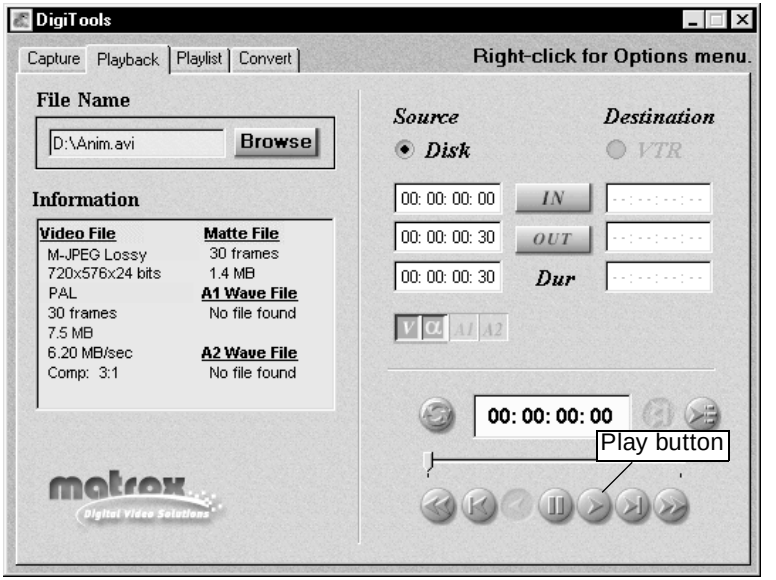
You can view your DigiSuite DirectShow animation using the DigiTools Playback tool or any other application that accepts *.avi* files.

➢ **To view a DigiSuite DirectShow animation using DigiTools:**

1 Make sure that your rendering process is complete.

2 Choose **Start | Programs | Matrox DigiSuite Utilities | DigiTools**.

3 Click the **Playback** tab in DigiTools. The **Playback** dialog box appears, similar to the following:



4 In the **File Name** box, select the file you want to play back.

5 Click the **Play** button to start playing the animation on your Program monitor. If this is an alpha-keyed animation, it will automatically be keyed over your source video. For more information about playing back files using DigiTools, see Chapter 2,"Working with Clips Using DigiTools."

Note After playing your animation, you should close DigiTools if you intend to return to LightWave 3D to render more DigiSuite animations.

Enhancements to Adobe After Effects

This chapter explains how to use the Adobe After Effects plug-in that comes with DigiSuite so that you can display the contents of your Composition window on your NTSC or PAL Program monitor.

Chapter

6

About the DigiSuite Adobe After Effects plug-in

The DigiSuite Adobe After Effects plug-in, together with your DigiSuite hardware, lets you display the contents of your Composition window in Adobe After Effects (version 4.0 or later) on your NTSC or PAL Program monitor. This lets you see the exact color temperature, safe-title area, and any interlaced artifacts in your composition as you work.

Important When you perform a RAM preview, it may not play back in real time on your Program monitor if your computer does not have a 100-MHz memory bus.

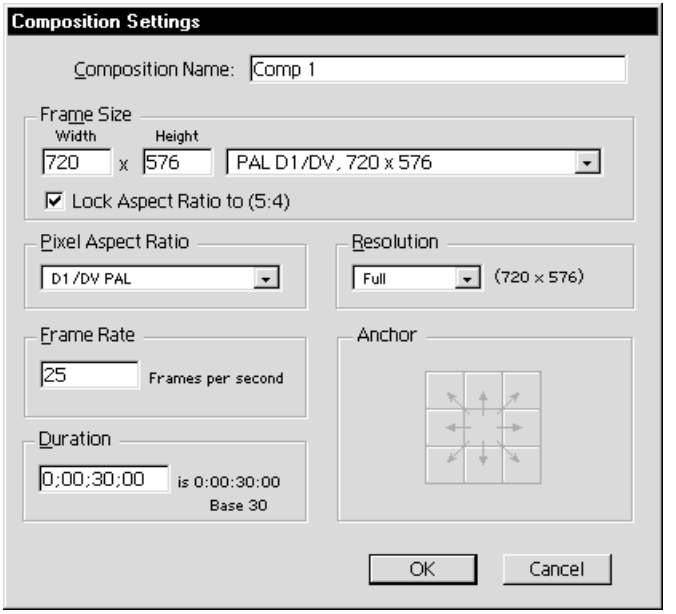
Required settings to use the plug-in

➢ **To use the Adobe After Effects plug-in:**

1. Run the DigiSuite Configuration program (located in Control Panel) and make sure that your **Display Source** for DigiMix, DigiSuite LE, or DigiSuite DTV in the **Output** or **Video Out** dialog box is set to **Graphic keyed over video**.

Note If you don't have a video source connected to your system, set the **Display Source** to **Graphic keyed over black**. If you're using an external downstream keyer, select **Graphic (external key)**.

2. Start Adobe After Effects.
3. Open the **Composition Settings** dialog box by choosing **Composition | New Composition**.



4 Set the **Frame Size** to full-screen resolution according to your system:
   – On DigiSuite or DigiSuite LE, set **Frame Size** to **NTSC D1, 720×486** for an NTSC animation, or **PAL D1/DV, 720×576** for a PAL animation.
   – On DigiSuite DTV, set **Frame Size** to **NTSC DV, 720×480** for an NTSC animation, or **PAL D1/DV, 720×576** for a PAL animation.

5 Set the **Frame Rate** to either **29.97** for an NTSC animation, or **25** for a PAL animation.

6 Set the **Resolution** to **Full**.

7 You can specify additional composition settings as explained in your *Adobe After Effects User Guide*.

Remarks

- When you separate fields in your imported video footage, only one video field will be displayed when you preview the video on your Program monitor. When you render your final image, however, it will be rendered correctly.
- You can apply the Broadcast Colors effect to your composition to reduce luminance or saturation to a safe (legal) level. To do so select all the layers in your composition, then choose **Effect | Video | Broadcast Colors**. Choose either **NTSC** or **PAL** according to your system. For more details see your *Adobe After Effects User Guide*.

Notes

Creating DigiSuite Effects

This chapter explains how to use the DigiSuite Effects plug-in with your nonlinear editing program.

Chapter

7

About the DigiSuite Effects plug-in

The DigiSuite Effects plug-in, together with your DigiSuite hardware and a supported nonlinear video editing program, lets you create the following realtime effects:

- Dissolve, wipe, and tile transitions.
- Chroma and luminance key effects.
- 2D DVEs (resize and crop an image to create a video window).
- Paint and proc amp effects.

Realtime means that you can play back and record your effects onto tape without having to render (compile) them, provided you're using an editing program that supports realtime effects, such as in:sync Speed Razor RT.

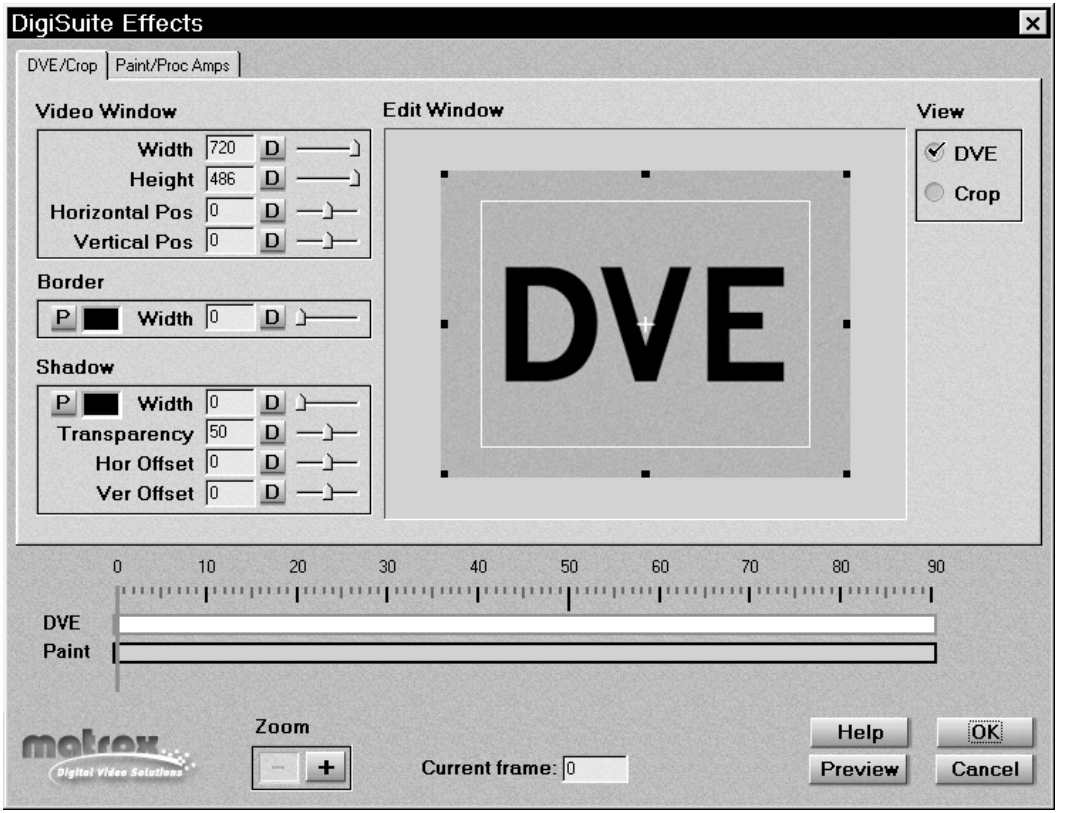
For information specific to using your editing program with the DigiSuite Effects plug-in, such as which effects are available and how to define your project settings for DigiSuite, refer to the section at the end of this chapter that pertains to your editing program.

Applying DigiSuite effects to your productions

When you install the DigiSuite Effects plug-in, the DigiSuite effects are added to your editing program so that you can include them in your video productions. You set up DigiSuite effects in your productions the same way as other effects included with your editing program.

For example, you apply a DigiSuite transition to your clips just as you would any other type of transition, except that the dialog box provided lets you create a DigiSuite transition, as is explained in this chapter. For instructions on how to apply effects to your productions, refer to your editing program's documentation.

When you apply a DigiSuite effect, a dialog box similar to the following appears (the resulting dialog box depends on the type of effect you apply):



The DigiSuite Effects plug-in comprises four dialog boxes:

- **Transitions** Lets you create dissolve, wipe, and tile transitions.
- **Keyers** Lets you create chroma and luminance key effects.
- **DVE/Crop** Lets you create 2D DVEs.
- **Paint/Proc Amps** Lets you create paint effects such as tint, mosaic, and posterization, as well as adjust a clip's proc amp settings.

The **Transitions** and **Keyers** dialog boxes usually appear separately, while the others are grouped together. To switch between dialog boxes that are grouped together, click the tab for the dialog box you want to use.

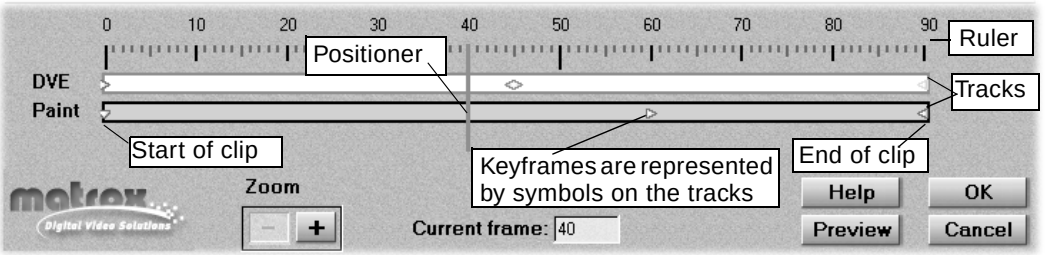
Using common controls in the plug-in

The following sections explain some common controls in the DigiSuite Effects plug-in.

About the keyframe controls

A *keyframe* is a frame at which you've defined one or more DigiSuite effects to take place in a clip. Interpolating between keyframes lets you create gradual transitions between different settings for an effect.

The keyframe controls, located at the bottom of each dialog box, let you work with and view your keyframes.



Tracks and Ruler

The tracks represent the progression of your clip over time, with the Ruler above the tracks denoting your clip's frame numbers. When more than one track is present, you can click a track to switch to its corresponding dialog box. For example, clicking the **Paint** track displays the **Paint/Proc Amps** dialog box.

Keyframe symbols

Whenever you create an effect, a symbol such as ▽ appears on the appropriate track, representing the keyframe you've created. For example, in the preceding illustration, the ▽ symbol on the **Paint** track at frame 0 represents a tint effect created at the beginning of the clip using the **Paint/Proc Amps** dialog box.

Positioner

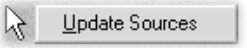
You use the Positioner to specify at which frame you want to create a keyframe. You can also preview an effect by dragging the Positioner across the clip. To move the Positioner to a particular frame, enter the frame number in the **Current frame** box, or click the frame on the Ruler. You can also right-click the Positioner or the Ruler to display a pop-up menu with commands for moving the Positioner.

For complete details on creating keyframes and using the keyframe controls, see "Working with keyframes" on page 125.

Previewing your effects

There are several ways to preview your effects.

- **Preview your entire clip** Click the **Preview** button at the bottom of the dialog box.
- **Preview a specified range** On the Ruler, click the frame number where you want your preview to start. Then hold down the **SHIFT** key while clicking the frame number where you want your preview to end. Your selected range becomes highlighted on the Ruler. Click the **Preview** button to view the range you've specified. To clear the selected range, **CTRL+click** the Ruler.
- **Start a preview at a specified frame** On the Ruler, double-click the frame number where you want your preview to start. Your clip is played from this point until its end.



- **Scrub through your clip** Drag the Positioner through the section of the clip you want to preview. For a smoother preview with the Positioner, right-click anywhere on the background of the keyframe controls and make sure that **Update Sources** is off. The preview will then be done using still frames.
- **Preview only one track's effects** Hold down the **F2** key while using any of the preceding methods for previewing your clip. Your clip is shown with only the effects of the highlighted track applied.

Using sliders

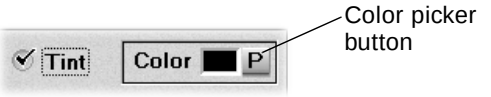
Sliders are provided to let you adjust the settings for many of the DigiSuite effects. For example, the **Width** slider under **Video Window** in the **DVE/ Crop** dialog box lets you set the width of your video window.

To change a slider's setting, simply drag it to the left or right. For a faster but less precise adjustment, **SHIFT+drag** the slider. You can also move the sliders using the arrow keys or the **PAGE UP** and **PAGE DOWN** keys.

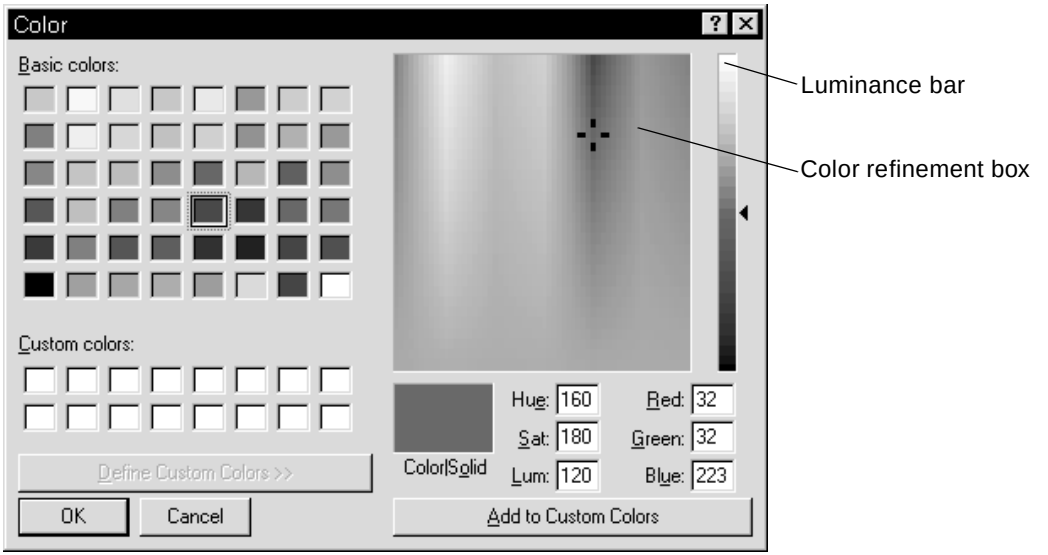
To return a slider to its default setting, **CTRL+click** the slider or slider bar (or click the D button, if present).

Selecting colors

Several DigiSuite effects provide a “color picker” button to let you choose the color you want for the effect, such as for a tint effect.



When you click a P button, the **Color** dialog box appears.



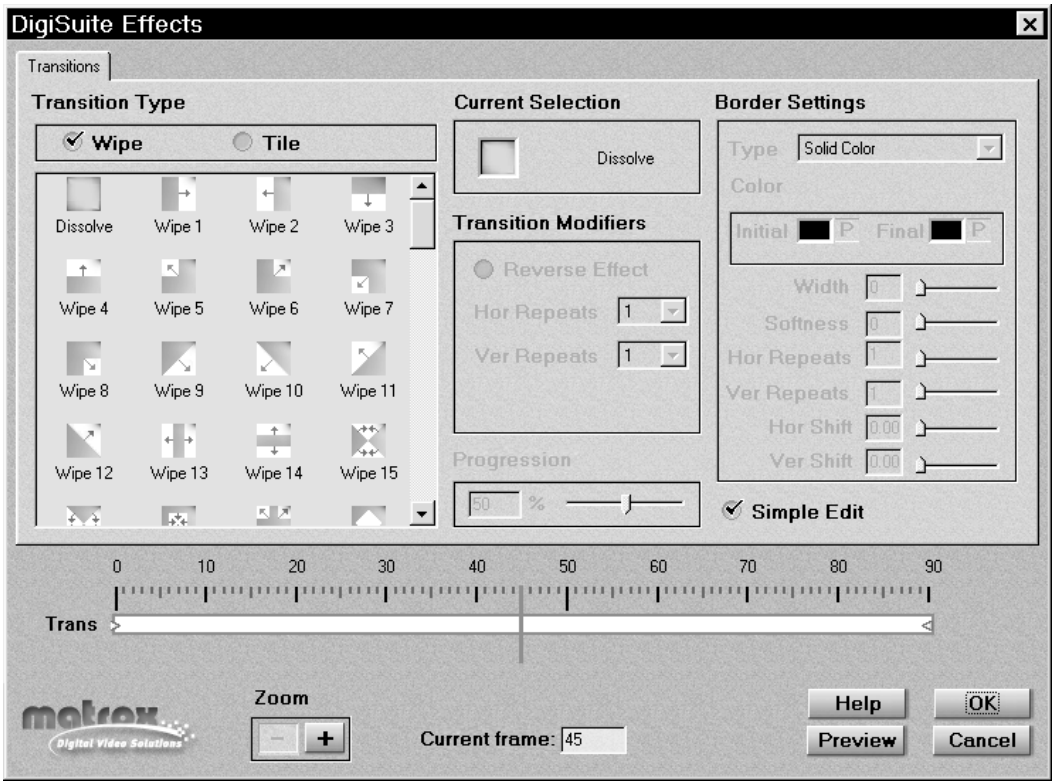
➢ **To select your color:**

1. Click one of the basic colors on the left side of the dialog box, or click the color you want inside the Color refinement box.
2. Adjust your color’s luminance by clicking inside the Luminance bar or by dragging the arrow beside it.

Alternatively, if you know your desired color’s Hue, Saturation, and Luminance values, or Red, Green, and Blue values, you can enter them in the corresponding text boxes.

Creating a transition

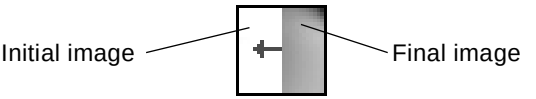
The first time you apply a DigiSuite transition to clips in your production during a work session, a dissolve (crossfade) transition is created by default. You can edit the transition to change its settings as explained in your program's documentation. When you do this, a dialog box similar to the following appears:



➢ **To edit the transition:**

1. Select the kind of transition you want by clicking **Wipe** or **Tile** under **Transition Type**.
2. Select the pattern you want from the list on the left side of the dialog box. The currently selected pattern is displayed to the right of the list.

The white area in each pattern represents your initial image, and the darker area represents the final image you're revealing. The arrow shows the direction of the pattern.



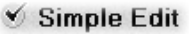
Note If you select a dissolve transition, the remaining controls in the dialog box will be unavailable, except for the **Progression** slider (see "Changing the progression of your transition" on page 96). If you select Wipe 77 (circular wipe), the border settings will be unavailable.

3 To create a border for your transition, use the **Border Settings** as described in "Adding a border to your transition" on page 95.

4 To change the appearance of your transition, for instance by repeating the wipe pattern or changing the tile size, use the **Transition Modifiers** as described in "Adjusting your transition" on page 96.

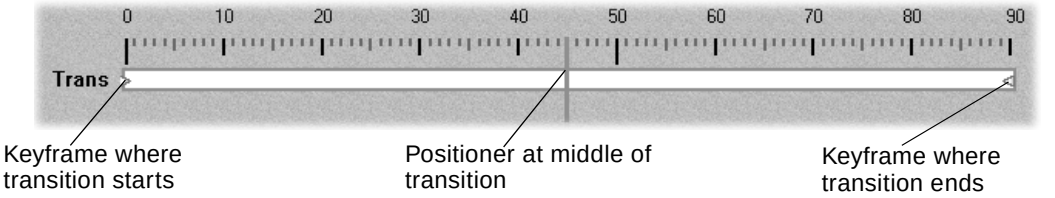
A "simple edit" transition is created by default, as explained in the next section.

About the Simple Edit option



You'll notice that when you create a transition, the **Simple Edit** option is selected by default. A "simple edit" transition is defined as follows:

- The transition starts at frame 0 and ends at the last frame of the clip region. Two interpolated keyframes are created for you at these frames, similar to the following illustration:



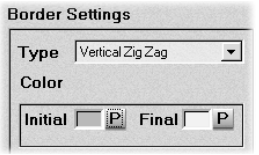
- The settings at both keyframes are the same (except for the **Progression** value). For example, if you add a border to your transition, the same border settings are applied at the start and end of the transition. The changes you make are applied to both keyframes, regardless of the Positioner's location.
- The transition has a standard progression ranging from 0% at the first frame up to 100% at the last frame. For example, at frame 0 the transition is about to start (initial image is fully visible), at the mid-

point the transition is 50% complete, and at the last frame the transition is complete (final image is fully visible).

Important To create a transition with settings **other** than those defined for a "simple edit", you must clear the **Simple Edit** option. For example, to interpolate between different border colors or change the progression, you must clear **Simple Edit** and place the Positioner at the frame where you want to make the change. For details on creating new keyframes and how interpolation works, see "Working with keyframes" on page 125.

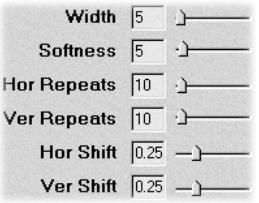
Adding a border to your transition

To create a border or soft edge between your initial and final images, use the **Border Settings** as follows:



1. Select the kind of border you want from the **Type** box. You can select a solid color, random noise, or a pattern.
2. To select the initial or final border color, click the **Initial** or **Final** P button, respectively, under **Color**. Then use the **Color** dialog box to select a color as described in "Selecting colors" on page 92.

   The initial color is the main color of your border pattern. The final color appears between repeated patterns (see step 3) as a gradation from your initial color. When you choose a solid-color border, only the **Initial** color button is available. Neither color button is available for the random noise border.
3. Adjust the following border settings by entering the values you want or by dragging the sliders.



- **Width** Thickness of your border, specified in pixels for a wipe transition, or the number of tiles for a tile transition. Set this to zero only if you do **not** want a border.
- **Softness** The softness of the edge or border between your initial and final images. The higher the **Softness** value, the less sharp the edge or border becomes.
- **Hor Repeats** Number of times your border pattern repeats horizontally (unavailable for the **Ramp** pattern).
- **Ver Repeats** Number of times your border pattern repeats vertically (unavailable for the **Ramp** pattern).
- **Angle** This control is only available if you selected **Ramp** as your border pattern in step 1. Use it to set the angle, in degrees, of your ramp.
- **Repeats** Available only for the **Ramp** pattern, this controls the number of ramps (that is, color changes between the two colors) that appear in your border.
- **Hor Shift** Shifts your border pattern horizontally across the screen.

– **Ver Shift** Shifts your border pattern vertically across the screen.

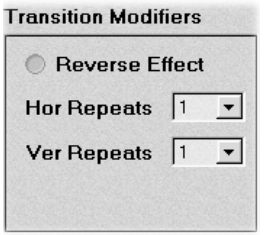
Adjusting your transition

Use the **Transition Modifiers** and **Progression** slider to adjust the appearance of your transition. For example, you can reverse the direction of your wipe or tile pattern, repeat the wipe pattern horizontally and/or vertically, and specify the size of the tiles in a tile transition.

The controls available under **Transition Modifiers** depend on whether you're adjusting a wipe or tile transition.

Adjusting a wipe transition

You can adjust a wipe transition as follows:

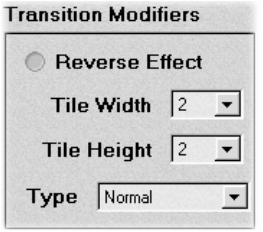


- **Reversing the transition** Select **Reverse Effect** to reverse the direction of the current wipe pattern.
- **Repeating the pattern** Select the number of times you want your transition pattern to repeat horizontally and vertically using the **Hor Repeats** and **Ver Repeats** boxes, respectively.

  For patterns that move in only one direction, such as a horizontal wipe from left to right, you'll only be able to see the result of repeating the pattern in that direction.

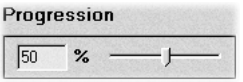
Adjusting a tile transition

You can adjust a tile transition as follows:



- **Reversing the transition** Select **Reverse Effect** to reverse the direction of the current tile pattern.
- **Changing the size of the tiles** Use the **Tile Width** and **Tile Height** boxes to change the width and height, respectively, of the tiles in your transition. The tile sizes are specified in pixels.
- **Overlaying a pattern** You can apply a pattern to your selected tile using the **Type** box. For example, you could apply a checkerboard pattern to your selected tile. Select **Normal** if you don't want to overlay a pattern.

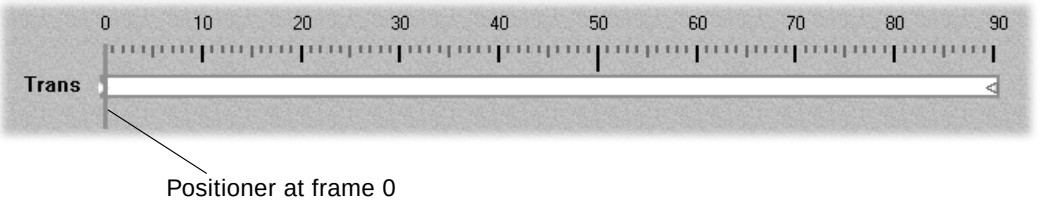
Changing the progression of your transition



The standard progression of a transition ranges from 0% at the first frame (transition not yet visible) up to 100% at the last frame (transition complete). The **Progression** slider lets you change the progression of your transition at any frame. For example, you could set the progression to 50% at the first frame to make the transition start only at its mid-point.

➢ To change the progression:

1. Clear the **Simple Edit** option if it's presently selected.
2. Move the Positioner to the frame where you want to change the progression. For example, to change how the transition starts, move the Positioner to frame 0 as in the following illustration:



3. Drag the **Progression** slider to the required setting, or enter the value you want in the corresponding text box.

Creating key effects

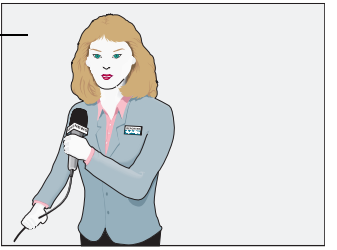
You can use the DigiSuite Effects plug-in to apply chroma and luminance key effects to clips in your production.

- Use the chroma key effect to make certain areas of a foreground image transparent based on the color in that image (or another source), so that an underlying image can show through.
- Use the luminance key effect to make certain areas of a foreground image transparent based on the luminance in that image (or another source), so that an underlying image can show through.

In the following example of a chroma key effect, our foreground image is a video clip of a reporter standing in front of a blue backdrop, and our underlying image is a video clip of a sunset:

Foreground image

Blue backdrop



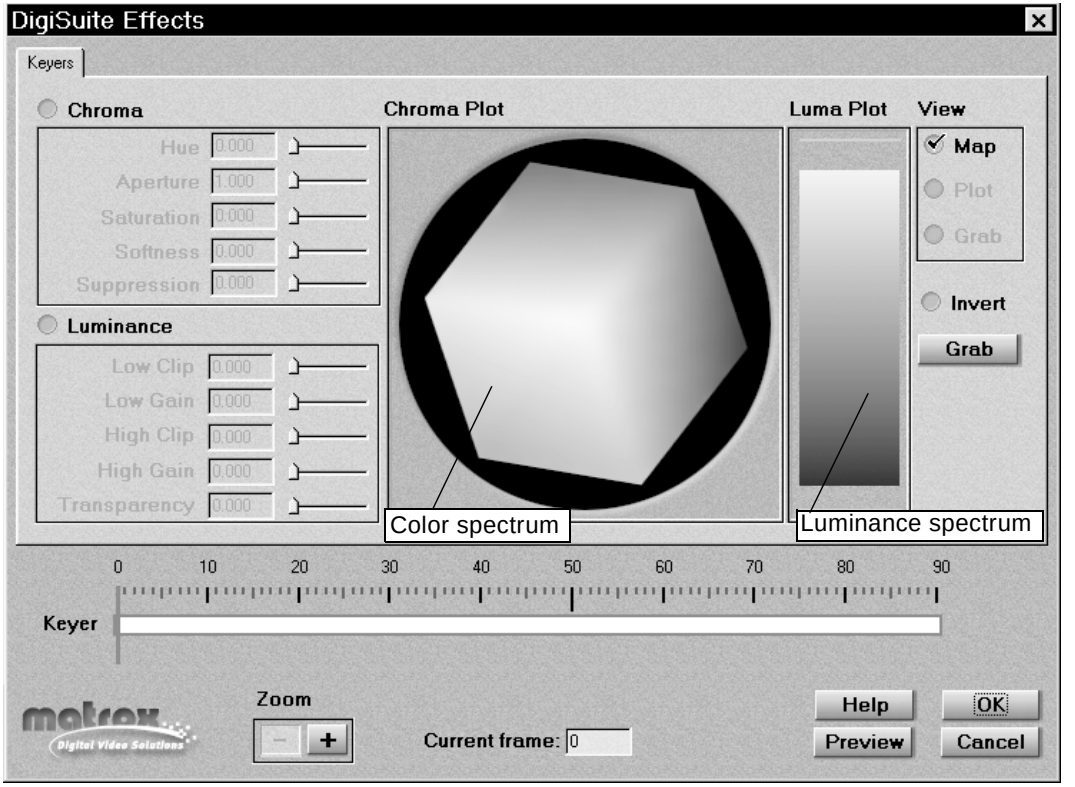
Underlying image

By chroma keying on the particular shade of blue in the backdrop of the foreground image, the backdrop area becomes transparent and the corresponding area of the underlying image shows through as follows:

Result of chroma key

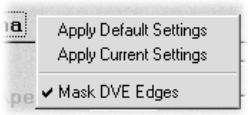
Important Make sure that you apply your key effect to the clip containing the colors and/or luminance values on which you want to key (called the *key source*). If your foreground image is your key source, as in the previous example, apply the effect titled **DigiSuite Self-key**. If you want to use a key source **other** than your foreground image, apply the effect titled **DigiSuite Filled Key**.

When you apply the effect, the **Keyers** dialog box appears, similar to the following:



Creating a chroma key effect

Select **Chroma** to enable the chroma key controls. Use these controls to select the colors you want to key, and the **View** controls to change the way you view and select your colors. Make sure that **Luminance** is **not** selected, unless you want to preserve shadows in your keyed image, as described on page 109.



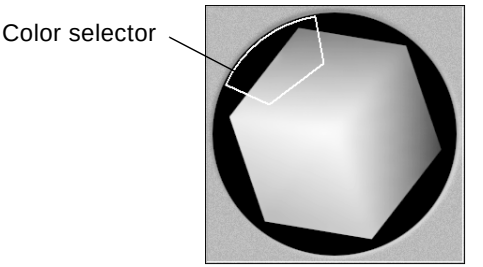
If your key source is a clip on which you've defined a DigiSuite 2D DVE (video window), right-click the background of the effect controls and make sure that **Mask DVE Edges** is selected in the pop-up menu. This option eliminates any thin unwanted lines that may appear at the edges of your keyed DVE. Be aware that if your system includes a Genie card, the **Mask DVE Edges** option won't be available. In this case, use Inscriber VideoFX instead of the DigiSuite Effects plug-in to scale your image, and add a soft

border to your DVE to soften any unwanted edges that may appear in your keyed DVE.

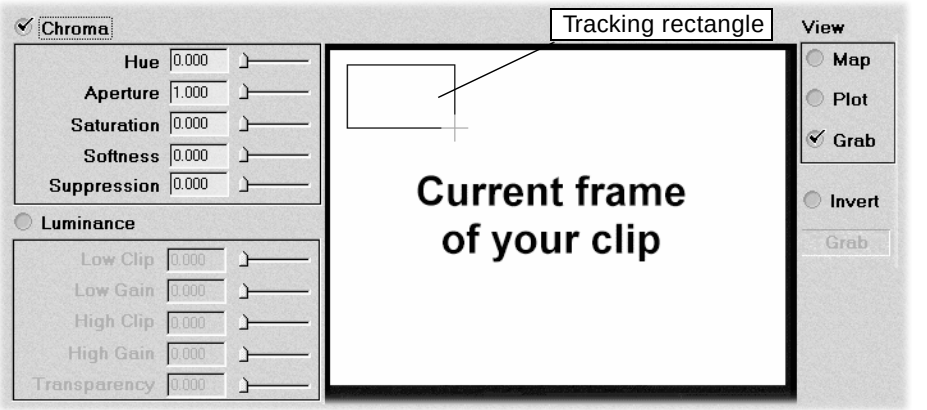
Viewing and selecting your key colors

There are three ways of viewing and selecting the colors on which you want to key.

- **Map** This is the default view when you first open the **Keyers** dialog box. It consists of a cube, located under **Chroma Plot**, that contains a color spectrum. When you adjust the **Chroma** controls (see the next section), a color selector appears around the colors on which you're keying, similar to the following:



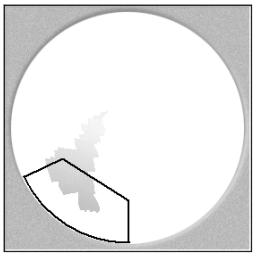
- **Grab** This view displays your clip's current frame. To obtain it, click the **Grab** button. The current frame takes the place of the color and luminance spectrums, as shown in the following illustration:



Use the tracking rectangle to select an area containing the colors on which you want to key. To create the rectangle, click and drag across the two opposing corners of the area you want to select. The rectangle stays visible until you let go of the mouse button. The **Chroma** controls are adjusted to reflect your selected key colors.

Note Be aware that all colors in your selected area will be keyed, as well as the intermediate shades in the color spectrum. For example, if your selected area includes red and blue, you'll also key on the intermediate shades of pink, magenta, and violet. This means you can't choose opposing colors, such as yellow and blue, to be your **only** key colors.

- **Plot** This view is similar to **Map**, but contains **only** the colors that are present in the current frame of your clip. To obtain the **Plot** view, click the **Grab** button, then select **Plot** under **View**. The result is similar to the following example:

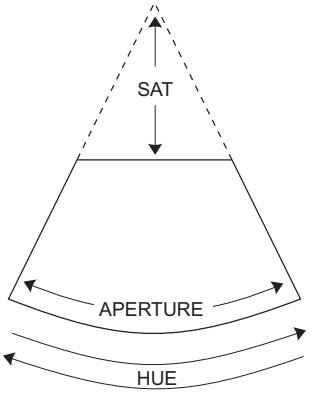


As with the **Map** view, when you adjust the **Chroma** controls, a color selector appears around your selected key colors.

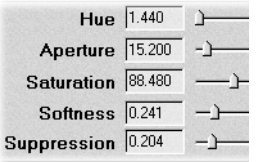
Note Once you've clicked the **Grab** button, you can switch between all three views by selecting **Map**, **Plot**, or **Grab** under **View**.

Using the chroma key controls

You can select colors on which to key by adjusting the **Hue**, **Aperture**, and **Saturation** controls. Your adjustments affect the shape and rotation of the color selector, which contains your key colors, as follows:



Here's an explanation of how to use the chroma key controls to set up your effect:



- **Hue** Use this to rotate the color selector around the perimeter of the color spectrum so that you can select different hues (colors) on which to key.
- **Aperture** Use this to widen or narrow the aperture of the color selector to increase or decrease the range of colors on which you want to key.
- **Saturation** Use this to select colors that have a particular saturation value. Pale colors have a **low** saturation value and are located at or near the **center** of the spectrum. Vivid colors have a **high** saturation value and are located at or near the **perimeter** of the spectrum. Because pale colors have low saturation, you'll find them more difficult to key on than the vivid colors.
- **Softness** Use this to soften the edges of your key by blending parts of your foreground image with your underlying image. This makes certain areas of your foreground image partially transparent instead of completely transparent or opaque.

  The softness value sets the range of colors that will create a soft key. For example, if you select a low softness value, only a few colors located just outside and just inside the present key color range will create a soft key. Alternately, a high softness value affects a wider range of colors and will probably make a larger area of your key foreground image partially transparent.

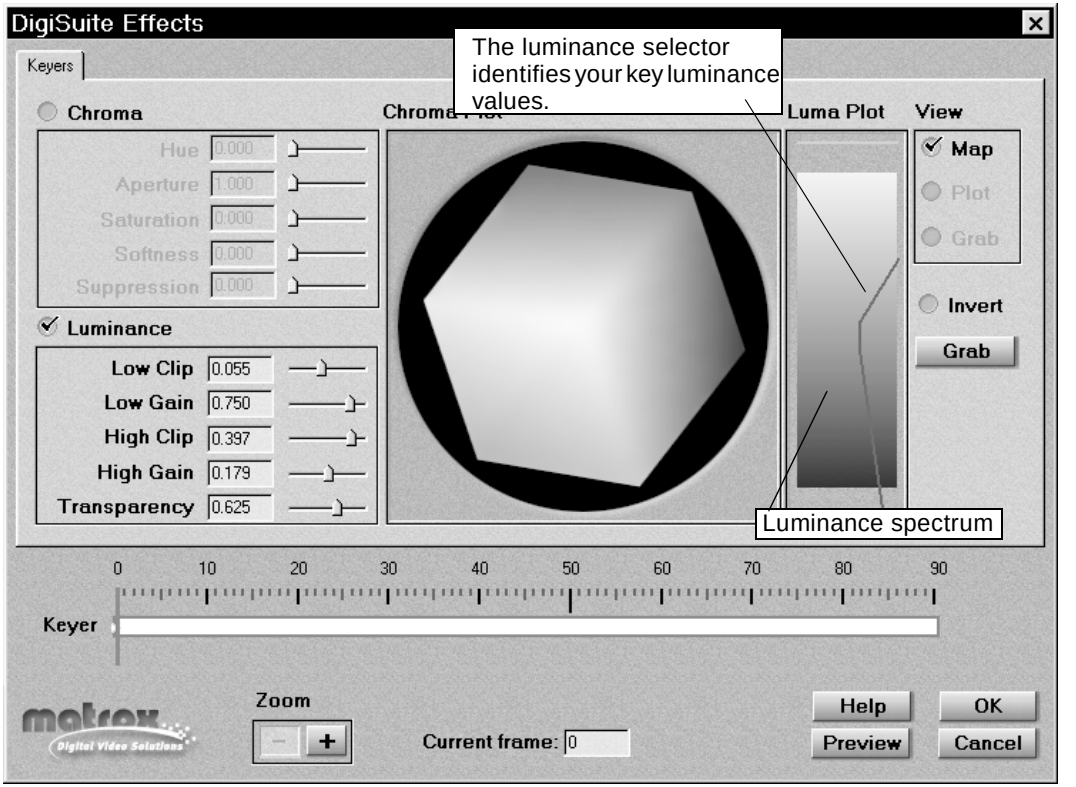
- **Suppression** Use this to remove the chrominance from certain colors at the edges of your key. This reduces the prominence of colors that could not be blended using the **Softness** control.

  For example, after applying softness to a foreground image of a newscaster against a blue background, you may find that there are still some blue pixels in the newscaster's hair. Increasing the suppression level removes the chrominance from these pixels and reduces their visibility.

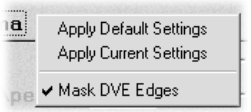
- **Invert** Select this to invert your key effect, giving you the opposite result of what you originally selected. Previously transparent areas become opaque, and opaque areas become transparent.

Creating a luminance key effect

In the **Keyers** dialog box, select **Luminance** to enable the luminance key controls, as shown below:



Use the **Luminance** controls to select the luminance values you want to key, and the **View** controls to change the way you view and select these values. Make sure that **Chroma** is **not** selected, unless you are preserving shadows in a chroma-keyed image, as described on page 109.

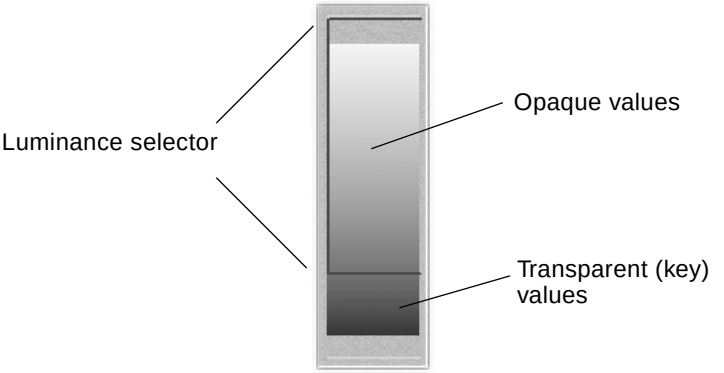


If your key source is a clip on which you've defined a DigiSuite 2D DVE (video window), right-click the background of the effect controls and make sure that **Mask DVE Edges** is selected in the pop-up menu. This option eliminates any thin unwanted lines that may appear at the edges of your keyed DVE. Be aware that if your system includes a Genie card, the **Mask DVE Edges** option won't be available. In this case, use Inscriber VideoFX instead of the DigiSuite Effects plug-in to scale your image, and add a soft border to your DVE to soften any unwanted edges that may appear in your keyed DVE.

Viewing and selecting your luminance values

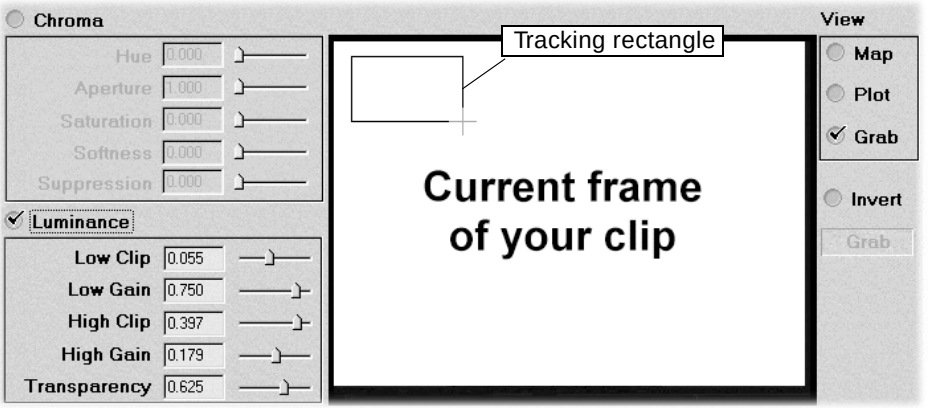
There are three ways of viewing and selecting the luminance values on which you want to key**.**

- **Map** This is the default view when you first open the **Keyers** dialog box. It consists of a luminance spectrum located under **Luma Plot**. When you adjust the **Luminance** controls (see the next section), a luminance selector indicates the values you're keying, as in the following example:



The luminance selector will also reflect adjustments you make to the level of transparency, as described in the next section, "Using the luminance key controls."

- **Grab** This view displays your clip's current frame. To obtain it, click the **Grab** button. The frame takes the place of the color and luminance spectrums, as shown in the following illustration:



You use the tracking rectangle to select an area containing the luminance values on which you **don't** want to key (this is opposite to the way the **Grab** view works for the chroma keyer). For example, if you want to key on dark gray, make sure the area you select **doesn't** contain any dark gray. To create the rectangle, click and drag across the two opposing corners of the area you want to select. The rectangle stays visible until you let go of the mouse button. The **Luminance** controls are adjusted to reflect your selected values.

- **Plot** This view is similar to **Map**, but is a histogram containing **only** the luminance values that are present in the current frame of your clip. To obtain the **Plot** view, click the **Grab** button, then select **Plot** under **View**. The result is similar to the following example:

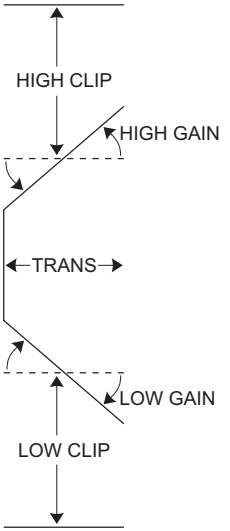
Each luminance value present in your image appears as a horizontal line in the histogram. A longer line indicates a higher amount of pixels in your image of that line's luminance value.

As with the **Map** view, when you adjust the **Luminance** controls (see the next section), a luminance selector appears indicating your key values and transparency levels.

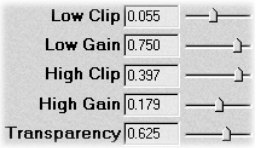
Note Once you've clicked the **Grab** button, you can switch between all three views by selecting **Map**, **Plot**, or **Grab** under **View**.

Using the luminance key controls

You can select luminance values on which to key by adjusting the **Low Clip** and **High Clip** controls.You can also adjust the softness of your key with the **Low Gain**, **High Gain**, and **Transparency** controls. All these adjustments affect the shape and size of the luminance selector as follows:



Here's an explanation of how to use each control:



- **Low Clip** Use this to select the lower (darker) luminance values to be keyed. A **Low Clip** setting of 0 represents black, and a setting of 1.000 represents white. Intermediate settings represent different shades of gray, from very dark to very light gray.
- **Low Gain** Use this to set the range of luminance values you want to be partially transparent based on the value set by the **Low Clip** control. As you increase the **Low Gain** setting, more luminance values become partially transparent to give you a softer-edged key.

  A **Low Gain** setting of 1.000 provides the widest range for maximum softness. Alternately, a gain setting of 0 creates a hard key where the luminance values are either completely transparent or opaque.

  You can think of the **Low Gain** control as defining a "Transparent to Opaque" range for keying the dark areas of your foreground image. The range is centered at the value you set using the **Low Clip** control.
- **High Clip** This control is similar to **Low Clip**, except you use it to select the higher (brighter) luminance values to be keyed.

- **High Gain** This control is similar to **Low Gain**, except you use it to set the range of luminance values you want to be partially transparent based on the value set by the **High Clip** control.

  You can think of the **High Gain** control as defining an "Opaque to Transparent" range for keying the lighter areas of your foreground image. The range is centered at the value you set using the **High Clip** control.

Note The values you can select using the **Low Clip** and **Low Gain** controls are dependent on the **High Clip** and **High Gain** controls, and vice versa. This prevents the low and high controls from keying on the same luminance values. For example, if the **High Clip** control is at 0.600, you'll only be able to set **Low Clip** up to 0.400.

- **Transparency** Use this control to set the overall transparency level of your foreground image. Higher values indicate higher transparency. For example, a **Transparency** value of 1.000 makes your foreground image completely transparent, leaving only your underlying image visible.

- **Invert** Select this to invert your key effect, giving you the opposite result of what you originally selected. Previously transparent areas become opaque, and opaque areas become transparent.

Preserving shadows in a chroma key

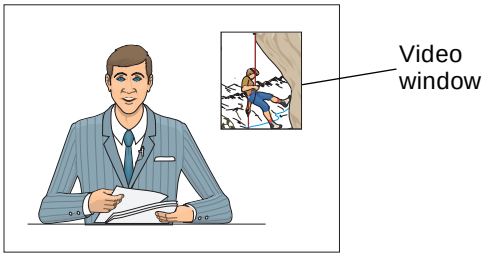
You can use the chroma and luminance keyers together to preserve the shadows of objects in a chroma-keyed image as follows:

1. Open the **Keyers** dialog box and create your chroma key effect, as described in “Creating a chroma key effect” on page 99.
2. Without changing your chroma key settings, deselect **Chroma** to turn off the chroma keyer.
3. Select **Luminance** to enable the luminance key controls.
4. Create a luminance key that preserves the desired shadows of your objects. For details on creating a luminance key, see “Creating a luminance key effect” on page 104.
5. With your luminance key still in effect, select **Chroma** to re-enable the chroma keyer. Your foreground image and its shadow are keyed over your underlying image.

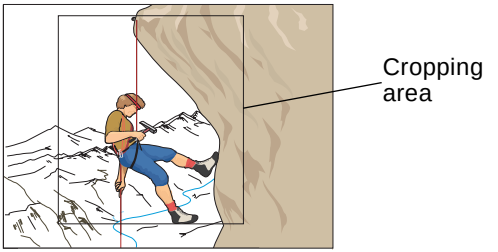
Note After step 5, you may need to make some minor adjustments to your Chroma and Luminance settings until you are satisfied with your key effect.

Creating 2D DVE (video window) effects

The DigiSuite 2D DVE Editor lets you scale an image to make it smaller than the full screen, allowing you to see an underlying image. The scaled image is known as a “video window.” In the following example, we created a video window containing a rock climber that we’re displaying on top of another video clip of a newscaster sitting at a desk:

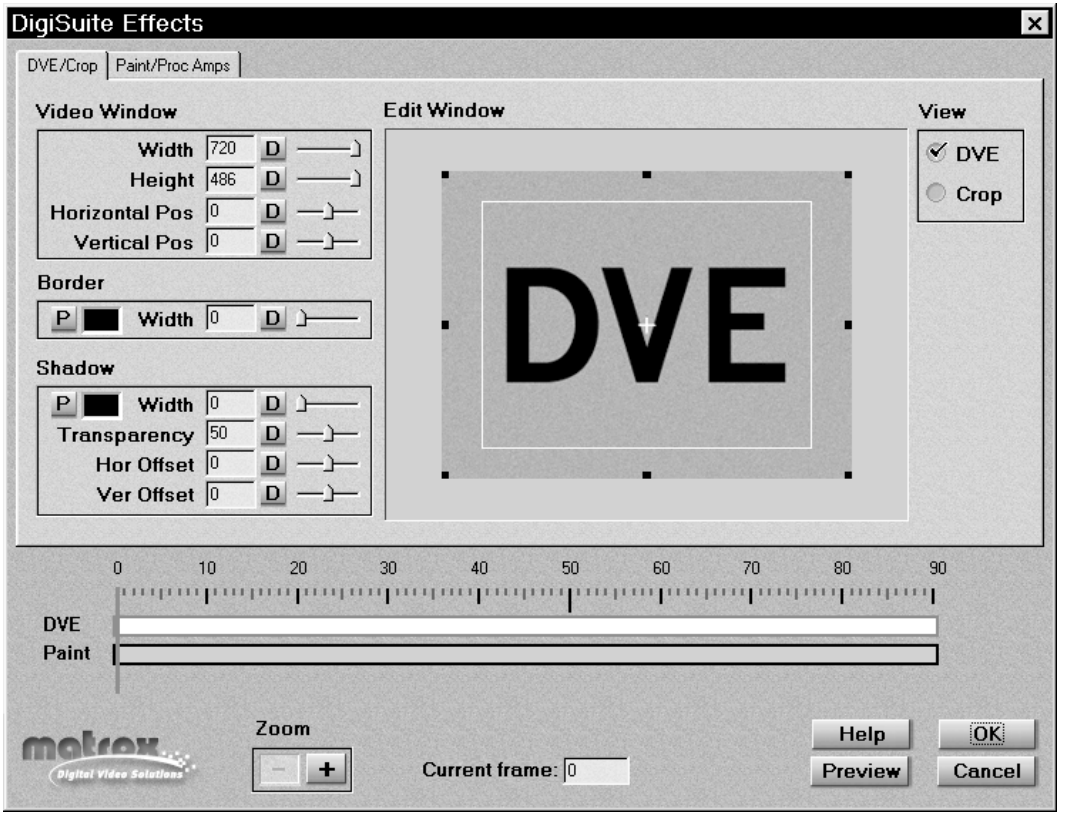


You can choose to display an entire image or just a portion of it in your video window. For our previous example, we defined a cropping area to select only a portion of an image (just the rock climber), as shown in the following diagram:



You can also choose to add a border and shadow to your video window. By interpolating between keyframes with different video window settings, you can make your video window shrink, expand, tumble, and move across the screen. For some examples of how to set up these effects, see “Using interpolations to create video window effects” on page 135.

To create a 2D DVE effect, click the **DVE/Crop** tab. This displays a dialog box similar to the following:

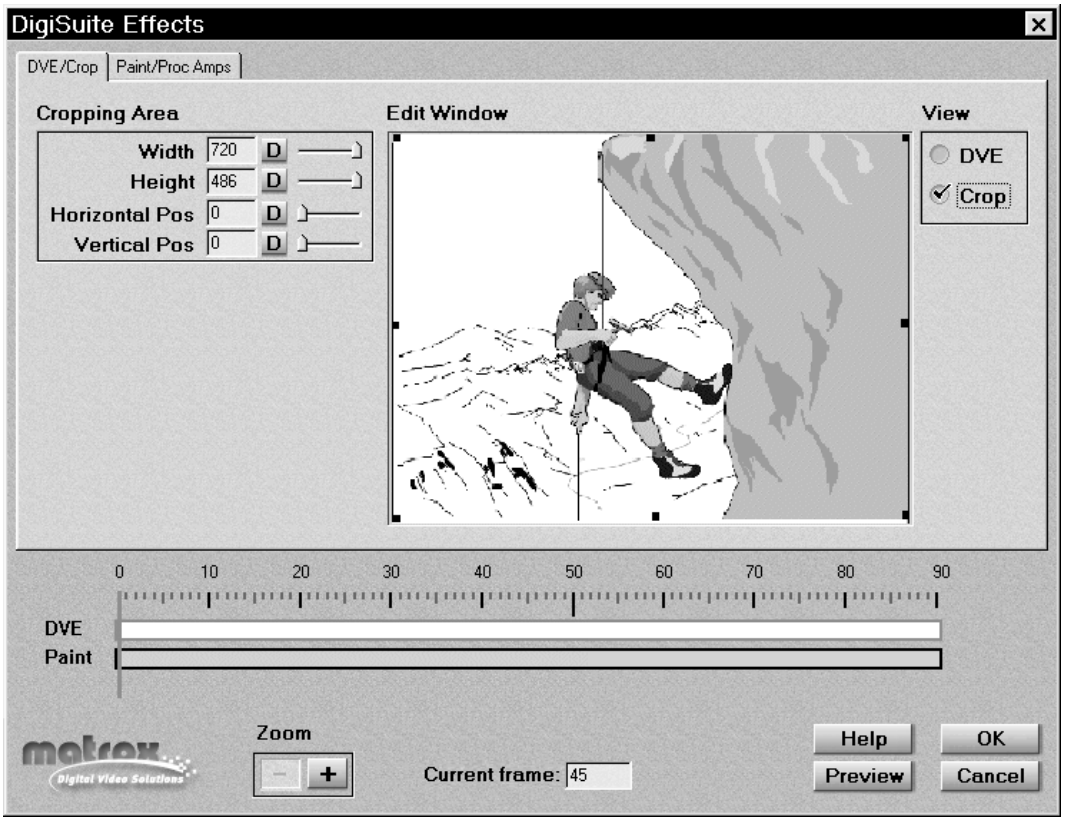


The next sections explain how to crop your image and set up your video window.

Cropping your image

The **Crop** option lets you select the part of your image you want to display in your video window. The region outside your cropping area is made transparent, allowing your underlying image to show through. The **full-screen** image (cropping area and transparent region) will be scaled to fit inside your video window.

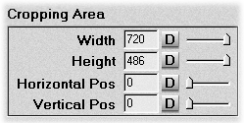
To switch to the **Crop** view, select the **Crop** option under **View**.



You can crop your image in several ways:

- Use the **Cropping Area** controls to define the size and location of the cropping area.
- Choose a command from a pop-up menu to crop your image by a preset amount.
- Crop directly in the **Edit Window** by dragging resize handles on the image.

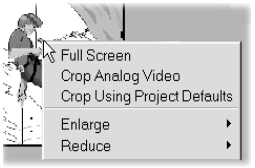
Using the Cropping Area controls



The controls under **Cropping Area** let you define the size and location of your cropping area. You can enter the values you want in the text boxes or drag the appropriate sliders.

- **Width** and **Height** Use these controls to specify the width and height (in pixels) of your cropping area.
- **Horizontal** and **Vertical Pos** Use these to define where the top left corner of your cropping area is located relative to the top left corner of the screen. The numbers in the **Horizontal** and **Vertical Pos** boxes specify the number of pixels to the right and down from the top left corner of the screen. For example, entering 200 in both the **Horizontal** and **Vertical Pos** boxes (or dragging the **Pos** sliders to 200) crops 200 pixels from the left side and top of your image.

Using the Cropping Area pop-up menu

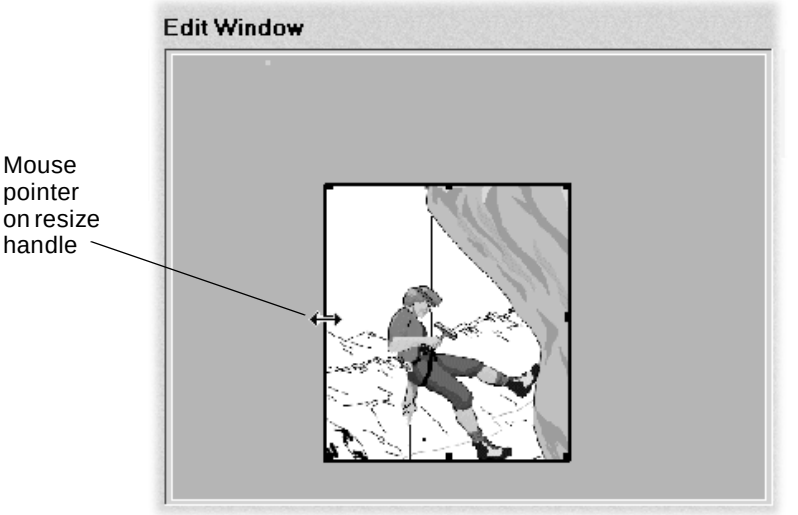


You can also resize your cropping area using commands from the **Cropping Area** pop-up menu. To display this pop-up menu, right-click anywhere in the **Edit Window**.

- **Full Screen** Sets the cropping area to full-screen size (that is, no cropping is done to the image).
- **Crop Analog Video** Crops the thin black borders that appear along the edges of video that's been captured from an analog source. These borders typically appear at the right and bottom edges of your image.
- **Crop Using Project Defaults** Re-applies the default 2D DVE cropping values you defined for your project (that is, your Output (Playback) settings in Speed Razor RT or General Settings in Adobe Premiere RT).
- **Enlarge** Lets you enlarge the cropping area by a given percentage, up to a maximum of full-screen size.
- **Reduce** Lets you reduce the cropping area by a given percentage, down to one pixel.

Cropping directly in the Edit Window

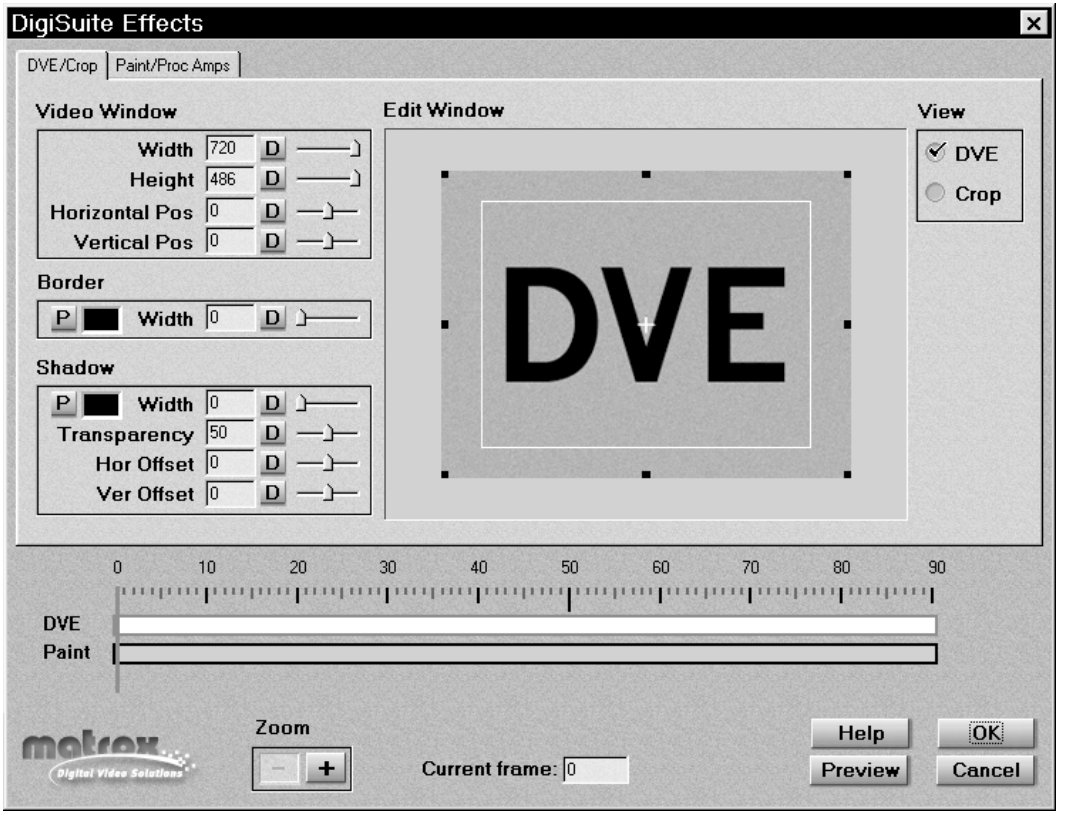
In the **Edit Window**, the cropping area is represented as a black rectangle with eight resize handles.



To resize your cropping area, rest your mouse pointer on one of the handles (the mouse pointer will turn into a double-headed arrow), then drag the handle. For example, drag the middle right or left handle to resize the width of your cropping area. To resize the entire cropping area at once, drag one of the corner handles (the corner that's diagonally opposite the handle you are moving will remain stationary).

Creating your video window

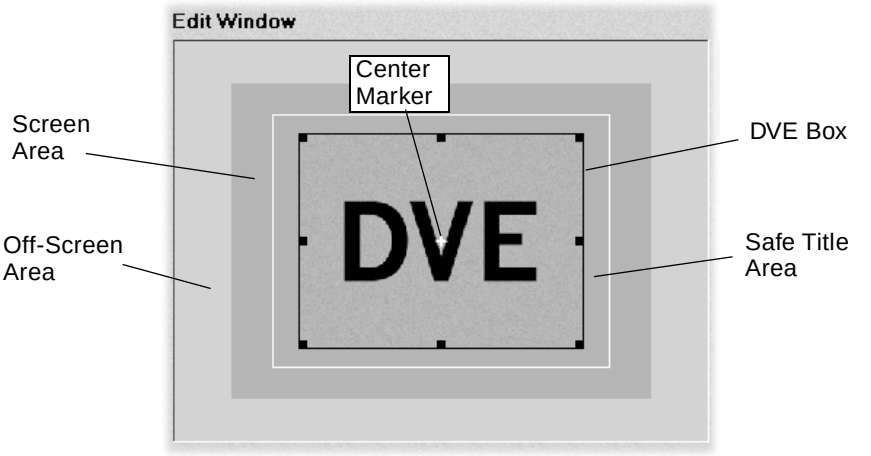
To set up your video window, select the **DVE** option under **View.** This switches the dialog box to **DVE** view, which is similar to the following:



Note If you've cropped your image, remember that the cropping area **and** surrounding transparent region will be displayed inside your video window as explained in the section "Cropping your image" on page 112.

For the best results, align your video window (DVE) at even pixel boundaries by setting its **Width**, **Height**, **Horizontal Pos**, and **Vertical Pos** to even numbers. When creating a DVE move, align the first and last DVEs in the keyframe sequence at even pixel boundaries.

The **Edit Window** lets you resize, flip, and position your video window, and also shows you a simulation of your video window effect. It's made up of the following:



- **DVE box** Represents your video window. It's the black rectangle with eight resize handles.
- **Safe Title Area** Central area of the screen where you can safely place your video window to be sure it will be visible on all monitors. It's the dark gray area **within** the white rectangle.
- **Screen Area** Entire (full-screen) area. It's the dark gray area of the **Edit Window**.
- **Off-screen Area** Area that isn't visible on any monitor. It's the light gray area of the **Edit Window**.
- **Center Marker** White cross that marks the center of your video window.

You can resize and position your video window in the following ways:

- Use the **Video Window** controls to define your video window's size and position coordinates.
- Choose commands from a pop-up menu to set a particular video window size and location, such as half-screen size in the bottom-right corner.
- Work directly in the **Edit Window** using your mouse. For example, you can drag resize handles to scale and flip the video window, and also drag the video window to position it.

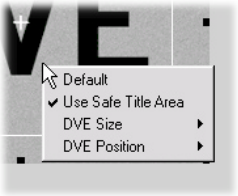
Important If you've cropped your image from the top-left corner, the DVE box in the **Edit Window** will not accurately reflect your image's position on the screen when you resize the video window. Your NTSC or PAL monitor, however, will show the true position of your image. For best results, refer to the image on your NTSC or PAL monitor when positioning your video window.

Using the Video Window controls

Use the controls under **Video Window** to resize, flip, and position your video window by entering the values you want in the text boxes or dragging the appropriate sliders.

- **Width** and **Height** Use these controls to specify the width and height of your video window in pixels, as well as flip your video window. To make your image flip horizontally or vertically, enter a negative value in the **Width** or **Height** box, respectively. For example, entering –720 in the **Width** box and –486 in the **Height** box displays a horizontally and vertically inverted full-screen video window on an NTSC system.
- **Horizontal** and **Vertical Pos** Use these to define where the center of your video window is located relative to the center of the screen. For example, entering 0 in both the **Horizontal** and **Vertical Pos** boxes aligns the center of your video window with the center of the screen. Entering –100 in both the **Horizontal** and **Vertical Pos** boxes (or dragging the **Pos** sliders to –100) moves your video window 100 pixels to the left and down from the center of the screen.

Using the Video Window pop-up menu

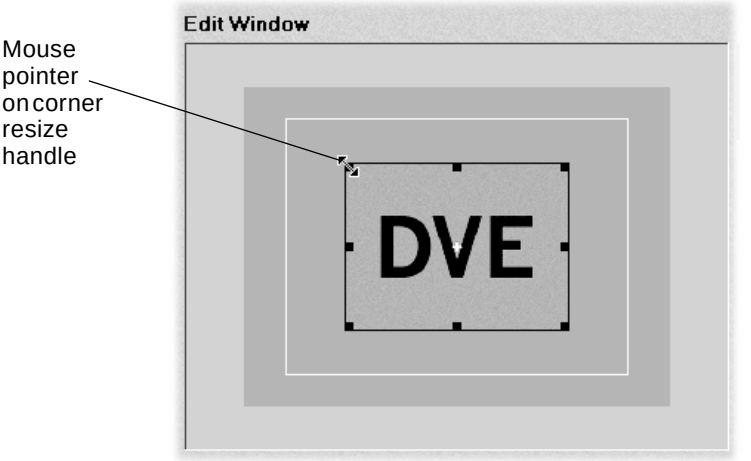


You can also resize and position your video window using commands from the **Video Window** pop-up menu. To display this menu, right-click anywhere in the **Edit Window**.

- **Default** Restores your video window to full-screen size.
- **Use Safe Title Area** Displays or removes the Safe Title Area rectangle.
- **DVE Size** Lets you set your video window to a selected size ranging from full-screen down to one pixel.
- **DVE Position** Lets you place your video window at a selected position, such as at the bottom right corner of the screen. If the Safe Title Area rectangle is displayed, it will serve as the reference for positioning your video window. If it isn't displayed, your video window will be positioned relative to the entire screen area.

Resizing and positioning directly in the Edit Window

In the **Edit Window**, the video window is represented as a black rectangle with eight resize handles.



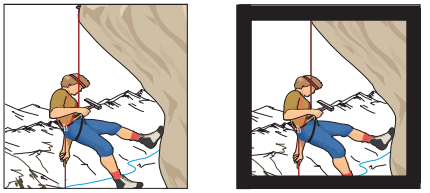
- **Resizing** Rest your mouse pointer on one of the handles: it will turn into a double-headed arrow. To resize opposing sides of your video window (left and right or top and bottom), drag one of the middle handles. To resize all sides at once while maintaining the image's aspect ratio, drag one of the corner handles. **SHIFT+drag** any of the handles to resize your video window while immobilizing the corner or side that's opposite the handle you are moving.
- **Flipping** To flip your image horizontally, drag the left or right middle handle **past** the center of the video window. You'll see the video window turn into a thin vertical line and then appear inverted. Drag the middle top or bottom handle in the same way to make your image flip vertically. To make your image flip horizontally and vertically at once, drag one of the corner handles past the center of the video window.
- **Positioning** Rest your mouse pointer anywhere on your video window (the mouse pointer will turn into a four-headed arrow) and drag it to the desired position.

Adding a border to your video window

Use the **Border** controls to add an opaque solid-colored border to your video window. If you've cropped your image, the border will be added to the cropping area.

- **Selecting the border color** Click the P button under **Border**. Then use the **Color** dialog box to select a color as described in "Selecting colors" on page 92.
- **Setting the border's width** Enter the desired width of the border in pixels, or drag the slider. Click the D button to remove the border.

Note The border will be placed **over** the edges of your image. For example, adding a 15-pixel border to a 225×225 image will reduce the visible portion of the image to 195×195, similar to the following example.



Adding a shadow to your video window

The **Shadow** controls let you display a shadow behind your video window (or cropping area). This shadow can be above or below, and to the left or right of the image. You can also choose the shadow's width, color, and transparency level.

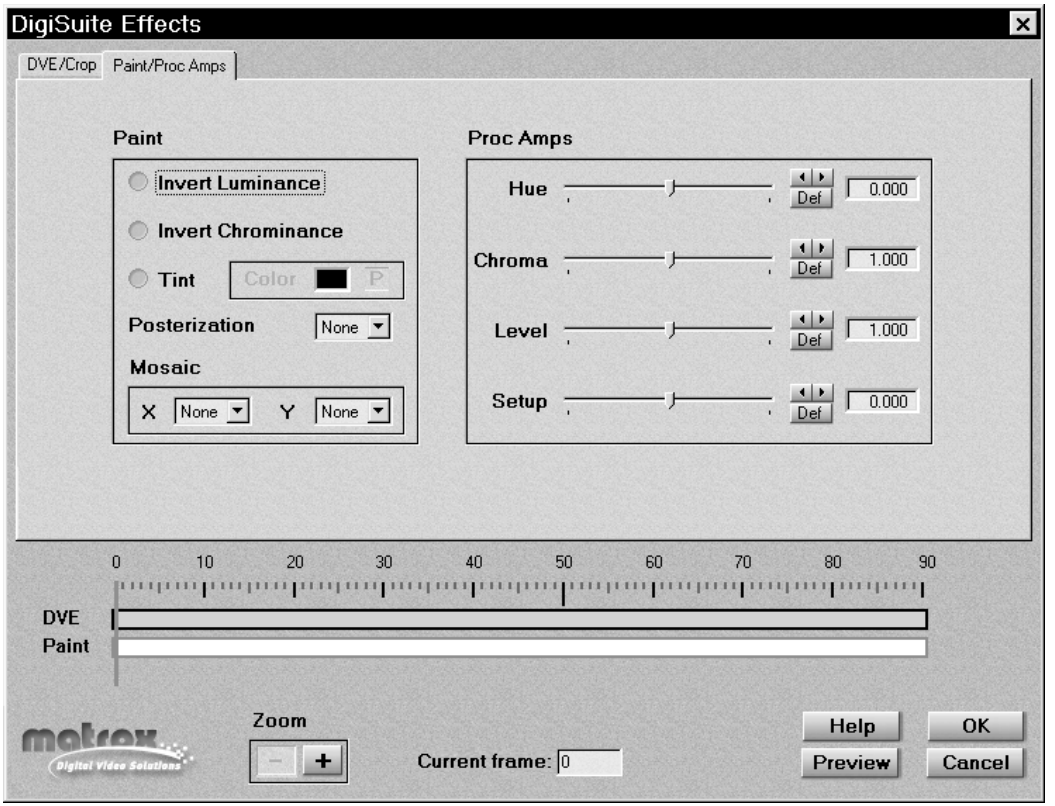
Note If you're displaying a graphic in your video window, you won't be able to add a shadow to the image.

- **Selecting the shadow's color** Click the P button under **Shadow**. Then use the **Color** dialog box to select a color as described in "Selecting colors" on page 92.
- **Setting the shadow's width** Use the **Width** control to specify the width of your shadow in pixels.

- **Adjusting the shadow's transparency** Use the **Transparency** control to set the level of transparency you want. Transparency levels range from opaque (0) to fully transparent (100).
- **Setting the shadow's position** Use the following controls to define the horizontal and vertical offsets (in pixels) for the shadow.
  - **Hor Offset** Place the shadow to the right of the image by entering a positive value in the **Hor Offset** box, or to the left by entering a negative value.
  - **Ver Offset** Place the shadow above the image by entering a negative value in the **Ver Offset** box, or below by entering a positive value.

Creating paint and proc amp effects

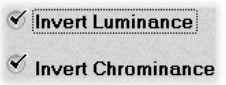
You can use the DigiSuite Effects plug-in to apply various paint effects to a clip, such as tint, posterization, and mosaic. You can also make changes to a clip's proc amp settings. To create any of these effects, click the **Paint/ Proc Amps** tab to display a dialog box similar to the following:



Creating paint effects

The **Paint** controls let you create photo negative, tint, posterization, and mosaic effects.

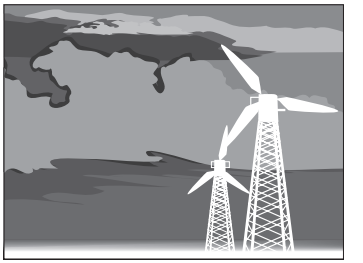
Creating a photo negative effect



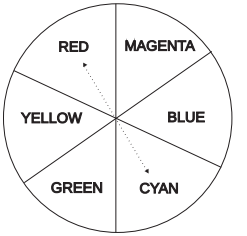
To give your image a photo negative appearance, select **Invert Luminance** and **Invert Chrominance**. This inverts the luminance and chrominance information of your image. For example, in a black and white image, the areas that are black become white, while the areas that are white become black as shown in the following example:

Original image

Negative image



In a color image, each color component is inverted to the color found directly across from it in the color spectrum. For example, red becomes cyan, blue becomes yellow, green becomes magenta, etc., as shown in the following diagram:



You can select **Invert Luminance** and **Invert Chrominance** separately from one another if this suits your needs, or if you simply want to experiment with different types of effects.

Creating a tint effect

The tint effect lets you convert all the colors in your image to shades of only one color. For example, you could convert a full-color video image to different shades of brown, making it look like an old-fashioned sepia picture.

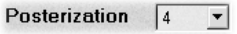
Colors are transformed based on their luminance values. For example, a light blue or red would appear as light brown in a sepia version of your image, just as navy or dark green would appear as dark brown.

➢ To create a tint effect:

1. Select **Tint** under **Paint**.
2. Click the P button to open the **Color** dialog box, then choose your color as described in "Selecting colors" on page 92. The default color is black, which gives you a black and white image.

Creating a posterization effect

Posterization reduces the range of color variation in your image so that it looks flat or two-dimensional, like a poster or paint-by-number picture. This is done by reducing the levels of luminance in the image.



The number in the **Posterization** box indicates the degree of the effect, with 7 being the highest, or most apparent setting, and 1 being the lowest, or least apparent setting. Select **None** to turn off posterization.

Creating a mosaic effect

Use the mosaic effect to give your image a blocky, tiled appearance. You'll probably recognize this as "robot vision," or the censoring effect used in television where the identity of a person is disguised. The effect is created by copying a given number of pixels horizontally and vertically into adjacent pixels.

Select the width and height of your tiles in pixels with the **X** and **Y** controls, respectively. For example, if you select **X** and **Y** values of 4, every fourth pixel will be copied into its three neighboring pixels both horizontally and vertically.

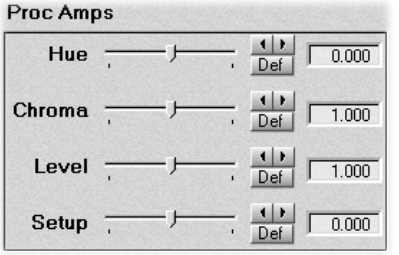
The width of your tiles must be a multiple of four, and the height a multiple of two. If you enter values with the keyboard, they will be clipped to an appropriate multiple if needed.

Note Remember that the larger your tile size is, the more apparent the mosaic effect will be.

Adjusting proc amps

The proc amp controls affect your image as follows:

- **Hue** Adjusts the tint of the colors in the image.
- **Chroma** Adjusts the vividness (saturation) of the image's colors.
- **Level** Adjusts the difference in luminance between the lightest and darkest areas of the image.
- **Setup** Adjusts the level of black in the image.



For example, if you created a transition between two clips with drastically different luminance, you could use the **Level** control to minimize the abrupt change in luminance during the transition.

To adjust a control, drag the slider or click the arrows. To return a control to its default setting, click its **Def** button, or **CTRL+click** the slider or slider bar.

Note The adjustments you make are used only for the effect you are creating. They have **no** effect on proc amp settings in other DigiSuite programs, such as the DigiSuite Configuration program.

Working with keyframes

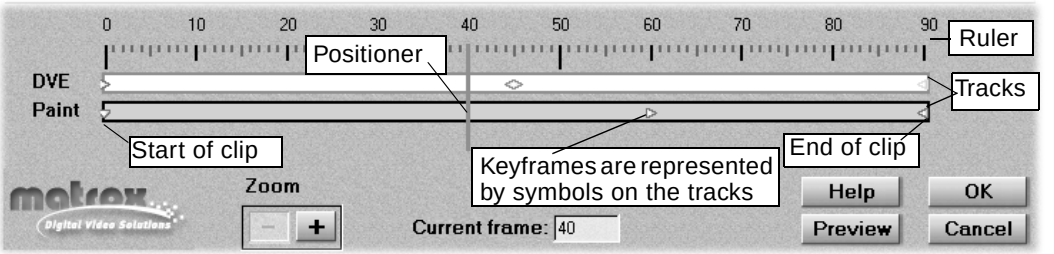
A *keyframe* is a frame at which you've defined one or more DigiSuite effects to take place in a clip. The effects start at the frame where you define them, and remain active on the clip until you define a later keyframe to turn off or change the effects. This allows you to control the occurrence and duration of effects. By interpolating between keyframes, you create gradual transitions between different settings for an effect.

In the following sections, we explain how to:

- Use the keyframe controls.
- Perform basic operations such as creating, copying, cutting, and pasting keyframes.
- Interpolate between keyframes.

Using the keyframe controls

The keyframe controls are used to work with and view the keyframes in your clip. They're located at the bottom of each dialog box, similar to the following:



Tracks and Ruler

The tracks represent the progression of your clip over time, with the Ruler above the tracks denoting your clip's frame numbers. When more than one track is present, you can click a track to switch to its corresponding dialog box. For example, clicking the **Paint** track displays the **Paint/Proc Amps** dialog box.

Zoom commands

You can zoom in or out on the tracks by clicking the **Zoom** buttons or by pressing the **F4** or **F3** key, respectively. Depending on your zoom setting and the length of your clip, only a portion of your clip might be displayed inside the tracks. If this is the case, you can scroll forward or backward through the runoff portion of your clip by dragging the Positioner.

Right-click pop-up menus

You can right-click any of the keyframe controls to display a context-sensitive pop-up menu. For example, if you right-click the Ruler, a pop-up menu appears that includes the **Zoom to Extent** command, which zooms your clip to fill the entire length of the tracks.

Keyframe symbols

Whenever you create an effect, a symbol such as appears on the appropriate track, representing the keyframe you've created. For example, in the preceding illustration, the symbol on the **Paint** track at frame 0 represents a tint effect created at the beginning of the clip using the **Paint/Proc Amps** dialog box. For more information, see "Creating new keyframes" on page 127.

Positioner

You use the Positioner to indicate where you want to create a keyframe. You can also preview an effect by dragging the Positioner as explained in "Previewing your effects" on page 91. To move the Positioner to a particular frame, enter the frame number in the **Current frame** box, or click the frame on the Ruler. Right-clicking the Positioner or the Ruler displays a pop-up menu for moving the Positioner. This menu also contains the **Snap** command, which when selected, makes it easier to drag the Positioner onto a keyframe or vice versa.

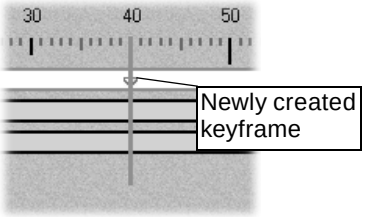
The following table lists keyboard shortcuts for zooming the tracks and moving the Positioner. For a complete list of shortcuts available for working with keyframes, see "Keyboard shortcuts" on page 137.

Keyboard Shortcuts	
Zoom In	**F4**
Zoom Out	**F3**
Zoom to Extent	**SHIFT+F3**
Previous Keyframe	**F5**
Next Keyframe	**F8**
Previous Frame	**F6**
Next Frame	**F7**
First Frame	**CTRL+F6**
Last Frame	**CTRL+F7**
Snap	S

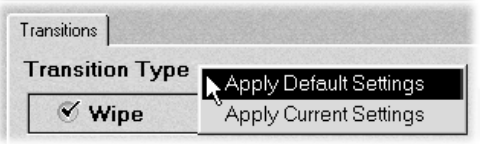
Creating new keyframes

➢ **To create a keyframe:**

1. Open the dialog box you want to use to create your effect. The appropriate track becomes highlighted. For example, when the **DVE/Crop** dialog box is open, the **DVE** track is highlighted.
2. Move the Positioner to the frame in your clip where you want the effect to take place. By default, the Positioner is at the start of the clip region when you first apply a DigiSuite effect (or the middle of the clip region for a DigiSuite transition).
3. Use the effect controls in the dialog box to set up your effect. As soon as you adjust a control, a keyframe is created on the highlighted track, behind the Positioner.



Alternately, you can create a keyframe with default settings or the currently displayed settings by right-clicking anywhere on the background of the effect controls and choosing the appropriate command from the pop-up menu.



Note When you create a DigiSuite transition, interpolated keyframes are created for you at the first and last frames of the clip region. To create additional keyframes, you must clear the **Simple Edit** option.

Modifying keyframes

➢ **To edit a keyframe:**

1. Double-click the keyframe. The current settings for the keyframe are displayed in the dialog box.
2. Edit the effect as needed. To apply default settings to the keyframe, right-click the background of the effect controls and choose **Apply Default Settings** from the pop-up menu.

Resetting a track to default settings

To reset a track to its default settings, right-click the track and choose **Reset Track Data** from the pop-up menu. For example, resetting the **Trans** track creates a dissolve transition with **Simple Edit** selected. Resetting any of the other tracks clears **all** keyframes from the track and restores the default effect settings.

Selecting keyframes

Many operations that you can perform on a keyframe, such as copying and deleting, require you to select the keyframe first. You can select keyframes using any of the following methods:

- Select a single keyframe by clicking it, or moving the Positioner to it when the track is highlighted.
- Select more than one keyframe on a track by holding down the **CTRL** key while clicking the keyframes you want to select.
- Select a range of keyframes on a track by clicking the first keyframe, then holding down the **SHIFT** key while clicking the last keyframe you want in the range.
- Select all keyframes on a track by pressing **CTRL+A** when the track is highlighted, or right-clicking the track and choosing **Select All**.

Copying and moving keyframes

➢ **To copy selected keyframes to a new location, do one of the following:**

- Press **CTRL+C** or right-click the selection and choose **Copy** from the pop-up menu. Move the Positioner to the destination frame (this frame can be in a different clip), then press **CTRL+V** or right-click the track and choose **Paste at Current Frame**.
- **CTRL+drag** the selected keyframes to a new location on the track.

➢ **To move selected keyframes, do one of the following:**

- Press **CTRL+X** or right-click the selection and choose **Cut** from the pop-up menu. Move the Positioner to the destination frame (this frame can be in a different clip), then press **CTRL+V** or right-click the track and choose **Paste at Current Frame**.
- Drag the selected keyframes to a new location on the track.

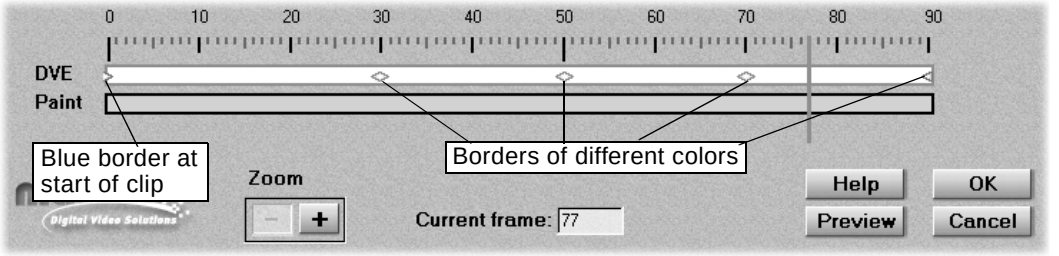
If a keyframe exists at your destination frame, it will be replaced with the pasted keyframe.

Note For details on how to paste only certain attributes of a keyframe, see "Pasting attributes of a keyframe ("selective paste")" on page 129. You can also save all keyframes on a track to a file, then load the file to apply your effects to other clips. For details on how to do this, see "Saving and loading keyframe track files" on page 131.

Pasting attributes of a keyframe ("selective paste")

You can copy and paste some or all of the attributes of a single keyframe to selected keyframes. The attributes you choose to paste replace the corresponding attributes of the destination keyframes. This is called a "selective paste," and is particularly useful when you want to make changes to a complex series of keyframes in a clip.

For example, let's say you've created a series of video windows (2D DVEs) on a clip, where each keyframe defines a video window having a different colored border. Your keyframe sequence might appear as follows:

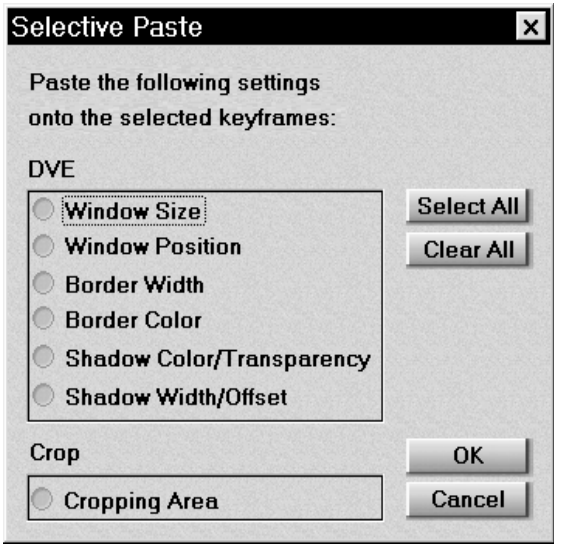


If you later decide that you'd like all the video windows to have a blue border, you could easily fix the sequence by pasting the initial keyframe's border color onto the other keyframes as follows:

1. Right-click the keyframe containing the settings you want to paste. (For this example, that would be the keyframe at frame 0.)
2. Choose **Copy** from the pop-up menu that appears.

3 Select the keyframes to which you want to paste the copied settings. You can **CTRL+click** individual keyframes to select them, or use **SHIFT+click** to select a range of keyframes.

4 Right-click any of the selected destination keyframes, then choose **Selective Paste** from the pop-up menu that appears. This displays a dialog box containing settings available for pasting, similar to the following::



Note The dialog box that appears depends on what type of keyframe you've copied.

5 Select the settings you want to paste. (For this example, you would select only **Border Color**.)

6 Click **OK**. Your destination keyframes are updated with the settings you selected, while retaining all other attributes.

Deleting keyframes

➢ **To delete a keyfame selection, use one of the following methods:**

- Press the **DELETE** key.
- Drag the selection vertically off the tracks.
- Right-click the selection and choose **Delete** or **Cut** from the pop-up menu.

To delete all keyframes on a track, right-click the track and choose **Delete All** from the pop-up menu.

Saving and loading keyframe track files

The **Save Keyframes** command lets you save all keyframes on a track to a file. You can then use the **Load Keyframes** command to load that file and apply the keyframes to other clips in your video production. This is useful for building a library of complex or frequently used keyframe sequences.

For example, after creating a complex series of keyframes to perform a 2D DVE tumble, you can save your keyframe sequence to a file, then load that file whenever you want to apply the same tumble to another clip in your project. You may also want to exchange your saved keyframes with other DigiSuite users.

➢ To save all keyframes on the currently selected track to a file:

1. Press **CTRL+S** or right-click the track and choose **Save Keyframes** from the pop-up menu.
2. In the provided dialog box, specify the file to which you want to store the keyframes. Your file will be given the extension *.trackname.Kft* , such as *DVE.Kft* if you're saving keyframes on the **DVE** track.

➢ To load saved keyframes to the currently selected track:

1. Press **CTRL+O** or right-click the track and choose **Load Keyframes** from the pop-up menu.
2. In the provided dialog box, select the file you want to load. This file must contain keyframes belonging to the current track. For example, you can load only DVE keyframes to the **DVE** track.

Note Any keyframes presently on the track will be replaced by the loaded keyframes.

Interpolating between keyframes

Interpolating between two or more consecutive keyframes on the same track enables you to create a gradual transition from one keyframe's settings to the next.

In the following sections we explain:

- How interpolation works.
- Considerations for creating an interpolation sequence.
- Linear and spline interpolation.
- How to turn interpolation on and off.
- How to use interpolation to create various video window effects.

How interpolation works

Interpolations are performed between different settings for the **same** effect. For example, if you defined a blue tint effect at the start of a clip and a red tint effect at the end of the clip, interpolating between the two keyframes makes your clip gradually change from blue to red. You can't, however, interpolate between "on" and "off" settings. For example, you can't interpolate between a blue tint and no tint (**Tint** option cleared) to make a clip change from blue to normal color.

Speed of transition

The speed of the transition between two consecutive keyframes depends on the amount of space (time) between them. For example, if you have a large amount of space between keyframes, the transition will occur slowly. Alternately, if your keyframes are close together, the transition will occur quickly.

Interpolating between different video window settings enables you to make a video window shrink, expand, tumble, and/or move across the screen. For some examples of how to set up these kinds of effects, see "Using interpolations to create video window effects" on page 135.

Interpolation is supported for all of the effects you can create with the plug-in, except that you can't interpolate between:

- **Crop** settings in the **DVE/Crop** dialog box.
- **Hor Repeats** or **Ver Repeats** settings in the **Transitions** dialog box, under **Transition Modifiers**. As well, you can't interpolate between different transition types or patterns.

Considerations for creating an interpolation sequence

By default, a spline interpolation is set between consecutive keyframes created on the same track. For an explanation of spline interpolation, see the next section.

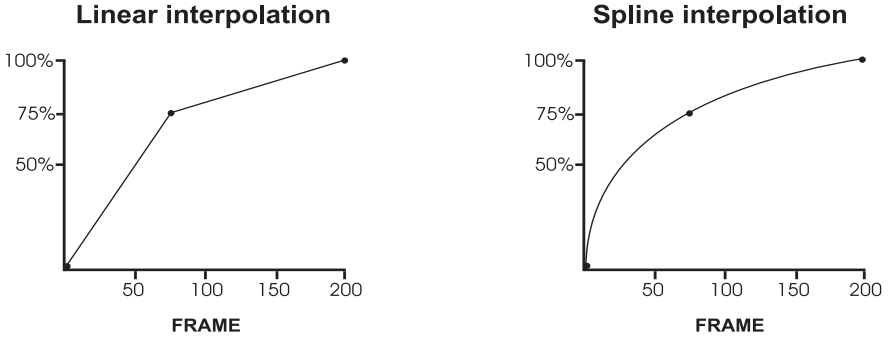
Create keyframes from left to right

As you create new keyframes, each keyframe is initialized to the same settings as the one to the immediate left on the track. This makes it easy for you to define an interpolation sequence in ascending order (from left to right). If you add a new keyframe **between** two interpolated keyframes, however, the new keyframe's settings will be calculated according to the adjacent keyframes. For example, if you add a keyframe between a blue tint effect and a red tint effect, the tint for the new keyframe will be set to the appropriate intermediate color.

Linear and spline interpolation

There are two types of interpolation that you can apply to a keyframe — linear or spline. Linear interpolation means that the transition between effect settings occurs in even, linear increments. For example, let's say you have two linearly interpolated keyframes 75 frames apart with **Transparency** settings of 0% and 75%, respectively. When you play back your clip, the transparency level increases between these two keyframes at a steady rate of 1% per frame.

If you have three or more interpolated keyframes, linear interpolation might not give the results you want. Spline interpolation gives you a smoother transition based on the settings of **all** keyframes. For example, if you add a third keyframe (with **Transparency** at 100%) to the example given in the previous paragraph, the difference between linear and spline interpolation can be illustrated as follows:

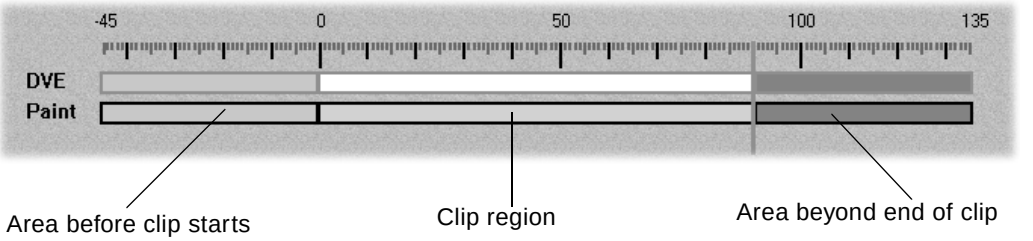


Notice how spline interpolation reduces the abruptness in the rate of interpolation between the keyframes. Spline interpolation is particularly useful for creating smooth transitions between video window settings, such as when you move a video window to different locations on the screen.

Creating keyframes outside the clip region

Because spline interpolation is affected by both the number of keyframes and the distance (frames) between them, you may find it helpful to create keyframes **outside** the clip region on the track. For example, you could start your interpolation sequence several frames before your clip starts to make the spline calculations start earlier.

To display the area outside the clip region, right-click the track and turn off **Display Clip Region Only**. Then drag the Positioner forward or backward to scroll to the area outside the clip.



Turning interpolation on and off

As previously mentioned, a spline interpolation is set by default between consecutive keyframes created on a track. You may, of course, choose to turn off interpolation or change the interpolation type.

To turn off or reset interpolation, right-click the keyframe or a range of selected keyframes, then choose **Interpolation Type | None**, **Linear**, or **Spline** from the pop-up menu that appears.

Depending on the location of a keyframe in a sequence and whether or not interpolation is set, the keyframe will be represented as follows:

- First keyframe in an interpolation sequence.
- Intermediate keyframe in an interpolation sequence.
- Last keyframe in an interpolation sequence. Interpolation ends at this point.
- Keyframe that is not in an interpolation sequence.

Note Newly created keyframes will be assigned the same interpolation setting as that of the keyframe to the immediate left on the track.

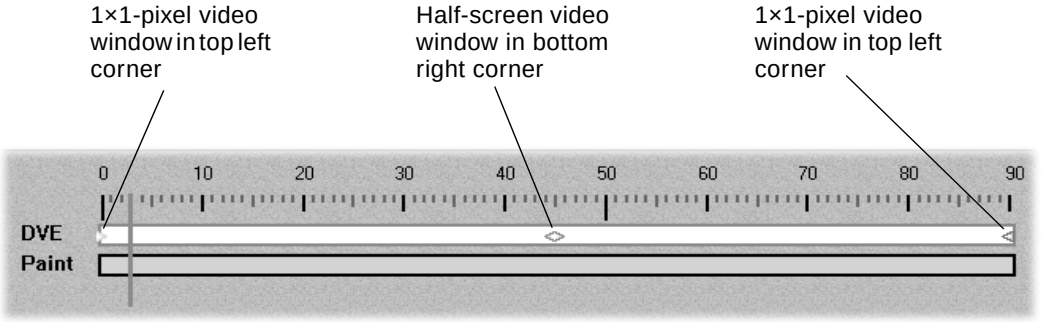
Using interpolations to create video window effects

The following sections provide examples of how to set up a sequence of interpolated keyframes to create various video window effects.

Making a video window expand, shrink, and move

By interpolating between keyframes with different video window sizes and positions, you can make your video window gradually expand or shrink while it simultaneously moves across the screen.

For example, you could define three keyframes as follows:



By interpolating between these keyframes, you make the video window progressively expand and then shrink to its original size as it moves from the top-left corner to the bottom-right corner of the screen and back.

Note The speed at which the video window resizes and moves is determined by the amount of space (duration) between the different keyframes. The farther apart you place your keyframes, the slower the interpolation will occur.

Making a video window tumble

You can make your video window appear to tumble by interpolating between keyframes with different video window size and horizontal or vertical flip settings. For example, to vertically tumble a video window (flip it repeatedly top to bottom), create five equidistant keyframes as follows:

1. In the first keyframe, define your video window (with or without a border and/or shadow).
2. In the second keyframe, do the following:
   – Change the height of your video window to 1 pixel, but keep its width the same.

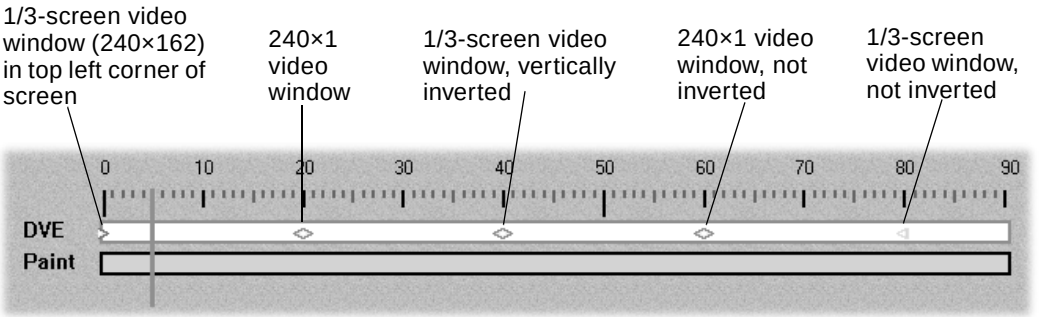
– If you've defined a shadow for your video window, set the shadow's width to 0.

3 To create the third keyframe, copy and paste the first keyframe (see "Copying and moving keyframes" on page 128), but flip the video window vertically by adding a minus sign to the **Height** value (for example, enter a height of -162 to vertically invert a 1/3-screen video window, as in our example below).

4 The fourth keyframe should be an exact copy of the second keyframe.

5 The fifth keyframe should be an exact copy of the first keyframe.

The following example shows how you could set up five keyframes to create a stationary tumble for a 1/3-screen video window on an NTSC system:



By interpolating between the five keyframes, you make the video window progressively shrink in height until it's almost invisible, flip and expand back to its original height, then shrink again, and gradually reappear right side up.

You can keep your video window in the same position during the tumble as explained above, or you could position your video window in a different area of the screen to see it move from one place to another while it's tumbling. You can also create a continuously tumbling video window by copying and pasting your keyframe sequence.

Note The speed at which the video window tumbles is determined by the amount of space (duration) between the different keyframes. The farther apart you place your keyframes, the slower the tumble will occur.

Keyboard shortcuts

The following table provides a complete list of keyboard shortcuts available for working with keyframes in the DigiSuite Effects plug-in dialog boxes.

Keyboard Shortcuts	
Zoom In	**F4**
Zoom Out	**F3**
Zoom to Extent	**SHIFT+F3**
Select All	ctrl+a
Cut	Ctrl+X
Copy	Ctrl+C
Paste at Current Frame	Ctrl+V
Selective Paste	Ctrl+Shift+V
Delete	DELETE
Save Keyframes	ctrl+s
Load Keyframes	ctrl+o
Previous Keyframe	**F5**
Next Keyframe	**F8**
Previous Frame	**F6**
Next Frame	**F7**
First Frame	**CTRL+F6**
Last Frame	**CTRL+F7**
Snap	S

Using the plug-in with in:sync Speed Razor RT

The following sections provide information specific to using the DigiSuite Effects plug-in with in:sync Speed Razor RT.

Available effects

The DigiSuite Effects plug-in for Speed Razor RT includes all the available DigiSuite effects and transitions. The plug-in also supports the following realtime features in your Speed Razor projects:

- Create realtime dissolves (crossfades) between clips using Speed Razor's Cross Fade transition.
- Create realtime fade effects by applying video opacity graphs to clips.
- Create realtime titling sequences (rolls and crawls) with the Inscriber/CG effect for Speed Razor.
- Apply realtime graphics overlays using 32-bit single-frame *.tga* files with an alpha-key channel.
- Apply realtime speed changes to video clips.

Instructions on how to set up effects in Speed Razor are provided in your *Speed Razor User's Guide*.

Defining your Speed Razor settings for DigiSuite

For details on establishing your editing settings in Speed Razor RT for use with DigiSuite, see your *Using Speed Razor and Matrox DigiSuite / DigiSuite LE* manual.

Importing the DigiSuite effects

The DigiSuite effects are provided in the following three files:

- *DigiSuite_TR.tra* Dissolve, wipe, and tile transitions.
- *DigiSuite_KEY.vfx* Chroma and luminance key effects.
- *DigiSuite_FX.vfx* 2D DVE/crop, paint, and proc amp effects.

To add the effects to your Speed Razor project, you must import the files to your project's Library. To customize the settings for any DigiSuite effect, double-click its icon in the Library, then make the changes you want in the displayed dialog box. You can import any DigiSuite file several times if you'd like to define multiple custom settings for it.

When will your DigiSuite effects require rendering?

In many cases, your DigiSuite effects will play back in real time. The following sections explain the times you'll need to render your effects in Speed Razor RT depending on which DigiSuite system you're using. For some examples of how to combine multiple DigiSuite effects to maintain realtime performance, see "Examples of combining realtime DigiSuite effects in Speed Razor RT" on page 141.

Note When you render your DigiSuite effects, they do **not** render in real time.

Rendering on a DigiMix-DigiMotion system

If you're using a DigiSuite system equipped with DigiMix and DigiMotion cards, you'll need to render your DigiSuite effects in Speed Razor RT when you do any of the following:

- Choose to export your project to an *.avi* file.
- Use more than two video clips and one graphic clip.
- Add a software effect or transition, such as a Speed Razor matte effect or transition other than a Cross Fade.
- Mix uncompressed-quality (lossless) clips with clips of any other quality on the timeline.
- In the same segment, create **more** than:
  - one DigiSuite transition,
  - two chroma or luminance key effects,
  - three DVE/crop effects, paint effects (same type), or fade effects.
- Assign a DigiSuite effect as the source to another DigiSuite effect in any order **other** than the following:

  DVE/Paint → Chroma/Luma key → Fade → Transition

  For example, you can assign a DVE or paint effect as the source to a key or fade effect and play back the segment in real time. If, however, you assign sources in the opposite order, such as a fade effect as the source to a key or paint effect, the segment will require rendering.
- Combine DigiSuite effects with 3D effects created using the Inscriber VideoFX software in any order **other** than the following:

  DVE/Paint → Inscriber VideoFX → Chroma/Luma key → Fade → Transition

  For example, you can assign a DigiSuite DVE or paint effect as the source to a page curl effect created using Inscriber VideoFX and play back the segment in real time. But if you assign a page curl as the source to a DigiSuite DVE or paint effect, the segment will require rendering.

Note If you assign a DigiSuite 2D DVE as the source to an Inscriber 3D effect, the area outside your 2D DVE will be black (that is, the image beneath your video window won't show through). To get around this problem, scale your images using Inscriber VideoFX instead of the DigiSuite Effects plug-in.

Rendering on DigiSuite LE or DigiSuite DTV

If you're using DigiSuite LE or DigiSuite DTV, you'll need to render your DigiSuite effects in Speed Razor RT when you do any of the following:

- Choose to export your project to an *.avi* file.
- Use more than two video clips and one graphic clip.
- Add a software effect or transition, such as a Speed Razor matte effect or transition other than a Cross Fade.
- Create a 2D DVE on a graphic.
- In the same segment, create **more** than:
  - one DigiSuite transition,
  - two chroma or luminance key effects,
  - two 2D DVE/crop effects,
  - two paint effects (same type), or
  - three fade effects.
- Assign a DigiSuite effect as the source to another DigiSuite effect in any order **other** than the following:

  DVE/Paint → Chroma/Luma key → Fade → Transition

  For example, you can assign a DVE or paint effect as the source to a key or fade effect and play back the segment in real time. If, however, you assign sources in the opposite order, such as a fade effect as the source to a key or paint effect, the segment will require rendering.
- Combine DigiSuite effects with 3D effects created using the Inscriber VideoFX software in any order **other** than the following:

  DVE/Paint → Inscriber VideoFX → Chroma/Luma key → Fade → Transition

  For example, you can assign a DigiSuite DVE or paint effect as the source to a page curl effect created using Inscriber VideoFX and play back the segment in real time. But if you assign a page curl as the source to a DigiSuite DVE or paint effect, the segment will require rendering.

Note If you assign a DigiSuite 2D DVE as the source to an Inscriber 3D effect, the area outside your 2D DVE will be black (that is, the image beneath your video window won't show through). To get around this problem, scale your images using Inscriber VideoFX instead of the DigiSuite Effects plug-in.

Examples of combining realtime DigiSuite effects in Speed Razor RT

Speed Razor RT with the DigiSuite Effects plug-in lets you set up a wide variety of realtime video effects. When combining multiple DigiSuite effects, however, you must respect the following priority sequence to ensure that your effects will play back in real time:

Clip → DVE/Paint → Chroma/Luma key → Fade → Transition

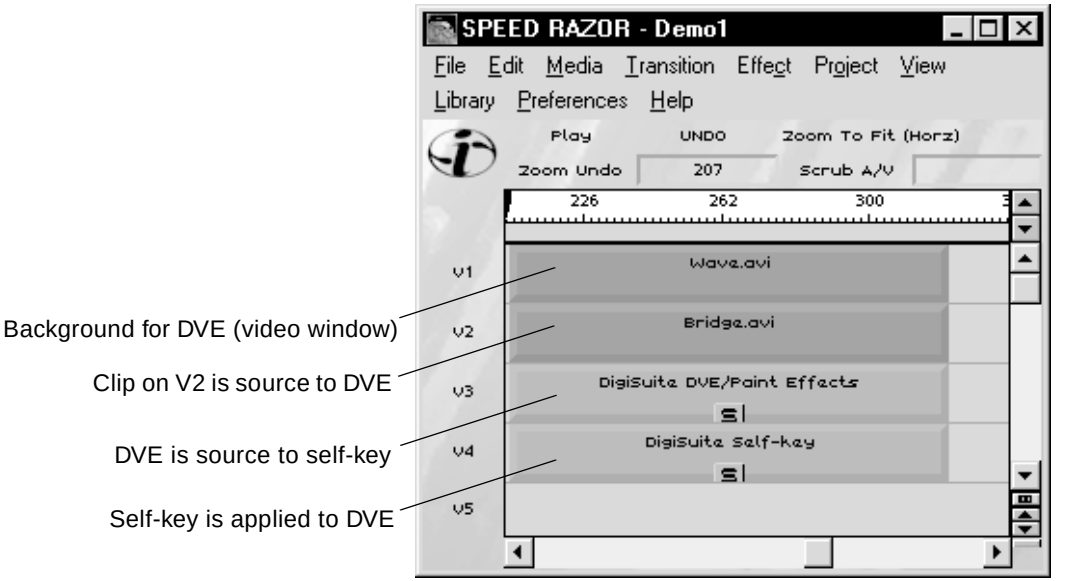
This priority sequence shows that any effect to the right can be performed in real time on any effect to its left. For example, you can perform a chroma/luma key on a DVE in real time, but if you do the opposite you'll need to render that segment of the timeline to play it back.

Assign sources correctly

When you add a DigiSuite effect to the timeline in Speed Razor RT, you assign one or more sources to the effect to indicate which images are used in the effect (see "Source Transitions and Effects" in the "Add Video Effects" chapter of your *Speed Razor User's Guide*). The following examples illustrate how to source various DigiSuite effects in the correct sequence to ensure realtime playback.

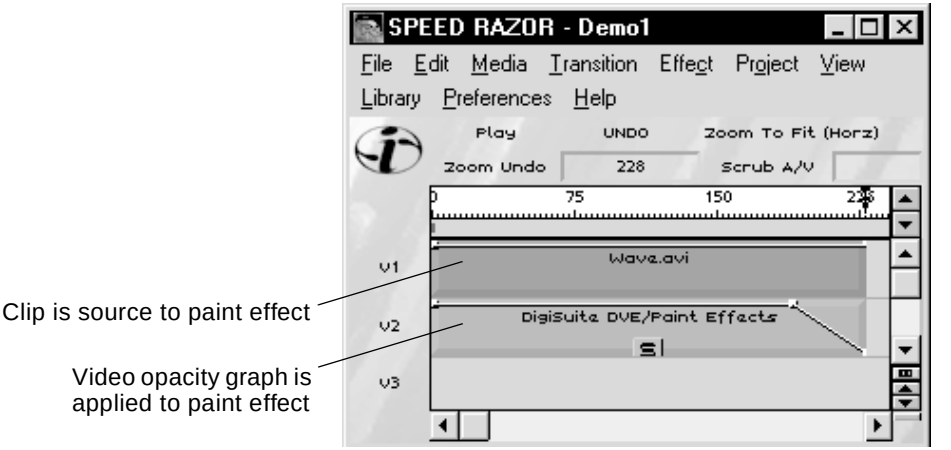
Apply chroma/luma key to DVE/paint effects

When combining a DigiSuite key effect with DVE/paint effects, you must apply the key effect to the DVE/paint effects to play back the segment in real time. This means you must source the DVE/paint effects to the key:

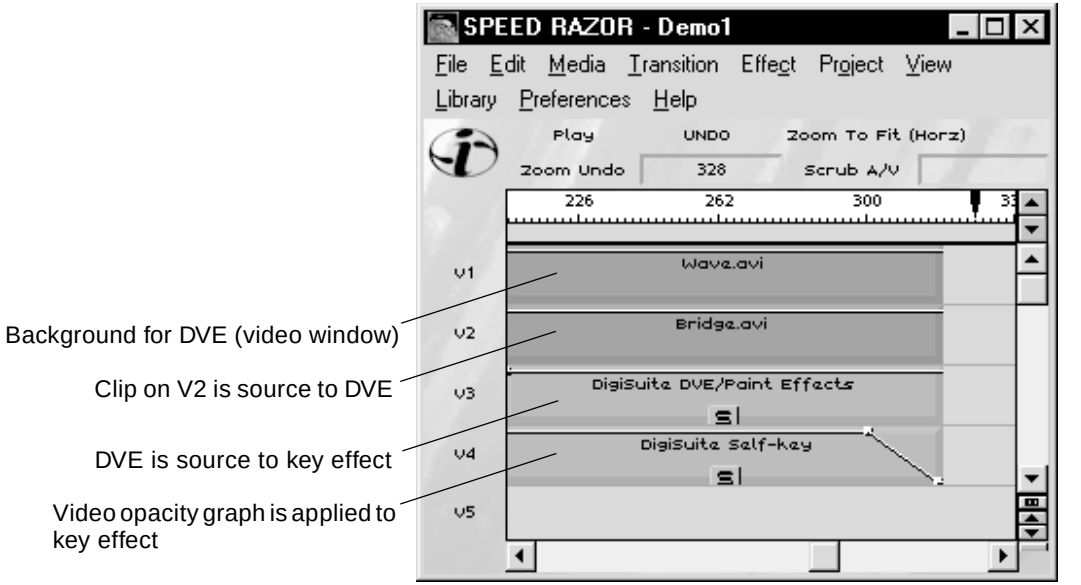


Apply fade to DigiSuite effect

The basic rule to remember about applying realtime fade (video opacity) effects is that if a clip is used as the source to a DigiSuite effect, you must apply the video opacity graph to the DigiSuite effect, instead of directly to the clip. This is shown in the following illustration:



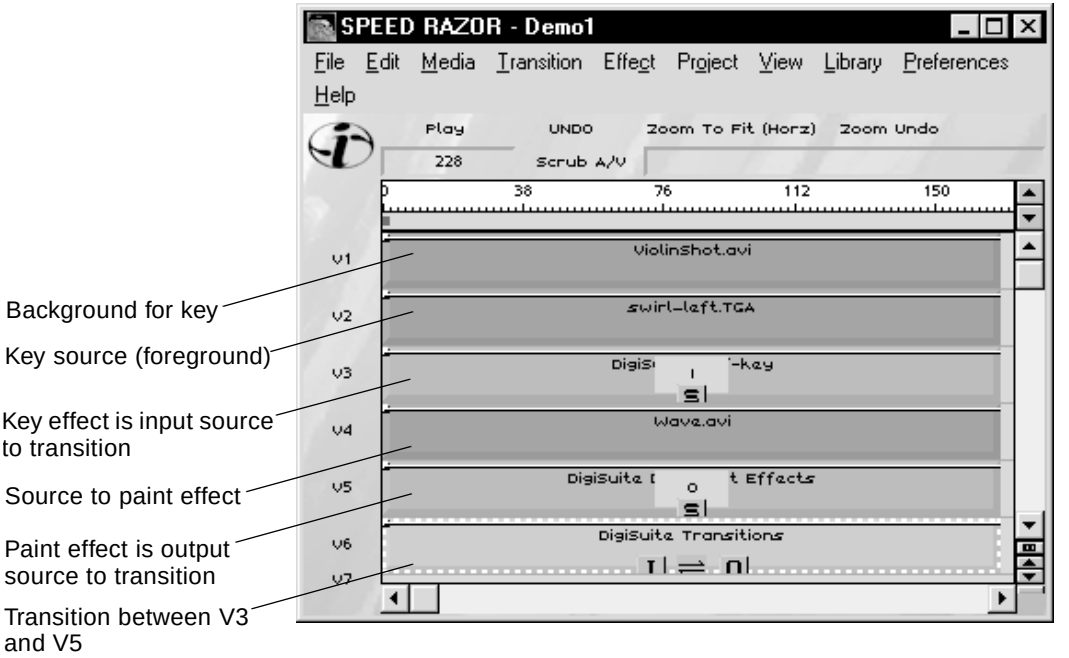
If you've combined several realtime DigiSuite effects, such as a DVE as the source to a key effect, simply apply the video opacity graph to the topmost DigiSuite effect as shown in the following illustration:



Use DigiSuite effects as transition sources

To set up a realtime DigiSuite transition between clips on which you've applied a DigiSuite effect, you must assign the corresponding DigiSuite effects as the input and output sources for the transition.

In the following example, we've set up a DigiSuite transition between a key effect on V3 and a paint effect on V5:



Using the plug-in with Adobe Premiere RT

The following sections provide information specific to using the DigiSuite Effects plug-in with Adobe Premiere RT.

Available effects

The DigiSuite Effects plug-in for Adobe Premiere RT includes all the available DigiSuite effects and transitions. The plug-in also supports the following realtime features in your Adobe Premiere projects:

- Create realtime dissolves (crossfades) between clips using Adobe Premiere's Cross Dissolve transition.
- Create realtime fade effects using the Fade control on clips placed in a superimpose track (that is, any video track other than Video 1).
- Create realtime titling sequences (rolls and crawls) with the Inscriber/CG software for Adobe Premiere.
- Create realtime graphics overlays using 32-bit single-frame *.tga* files with an alpha-key channel.
- Create realtime traveling matte effects using Adobe Premiere's Track Matte key effect. (You must apply an Alpha Channel key to the clip used as the track matte.)
- Apply realtime speed changes to video clips (forward motion only).

Instructions on how to set up effects in Adobe Premiere are provided in your *Adobe Premiere User Guide*.

Remarks

- To apply a DigiSuite transition in Adobe Premiere RT, select **DigiSuite Transitions** from the **Transitions** palette. The DigiSuite effects are available from the video **Filters** dialog box. Be aware that you can't create or edit keyframes for a DigiSuite effect using the keyframe timeline on the **Filters** dialog box. You must use the keyframe tracks on the DigiSuite Effects plug-in's dialog boxes to create and edit keyframes for your DigiSuite effects.
- To apply a realtime fade to a traveling matte effect, make sure you adjust the Fade control on the clip to which you applied the Track Matte key (usually the clip on Video 2), and **not** the clip used as the track matte.

Displaying video in a window on your computer's monitor

If your system includes DigiDesktop, or you have DigiSuite LE or DigiSuite DTV with any other Matrox display card (such as Millennium, G400, etc.), you'll have video-in-a window capabilities in Adobe Premiere RT. For example, you'll be able to play back video in Premiere's **Clip** window on your computer screen. To display video in a window, you must set your Matrox Display Properties in the Windows NT Control Panel as follows:

- If you have DigiDesktop, set the color palette to **True Color (24-bit)**.
- If you have DigiSuite LE or DigiSuite DTV with a Matrox display card other than DigiDesktop, set the color palette to either **High Color (16-bit)** or **True Color (32-bit)**.

When using a non-Matrox display card, video won't be displayed on your computer screen, but will be displayed on your NTSC or PAL Program monitor.

Setting up your scratch disks

When specifying the location of your scratch disks in Adobe Premiere RT, make sure you follow the recommendations in your *Adobe Premiere User Guide*. For example, store your video and audio files on an A/V drive used exclusively for that purpose.

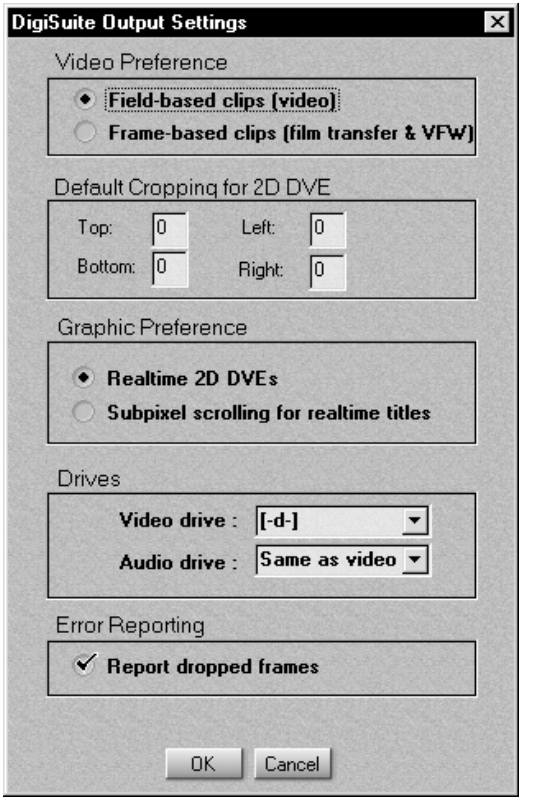
For the best performance, store your audio files and graphics on an A/V drive separate from your video files. This is the most cost-effective way of optimizing system performance. For more information on using A/V drives with DigiSuite, see "DigiSuite System Recommendations" in the Customer Service section of our Web site at *www.matrox.com/video*.

It's important that you select your video and audio drives when defining your General Settings as explained in the next section.

Defining your General Settings

To specify your project's General Settings for editing in Adobe Premiere RT on DigiSuite:

1. Choose **Project | Settings | General**.
2. From the **Editing Mode** list, select **Matrox DigiSuite**.
3. Click the **Advanced Settings** button. This displays the **Output Settings** dialog box for your DigiSuite system, similar to the following:



Note Any options that are not applicable to your particular DigiSuite system will be unavailable.

Video Preference

4 Under **Video Preference**, select the option that most closely matches the type of video clips you're using in your production:

- **Field-based clips (video)** Select this if most of your video clips are DirectShow *.avi* files obtained from footage shot using a video camera. Speed changes applied to your clips will therefore be field-based. When you select this option, any Matrox VFW *.avi* files (that is, *.avi* files you created on DigiSuite using a Video for Windows program) will require rendering to play them back.
- **Frame-based clips (film transfer & VFW files)** Select this if you're using video clips obtained from motion-picture film that was transferred to videotape, or you have many Matrox VFW files in your production. Speed changes applied to your clips will be frame-based, which is suitable for clips from film transfer.

Important Any speed changes applied to video clips that don't match the type of source material you've selected (video or film transfer) may be jerky. To avoid having to support VFW files in your project, you can convert your Matrox VFW *.avi* files to DirectShow *.avi* files using the DigiTools Convert tool as explained in the section "Changing the compression type of an .avi file" on page 55.

Default Cropping for 2D DVE

5 Under **Default Cropping for 2D DVE**, specify the default cropping values (in pixels) you want to be applied each time you create a 2D DVE with the DigiSuite Effects plug-in. For example, if garbage video or black lines appear at the top and bottom edges of your video, you'll want to crop these edges so that they're not visible in your 2D DVE.

Graphic Preference

6 Under **Graphic Preference**, select one of the following options:

- Select **Realtime 2D DVEs** to be able to create realtime 2D DVEs on graphics. If you don't select this option, all 2D DVEs applied to graphics in your project will require rendering.
- Select **Subpixel scrolling for realtime titles** if you prefer that your realtime titling sequences (rolls and crawls) be displayed using subpixel scrolling. This gives you the smoothest possible movement of titles on the screen. Subpixel scrolling is always used for your rendered titling sequences.

Drive selection

7 From the **Video drive** list, select the A/V drive you use to store captured video clips in Adobe Premiere RT.

8 From the **Audio drive** list, select the drive where you want Adobe Premiere to store the *.wav* files associated with video clips created on DigiSuite. The default setting is **Same as video**, meaning that when you capture or export video with audio, the audio will be stored in a *.wav* file on the same drive as the video (*.avi*) file. However, if your system is set up to use a separate audio drive, you can choose to store your *.wav* files onto that drive.

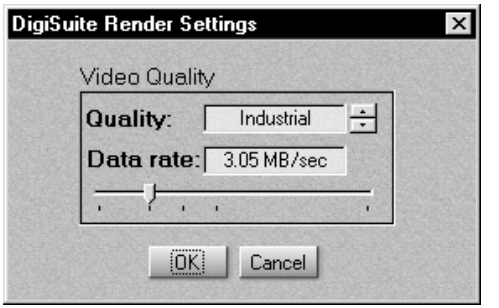
9 Under **Error Reporting**, select **Report dropped frames** if you want to be warned each time frames are dropped when you play back video from the Timeline. Otherwise, clear this option.

10 Click **OK** to save your settings and return to the **Project Settings** dialog box. You can specify additional General Settings as explained in your *Adobe Premiere User Guide*.

Defining your Video Settings (DigiSuite or DigiSuite LE)

To specify your settings for playing back video from the Adobe Premiere RT Timeline on a DigiMix-DigiMotion or DigiSuite LE system:

1. Choose **Project | Setttings | Video**.
2. To select the video quality you want to create your preview files when playing back non-realtime effects, click the **Configure** button. This displays the **DigiSuite** or **DigiSuite LE Render Settings** dialog box:



3. You can either select one of several preset video qualities, or select a custom quality using the data rate slider.
   – To select one of the following preset video qualities, click the arrows beside the **Quality** box. The approximate data rates for the preset qualities are:
     - **Preview** 0.1 MB/sec
     - **Industrial** 3 MB/sec
     - **Broadcast** 5 MB/sec
     - **Digital** 7 MB/sec
     - **Uncompressed** Lossless (about 13 MB/sec, but varies depending on the complexity of the video). This quality is **not** available on DigiSuite LE. To select the highest possible quality on DigiSuite LE, select **Best Quality**.
   – To select a custom video quality, drag the slider. For example, to select a broadcast quality at a data rate of approximately 6.0 MB/sec, simply drag the slider until that value is displayed in the **Data rate** box.
4. Click **OK** to save your settings and return to the **Project Settings** dialog box. You can specify additional Video Settings as explained in your *Adobe Premiere User Guide*.

Important To ensure realtime playback of your production on a DigiMix-DigiMotion system, don't mix uncompressed (lossess) quality clips with clips created at any of the lossy video qualities (preview,

industrial, broadcast, or digital). If you mix lossless and lossy clips in the Timeline, the clips that don't match your project's Video Settings will require rendering to play them back. For example, if you set the render video quality to **Broadcast**, any uncompressed-quality clips in the Timeline will be rendered at broadcast quality.

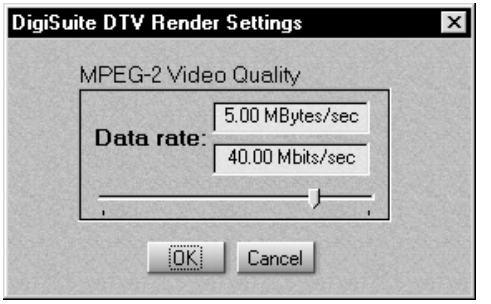
Defining your Video Settings (DigiSuite DTV)

To specify your settings for playing back video from the Adobe Premiere RT Timeline on DigiSuite DTV:

1. Choose **Project | Setttings | Video**.
2. From the **Compressor** list, select the codec that matches the video format you want to create your preview files when playing back non-realtime effects. The codecs available depend on whether you're using an NTSC or PAL system.
   - On an NTSC system, you can select any of the following codecs:
     - **Matrox DV 4:1:1** Renders video to DV, DVCAM, or DVCPRO format.
     - **Matrox DV50 4:2:2** Renders video to DVCPRO50 or Digital-S format.
     - **Matrox MPEG-2 I-frame (4:2:2P@ML)** Renders video to MPEG-2 intra-frame format using the 4:2:2 Profile @ Main Level at a selected data rate.
   - On a PAL system, you can select any of the following codecs:
     - **Matrox DV 4:2:0** Renders video to DV or DVCAM format.
     - **Matrox DV 4:1:1** Renders video to DVCPRO format.
     - **Matrox DV50 4:2:2** Renders video to DVCPRO50 or Digital-S format.
     - **Matrox MPEG-2 I-frame (4:2:2P@ML)** Renders video to MPEG-2 intra-frame format using the 4:2:2 Profile @ Main Level at a selected data rate.

Note The **Matrox MPEG-2 IBP (MP@ML)** codec is also available from the **Compressor** list, but you should use this codec only when exporting video to an *.avi* file. For details, see "Defining your Export Movie Settings (DigiSuite DTV)" on page 156.

3. To select your MPEG-2 data rate (video quality), click the **Configure** button. This displays the **DigiSuite DTV Render Settings** dialog box:



4 Drag the slider until your desired data rate is displayed (the higher the data rate you select, the better the video quality will be), then click **OK** to return to the **Project Settings** dialog box.

5 You can specify additional Video Settings as explained in your *Adobe Premiere User Guide*.

Important To ensure realtime playback of your production on DigiSuite DTV, don't mix MPEG-2 clips with clips created using any of the DV formats (DV or DV50). If you mix MPEG-2 clips with DV clips in the Timeline, the clips that don't match your project's Video Settings will require rendering to play them back. For example, if you set the render format to MPEG-2 I-frame, any DV clips in the Timeline will be rendered to MPEG-2 I-frame format.

Defining your Audio Settings

To ensure that your audio preview files play back correctly when you scrub the Timeline in Adobe Premiere RT:

1 Choose **Project | Settings | Audio**.

2 From the **Rate** list, select **48000Hz**.

3 From the **Format** list, select **16 Bit - Stereo**.

4 You can specify additional audio settings as explained in your *Adobe Premiere User Guide*. The **Interleave** setting is not applicable, however, because DigiSuite does not create files with interleaved audio and video. Instead, separate audio and video files are created.

Note Adobe Premiere RT supports DigiSuite's audio Input and Output Pair 1 only. Use IN 1/OUT 1 for your left audio input/output, and IN 2/OUT 2 for your right input/output.

Defining your Capture Settings (DigiSuite or DigiSuite LE)

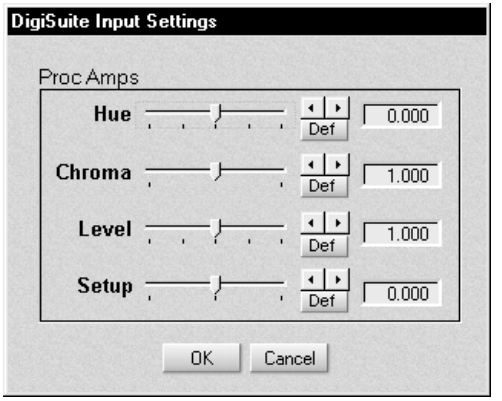
Note Adobe Premiere will capture material from the default video source you selected for DigiMix or DigiSuite LE in the DigiSuite Configuration program as explained in the installation manual for your DigiSuite system. If you need to change the video source, quit Adobe Premiere RT before starting the DigiSuite Configuration program.

To specify your settings for capturing material in Adobe Premiere RT on a DigiMix-DigiMotion or DigiSuite LE system:

1. Choose **Project | Settings | Capture**.
2. From the **Capture Format** list, select **DigiSuite Capture**.

Proc amp adjustments

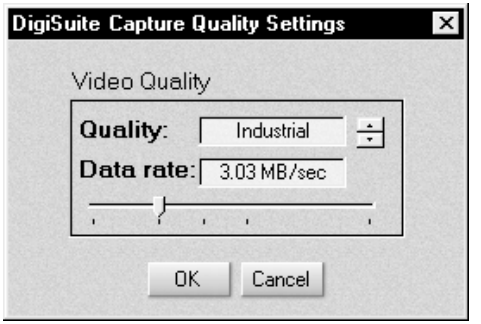
3. To adjust the proc amp settings for the analog video you'll be capturing, click the **Proc Amps** button. This displays the **DigiSuite** or **DigiSuite LE Input Settings** dialog box:



4. Use the proc amp controls as needed to adjust the incoming video signal before starting the capture. To return a control to its default setting as defined in the DigiSuite Configuration program, click the **Def** button. To restore a control to its factory default setting, **SHIFT+click** the slider.
5. Click **OK** to save your proc amp changes and return to the **Project Settings** dialog box.

Capture video quality

6. To select the video quality you want for your captured material, click the **Format** button. This displays the **DigiSuite** or **DigiSuite LE Capture Quality Settings** dialog box:



7 You can either select one of several preset video qualities, or select a custom quality using the data rate slider.

– To select one of the following preset video qualities, click the arrows beside the **Quality** box. The approximate data rates for the preset qualities are:

- **Preview** 0.1 MB/sec
- **Industrial** 3 MB/sec
- **Broadcast** 5 MB/sec
- **Digital** 7 MB/sec
- **Uncompressed** Lossless (about 13 MB/sec, but varies depending on the complexity of the video). This quality is **not** available on DigiSuite LE. To select the highest possible quality on DigiSuite LE, select **Best Quality**.

– To select a custom video quality, drag the slider. For example, to select a broadcast quality at a data rate of approximately 6.0 MB/sec, simply drag the slider until that value is displayed in the **Data rate** box.

8 Click **OK** to save your settings and return to the **Project Settings** dialog box. You can specify additional Capture Settings as explained in your *Adobe Premiere User Guide*.

Defining your Capture Settings (DigiSuite DTV)

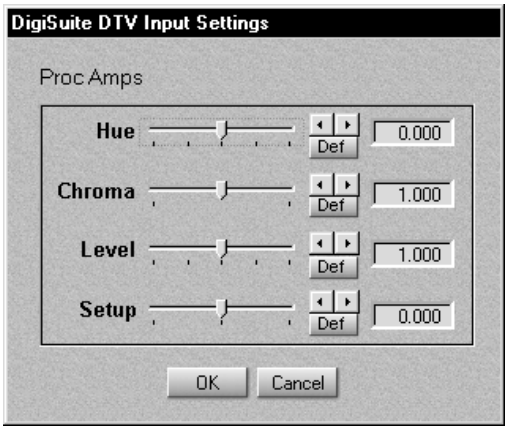
Note Adobe Premiere will capture material from the default video source you selected for DigiSuite DTV in the DigiSuite Configuration program as explained in your *DigiSuite DTV Installation Manual*. If you need to change the video source, quit Adobe Premiere RT before starting the DigiSuite Configuration program.

To specify your settings for capturing material in Adobe Premiere RT on DigiSuite DTV:

1. Choose **Project | Settings | Capture**.
2. From the **Capture Format** list, select **DigiSuite Capture**.

Proc amp adjustments

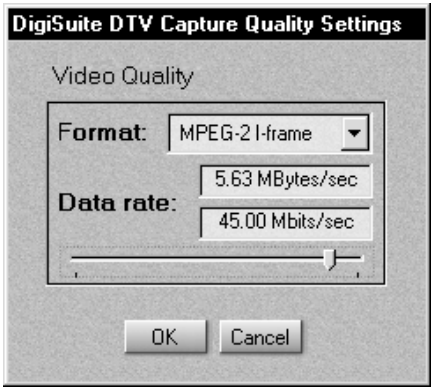
3. To adjust the proc amp settings for the analog video you'll be capturing, click the **Proc Amps** button. This displays the **DigiSuite DTV Input Settings** dialog box:



4. Use the proc amp controls as needed to adjust the incoming video signal before starting the capture. To return a control to its default setting as defined in the DigiSuite Configuration program, click the **Def** button. To restore a control to its factory default setting, **SHIFT+click** the slider.
5. Click **OK** to save your proc amp changes and return to the **Project Settings** dialog box.

Capture video quality

6. To select the video quality you want for your captured material, click the **Format** button. This displays the **DigiSuite DTV Capture Quality Settings** dialog box, similar to the following:



7 From the **Format** box, select the format to which you want your video to be captured. The formats available depend on whether you're using an NTSC or PAL system.

– On an NTSC system, you can select any of the following:

- **DV 4:1:1** Captures video to DV, DVCAM, or DVCPRO format.
- **DV50 4:2:2** Captures video to DVCPRO50 or Digital-S format.
- **MPEG-2 I-frame** Captures video to MPEG-2 intra-frame format using the 4:2:2 Profile @ Main Level at a selected data rate.

– On a PAL system, you can select any of the following:

- **DV 4:2:0** Captures video to DV or DVCAM format.
- **DV 4:1:1** Captures video to DVCPRO format.
- **DV50 4:2:2** Captures video to DVCPRO50 or Digital-S format.
- **MPEG-2 I-frame** Captures video to MPEG-2 intra-frame format using the 4:2:2 Profile @ Main Level at a selected data rate.

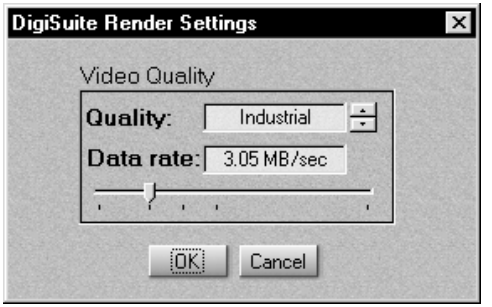
8 To select your MPEG-2 data rate, drag the slider until the desired data rate is displayed. The higher the data rate you select, the better the video quality will be.

9 Click **OK** to save your settings and return to the **Project Settings** dialog box. You can specify additional Capture Settings as explained in your *Adobe Premiere User Guide*.

Defining your Export Movie Settings (DigiSuite or DigiSuite LE)

To export your Adobe Premiere RT production to a Matrox DigiSuite *.avi* file on a DigiMix-DigiMotion or DigiSuite LE system:

1. Choose **File | Export | Movie**, then click the **Settings** button.
2. From the **File Type** list, select **Matrox DigiSuite**.
3. From the menu at the top of the dialog box, select **Video Settings**.
4. To select the video quality for your exported file, click the **Configure** button. This displays the **DigiSuite** or **DigiSuite LE Render Settings** dialog box:



Render Video Quality

5. You can either select one of several preset qualities, or select a custom quality by dragging the data rate slider.
   – To select one of the following preset video qualities, click the arrows beside the **Quality** box. The approximate data rates for the preset qualities are:
     - **Preview** 0.1 MB/sec
     - **Industrial** 3 MB/sec
     - **Broadcast** 5 MB/sec
     - **Digital** 7 MB/sec
     - **Uncompressed** Lossless (about 13 MB/sec, but varies depending on the complexity of the video). This quality is **not** available on DigiSuite LE. To select the highest possible quality on DigiSuite LE, select **Best Quality**.
   – To select a custom video quality, drag the slider. For example, to select a broadcast quality at a data rate of approximately 6.0 MB/sec, simply drag the slider until that value is displayed in the **Data rate** box.
6. Click **OK** to save your settings and return to the **Export Movie Settings** dialog box.

7 From the **Frame Rate** list, select **29.97** if you have an NTSC system, or **25** if you have a PAL system.

8 You can specify additional export settings as explained in your *Adobe Premiere User Guide.*

Note Exported audio will be saved as a separate *.wav* file in the same folder as your *.avi* file, either on the same drive as the *.avi* file or on your separate audio drive as indicated by your General Settings.

Defining your Export Movie Settings (DigiSuite DTV)

To export your Adobe Premiere RT production to a Matrox DigiSuite *.avi* file on DigiSuite DTV:

1 Choose **File | Export | Movie**, then click the **Settings** button.

2 From the **File Type** list, select **Matrox DigiSuite**.

3 From the menu at the top of the dialog box, select **Video Settings**.

4 From the **Compressor** list, select the codec that matches the video format you want for your exported file. The codecs available depend on whether you're using an NTSC or PAL system.

– On an NTSC system, you can select any of the following codecs:

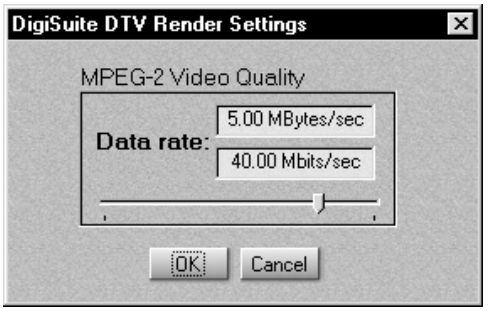
- **Matrox DV 4:1:1** Renders video to DV, DVCAM, or DVCPRO format.
- **Matrox DV50 4:2:2** Renders video to DVCPRO50 or Digital-S format.
- **Matrox MPEG-2 I-frame (4:2:2P@ML)** Renders video to MPEG-2 intra-frame format using the 4:2:2 Profile @ Main Level at a selected data rate.
- **Matrox MPEG-2 IBP (MP@ML)** Renders video to MPEG-2 IBP frame-group format using the Main Profile @ Main Level at a selected data rate (see important note below).

– On a PAL system, you can select any of the following codecs:

- **Matrox DV 4:2:0** Renders video to DV or DVCAM format.
- **Matrox DV 4:1:1** Renders video to DVCPRO format.
- **Matrox DV50 4:2:2** Renders video to DVCPRO50 or Digital-S format.
- **Matrox MPEG-2 I-frame (4:2:2P@ML)** Renders video to MPEG-2 intra-frame format using the 4:2:2 Profile @ Main Level at a selected data rate.
- **Matrox MPEG-2 IBP (MP@ML)** Renders video to MPEG-2 IBP frame-group format using the Main Profile @ Main Level at a selected data rate (see important note below).

Important The **Matrox MPEG-2 IBP (MP@ML)** codec creates files suitable for DVD authoring, such as for use with Sonic's DVDit! authoring program. Files created using this codec, however, are **not** supported in your Adobe Premiere RT project or DigiTools.

5 To select your MPEG-2 data rate (video quality), click the **Configure** button. This displays the **DigiSuite DTV Render Settings** dialog box:



6 Drag the slider until your desired data rate is displayed (the higher the data rate you select, the better the video quality will be), then click **OK** to return to the **Export Movie Settings** dialog box.

Important If you're creating an MPEG-2 IBP file for use with Sonic DVDit!, make sure you don't select a data rate higher than 1.13 MBytes/sec (9.0 Mbits/sec), which is the maximum data rate supported by the DVDit! authoring program.

7 From the **Frame Rate** list, select **29.97** if you have an NTSC system, or **25** if you have a PAL system.

8 You can specify additional export settings as explained in your *Adobe Premiere User Guide.*

Note Exported audio will be saved as a separate *.wav* file in the same folder as your *.avi* file, either on the same drive as the *.avi* file or on your separate audio drive as indicated by your General Settings.

Setting up device control

Important If you have the Matrox DV-1394 option, see your *Matrox DV-1394 Installation & User Guide* for details on how to set up 1394 device control for your DV deck.

The DigiSuite Effects plug-in for Adobe Premiere RT lets you use RS-422 device control when capturing and recording material onto tape in Adobe Premiere RT. To set up this device control:

1. Configure your VTR settings using the DigiSuite Configuration program (see your DigiSuite, DigiSuite LE, or DigiSuite DTV installation manual).
2. Close the DigiSuite Configuration program, then start Adobe Premiere RT.
3. Choose **File | Preferences | Scratch Disks/Device Control**.
4. In the **Device Control** section, select **Matrox Device Control**. There are no other settings to select.
5. Click **OK**.
6. You can now use device control when capturing material and recording the Timeline to tape as explained in your *Adobe Premiere User Guide*. You must, however, make sure that the **Editing Mode** in the **Project Settings** dialog box is set to **Matrox DigiSuite**.

Note When you record the Timeline to tape using RS-422 device control on DigiSuite, the **Play black for __ seconds** option isn't supported in the **Export to Tape** dialog box, although it is available. As well, DigiSuite will use the preroll setting on your VTR rather than the setting in the dialog box.

When will your DigiSuite effects require rendering?

In many cases, your DigiSuite effects will play back in real time. The following sections explain the times you'll need to render your effects in Adobe Premiere RT depending on which DigiSuite system you're using.

Note When you render your DigiSuite effects, they do **not** render in real time.

Rendering on a DigiMix-DigiMotion system

If you're using a DigiSuite system equipped with DigiMix and DigiMotion cards, you'll need to render your effects in Adobe Premiere RT when you do any of the following:

- Choose to export your production to an *.avi* file.
- Use more than two video clips and one graphic clip.
- Mix uncompressed-quality (lossless) clips with clips of any other quality in the Timeline.
- Add a software effect or transition, such as an Adobe Premiere video filter or transition other than a Cross Dissolve.
- Apply a speed change using a negative value to play the clip in reverse.
- Apply any field processing options to a clip, such as **Interlace Consecutive Frames** or **Flicker Removal**.
- Apply an Adobe Premiere key type other than **None, Alpha Channel**, or **Track Matte**.
- Apply a freeze-frame effect to a clip using the **Frame Hold** command with the **Deinterlace** option selected (rendering won't be required if you clear the **Deinterlace** option).
- In the same segment, create **more** than:
  - one DigiSuite transition,
  - two chroma or luminance key effects,
  - three DVE/crop effects, paint effects (same type), or fade effects.
- Apply multiple DigiSuite effects to a clip in any order **other** than the following in the **Current** list of the **Filters** dialog box:

  DigiSuite DVE/Paint Effects
  DigiSuite Self-key or **DigiSuite Filled Key**

  For example, you can apply a chroma key to a DVE or paint effect and play back the clip in real time. If, however, you apply DigiSuite effects in the opposite order, such as a DVE to a chroma key, the clip will require rendering.

Note If you create a virtual clip that includes realtime DigiSuite effects, you must respect the following priority sequence when applying additional effects to the clip:

DVE/Paint → Chroma/Luma key → Fade → Transition

This sequence shows that any effect to the right can be performed in real time on any effect to its left, but if you do the opposite, your clip will require rendering. For example, if your virtual clip includes a realtime fade (video opacity) effect, you can apply a DigiSuite transition to the clip and play it back in real time. If, however, you apply a DigiSuite DVE/paint or key effect to a virtual clip that includes a fade effect, you'll have to render the clip to play it back.

- Combine DigiSuite effects with 3D effects created using the Inscriber VideoFX software in any order **other** than the following in the **Current** list of the **Filters** dialog box:

  DigiSuite DVE/Paint Effects
  Inscriber VideoFX
  DigiSuite Self-key or **DigiSuite Filled Key**

  For example, you can apply a page curl effect created using Inscriber VideoFX to a DigiSuite DVE or paint effect and play back the clip in real time. But if you apply a DigiSuite DVE or paint effect to a page curl, you'll have to render the clip.

Note If you apply an Inscriber 3D effect to a DigiSuite 2D DVE, the area outside your 2D DVE will be black (that is, the image beneath your video window won't show through). To get around this problem, scale your images using Inscriber VideoFX instead of the DigiSuite Effects plug-in.

Rendering on DigiSuite LE or DigiSuite DTV

If you're using DigiSuite LE or DigiSuite DTV, you'll need to render your effects in Adobe Premiere RT when you do any of the following:

- Choose to export your production to an *.avi* file.
- Use more than two video clips and one graphic clip.
- Create a 2D DVE on a graphic.
- Add a software effect or transition, such as an Adobe Premiere video filter or transition other than a Cross Dissolve.
- Apply a speed change using a negative value to play the clip in reverse.
- Apply any field processing options to a clip, such as **Interlace Consecutive Frames** or **Flicker Removal**.
- Apply an Adobe Premiere key type other than **None**, **Alpha Channel**, or **Track Matte**.
- Apply a freeze-frame effect to a clip using the **Frame Hold** command with the **Deinterlace** option selected (rendering won't be required if you clear the **Deinterlace** option).
- In the same segment, create **more** than:
  - one DigiSuite transition,
  - two chroma or luminance key effects,
  - two 2D DVE/crop effects,
  - two paint effects (same type), or
  - three fade effects.
- Apply multiple DigiSuite effects to a clip in any order **other** than the following in the **Current** list of the **Filters** dialog box:

  DigiSuite DVE/Paint Effects
  DigiSuite Self-key or **DigiSuite Filled Key**

  For example, you can apply a chroma key to a DVE or paint effect and play back the clip in real time. If, however, you apply DigiSuite effects in the opposite order, such as a DVE to a chroma key, the clip will require rendering.

Note If you create a virtual clip that includes realtime DigiSuite effects, you must respect the following priority sequence when applying additional effects to the clip:

DVE/Paint → Chroma/Luma key → Fade → Transition

This sequence shows that any effect to the right can be performed in real time on any effect to its left, but if you do the opposite, your clip will require rendering. For example, if your virtual clip includes a realtime fade (video opacity) effect, you can apply a DigiSuite transition to the

clip and play it back in real time. If, however, you apply a DigiSuite DVE/paint or key effect to a virtual clip that includes a fade effect, you'll have to render the clip to play it back.

- Combine DigiSuite effects with 3D effects created using the Inscriber VideoFX software in any order **other** than the following in the **Current** list of the **Filters** dialog box:

  DigiSuite DVE/Paint Effects
  Inscriber VideoFX
  DigiSuite Self-key or **DigiSuite Filled Key**

  For example, you can apply a page curl effect created using Inscriber VideoFX to a DigiSuite DVE or paint effect and play back the clip in real time. But if you apply a DigiSuite DVE or paint effect to a page curl, you'll have to render the clip.

Note If you apply an Inscriber 3D effect to a DigiSuite 2D DVE, the area outside your 2D DVE will be black (that is, the image beneath your video window won't show through). To get around this problem, scale your images using Inscriber VideoFX instead of the DigiSuite Effects plug-in.

Using DigiSuite with Video for Windows Programs

This chapter provides information you need to know when using Video for Windows programs to render, capture, and play back material on your DigiSuite system.

Chapter

8

About nonlinear editing on DigiSuite

When using Video for Windows programs to render (compile) material to an *.avi* file, such as in the case of a completed video production or an animation, you can use any of the Matrox codecs provided by DigiSuite to create a Matrox *.avi* file.

Motion-JPEG qualities

To render material for use on DigiSuite or DigiSuite LE, you can create Motion-JPEG *.avi* files at a selected video quality. For example, if you're working on a draft version of your production or you don't have a lot of available disk space, you may want to choose a low-quality preview setting. When you're ready to create your final production, you can render your material at digital quality to obtain professional results.

DV and MPEG-2 formats

If you're rendering material for use on DigiSuite DTV, you can create *.avi* files in various DV formats, or in MPEG-2 intra-frame format using the 4:2:2 Profile @ Main Level at a selected data rate (video quality).

In this chapter, we'll explain the various settings you need to make when using your Video for Windows program to create Matrox *.avi* files on your DigiSuite system. For details on using a DirectShow program with the DigiSuite Effects plug-in, such as Speed Razor RT or Adobe Premiere RT, see Chapter 7, "Creating DigiSuite Effects."

Important Although you can use your Video for Windows program to capture material on DigiSuite or DigiSuite LE, we strongly recommend that you use a DirectShow program such as DigiTools to capture your clips. For details, see "Getting the best video quality for your production" on page 174. At present, DigiSuite DTV does not support capturing clips using Video for Windows programs.

Using VFW programs without the DigiSuite hardware

If you installed the Matrox Video for Windows (VFW) software codecs, you can render and play back DigiSuite-compatible *.avi* files using your Video for Windows program without having the DigiSuite hardware in your computer. To capture material, however, your system must be equipped with the DigiSuite hardware.

Before you start rendering

Before you start rendering material to a Matrox *.avi* file, make the following settings in your Video for Windows program:

- Set the frame rate for your rendered material to 29.97 frames per second for NTSC video, or 25 frames per second for PAL video.

- Set the frame size of your rendered material to full-screen resolution according to the particular DigiSuite system on which you'll be using your *.avi* file:
  - On DigiSuite or DigiSuite LE, set the frame size to 720×486 for NTSC video, or 720×576 for PAL video.
  - On DigiSuite DTV, set the frame size to 720×480 for NTSC video, or 720×576 for PAL video.
- To render your production at a quality that's different from the one at which your clips were created, all your clips must be recompressed at the new quality level during the rendering process. If your program provides an option for controlling compression, set this option to "**Always recompress**" when rendering.
- If you'll be rendering audio, set your program to render audio to a separate *.wav* file (that is, don't include the audio in your *.avi* file).
- For best results, make sure you clear your program's "**Data rate limit**" option for rendered material. This ensures that your *.avi* file will be created at the particular video quality you select.

Note If your rendered animations or transitions such as wipes and slides appear jumpy, try adjusting the field dominance or field order for your rendered material. For example, if your transitions appear jumpy with the field dominance set to "**Odd field**" or "**Field 1**," try switching the setting to "**Even field**" or "**Field 2**."

Rendering material to a Matrox VFW .avi file

When you render material to an *.avi* file, such as when you render a finished video production or an animation, you must select the compressor (codec) you want to create the file. The compressor determines the quality of your rendered video. Refer to your program's documentation for instructions on how to select a compressor for your *.avi* file.

➢ To create a Matrox Video for Windows *.avi* file:

1. Select one of the following codecs from your program's list of available compressors:
   - **Matrox M-JPEG** Renders video to either Motion-JPEG lossless format, or Motion-JPEG lossy format at a selected data rate.
   - **Matrox DV 4:2:0 PAL/4:1:1 NTSC** Renders PAL video to DV or DVCAM format, and renders NTSC video to DV, DVCAM, or DVCPRO format.
   - **Matrox DV 4:1:1 (PAL)** Renders PAL video to DVCPRO format.
   - **Matrox DV50 4:2:2** Renders video to DVCPRO50 or Digital-S format.

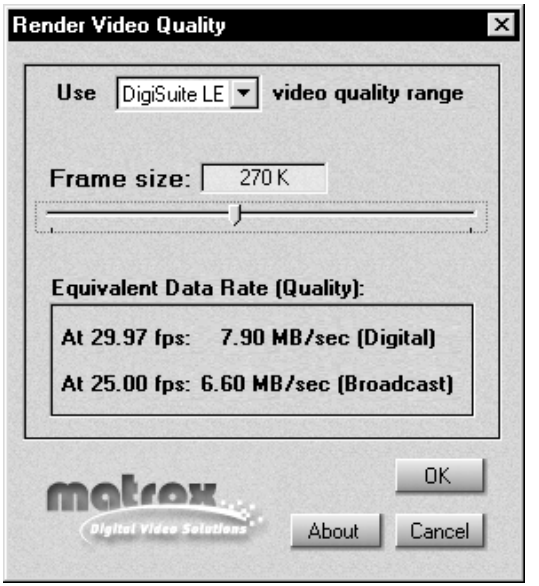
– **Matrox MPEG-2 I-frame** Renders video to MPEG-2 intra-frame format using the 4:2:2 Profile @Main Level at a selected data rate.

Important Motion-JPEG clips are supported only on DigiSuite and DigiSuite LE, while DV (including DV50) and MPEG-2 clips are supported only on DigiSuite DTV.

2 To select your Motion-JPEG or MPEG-2 data rate (video quality), you must configure the compressor by clicking the **Configure** button. For details, see "Configuring the Matrox M-JPEG codec" below, or "Configuring the Matrox MPEG-2 I-frame codec" on page 167.

Configuring the Matrox M-JPEG codec

When you click your program's **Configure** button to configure the Matrox M-JPEG codec, the following dialog box appears:



1 To limit the available video qualities to those supported by DigiSuite LE, select **DigiSuite LE** from the **Use video quality range** box. This prevents you from creating an uncompressed-quality *.avi* file, which is supported only on DigiSuite (that is, a DigiMix-DigiMotion system).

2 Drag the slider to select a frame size that matches the data rate and video quality you want according to your system's frame rate—either 29.97 fps for NTSC video, or 25 frames per second for PAL video.

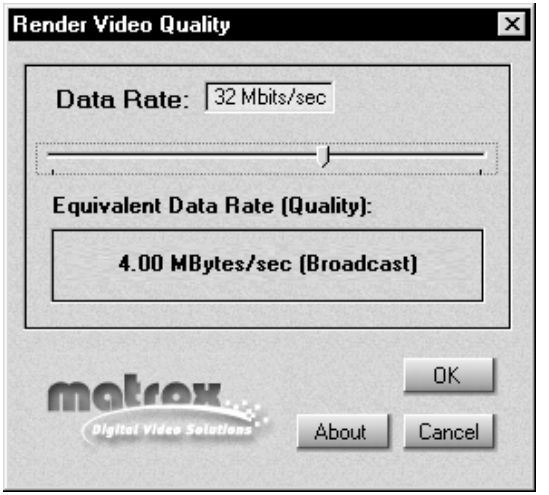
Only the uncompressed (lossless) quality **guarantees** identical quality to your source material. You can, however, achieve results that are virtually lossless by selecting a digital quality at a high data rate.

3 Click **OK** to save your selection. The quality you selected will be used each time you render or capture material with your program, until you change the quality again.

Be aware that depending on the capabilities of your system, you may not be able to smoothly play back video rendered at a high quality using your Video for Windows program. For the best playback performance, use a DirectShow program such as the Playback tool included with DigiTools.

Configuring the Matrox MPEG-2 I-frame codec

When you click your program's **Configure** button to configure the Matrox MPEG-2 I-frame codec, the following dialog box appears:



1 Drag the slider until your desired data rate (video quality) is displayed. The higher the data rate you select, the better the video quality will be.

2 Click **OK** to save your selection. The quality you selected will be used each time you render material with your program, until you change the quality again.

Be aware that depending on the capabilities of your system, you may not be able to smoothly play back video rendered at a high quality using your Video for Windows program. For the best playback performance, use a DirectShow program such as the Playback tool included with DigiTools.

Setting DigiSuite for VFW capture and selecting the playback monitor

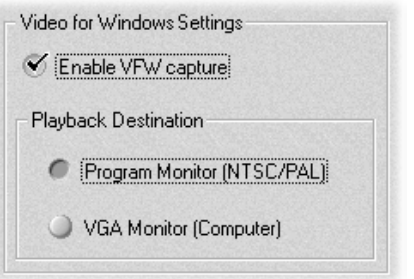
Important Instead of using your Video for Windows program to capture clips on DigiSuite, you'll get much better results using a DirectShow program such as DigiTools (see "Getting the best video quality for your production" on page 174). If you have a DirectShow program for which you've installed the DigiSuite Effects plug-in, such as Speed Razor RT, you should use that program to capture your clips.

To allow your Video for Windows program to capture material on DigiSuite or DigiSuite LE, you must set up the Matrox M-JPEG codec. When you do this, you can also select the monitor you want to use for playing back the video clips you create on your DigiSuite system.

Note At present, DigiSuite DTV does not support capturing clips using Video for Windows programs.

➢ **To set up the Matrox M-JPEG codec:**

1. Choose **Start | Settings | Control Panel**, then double-click the **Multimedia** icon.
2. Click the **Devices** tab. Under the list of video capture devices, select **Matrox Codecs**.
3. Click **Properties**, then **Settings**.
4. In the provided dialog box, select **Enable VFW capture**. This option allows your Video for Windows program to capture material on your DigiSuite system. If you run multiple Video for Windows programs at the same time, you'll be able to capture using only the first program you started.



Important When **Enable VFW capture** is selected, take care **not** to run a DirectShow program such as Speed Razor RT at the same time as your Video for Windows program. Doing so may cause your audio/video signals and system to become unstable. Before running a DirectShow

program together with a Video for Windows program, make sure you clear **Enable VFW capture**.

5 Under **Playback Destination**, select the monitor for playing back Matrox *.avi* files from your Video for Windows program:

- **Program Monitor (NTSC/PAL)** Displays the video on your Program monitor to give you the smoothest possible playback. This option is available only when **Enable VFW capture** is selected.
- **VGA Monitor (Computer)** Displays the video on your computer's monitor. Because the video is transferred into system memory, the video won't play back as smoothly as when you use your Program monitor.

Note Only full-screen video can be played back on your Program monitor. Video rendered at a size other than full-screen will always play back on your computer's monitor.

6 Click **OK** to save your settings. If you're presently running any Video for Windows programs, your settings will take effect after you quit those programs.

Before you start capturing

Before you start capturing clips on your DigiSuite system, make the following settings in your Video for Windows program:

- Set the frame rate for your captured clips to 29.97 frames per second on an NTSC system, or 25 frames per second on a PAL system.
- If possible, set your program to capture audio to a separate *.wav* file (that is, don't include audio in your *.avi* file).
- For the best results, set the audio sampling rate to 44.1 or 48 kHz, and the sample size to 16-bit (mono or stereo). If you'll be capturing digital audio (AES/EBU or S/PDIF), make sure you set the audio sampling rate to the same rate as the digital input. For example, to capture audio from a CD player, set the sampling rate to 44.1 kHz.
- If your program has a setting for the number of video capture buffers, set this number to 55 in order to optimize capture performance. In Adobe Premiere 4.2, you can set the number of video capture buffers by choosing **File | Preferences | Video Capture**.

Capturing material for your production

The following sections explain how to select the device from which you want to capture material, change the proc amp settings of your incoming video if needed, and select your video capture quality.

For instructions on how to capture material, refer to your program's documentation.

Note When using Adobe Premiere 4.2, wait until you see live video on your Program monitor before starting the capture.

Selecting your capture source

Your program captures material from the default video source you select for Card Set 1 in the DigiSuite Configuration program. To select this source:

1. Choose **Start | Settings | Control Panel**, then double-click the **DigiSuite** icon. This starts the DigiSuite Configuration program.
2. Click the **DigiMix** or **DigiSuite LE** tab, then the **Input** or **Video In** tab.
3. From the **Video Source** box, select the source you want to use. For example, select **Y/C (S-Video) 1** to capture material from your S-Video VTR connected to Y/C IN 1.

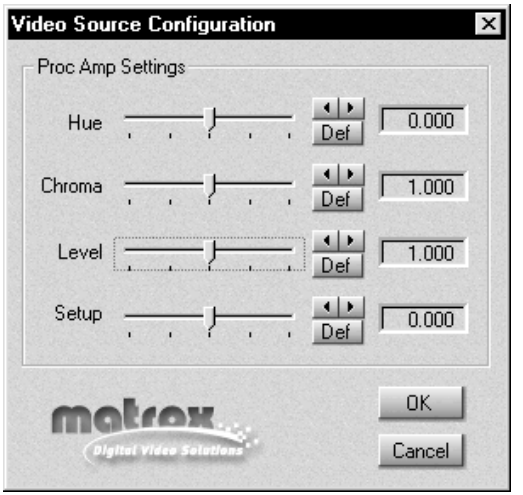
   If you selected an analog source, you can use the other controls in the dialog box to configure your source's input signal. For example, you can define the default proc amp settings.
4. Click **OK** to save your settings.

For complete details on using the DigiSuite Configuration program, refer to your DigiSuite or DigiSuite LE installation manual.

Changing your capture source's proc amps

When you start your computer, the proc amp settings defined for DigiMix or DigiSuite LE in the DigiSuite Configuration program are applied to your capture source's incoming analog video signal.

If you'd like to use different proc amp settings for the analog video you'll be capturing, choose your program's **Video Source** command. This displays the **Video Source Configuration** dialog box:



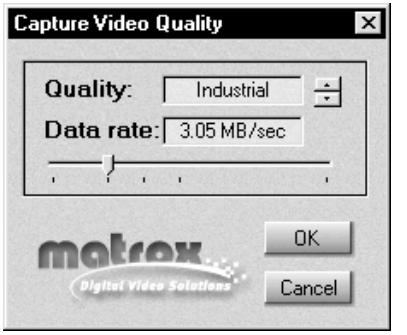
Use the proc amp controls as needed to adjust the incoming video signal before starting the capture. To return a control to its default setting as defined in the DigiSuite Configuration program, click the **Def** button. To restore the factory default setting for a control, **SHIFT+click** the slider.

Note Your proc amp changes will be retained until you reboot your computer.

Selecting your capture video quality

To select the video quality you want for your captured material on DigiSuite or DigiSuite LE:

1 Choose your program's **Video Format** command. The **Capture Video Quality** dialog box appears:



2 You can either select one of several preset video qualities, or select a custom quality using the data rate slider. The quality of your captured video depends on the data rate at which it's captured — higher data rates provide better quality video.

Select a preset quality

– To select one of the following preset video qualities, click the arrows beside the **Quality** box. The approximate data rates for the preset qualities are:

- **Preview** 0.1 MB/sec
- **Industrial** 3 MB/sec
- **Broadcast** 5 MB/sec
- **Digital** 7 MB/sec
- **Uncompressed** Lossless (about 13 MB/sec, but varies depending on the complexity of the video). This quality is **not** available on DigiSuite LE. To select the highest possible quality on DigiSuite LE, select **Best Quality**.

Select a custom quality

– To select a custom video quality, drag the slider. For example, to select a broadcast quality at a data rate of approximately 6.0 MB/sec, simply drag the slider until that value is displayed in the **Data rate** box.

Only the uncompressed (lossless) quality **guarantees** identical quality to your source video. You can, however, achieve results that are virtually lossless by selecting a digital quality at a high data rate.

3 Click **OK** to save your selection. The quality you selected will be used each time you render or capture material with your program, until you change the quality again.

Important Depending on the capabilities of your system, frames may be dropped when you capture video at the higher qualities (about 3.5 MB/sec and higher). For the best results, use DigiTools as explained in the section “Getting the best video quality for your production” on page 174.

Remember to save your captured video to an *.avi* file on one of your A/V drives. Keep in mind that you’ll need more disk space to capture video at a high quality than at a lower quality setting. For a table of various video qualities with corresponding data rates and disk space requirements, see Appendix A, “DigiSuite Data Rates and Disk Space Requirements.”

A note about capturing video with audio

Because of the way Video for Windows captures material, when you capture video and audio to the same *.avi* file, the duration of the video and audio portions of the clip may not be exactly the same. For example, the clip’s audio may end a few frames before its associated video. To play back the clip, Video for Windows adjusts the frame rate of the video so that it’s synchronized to start and stop at the same time as the audio. This means the video may not play back smoothly, and the clip’s frame rate won’t match the standard frame rate for your system (29.97 fps for NTSC video, or 25 fps for PAL video). The problem is most apparent with very short clips.

If you use a DirectShow program such as DigiTools to capture your material, the duration of the video and audio portions of your clips will match, and the audio will be stored in separate *.wav* files. If your Video for Windows program supports audio sampled at 48 kHz, you may prefer to capture your video and audio material with DigiTools (see Chapter 3, “Working with Clips Using DigiTools”).

Using Matrox .avi files in your production

When you build a production, make sure **all** the clips in your production match one of the following compression types:

- Motion-JPEG lossless (uncompressed quality).
- Motion-JPEG lossy (used for the preview, industrial, broadcast, and digital qualities).
- DV (includes DV50).
- MPEG-2 I-frame.

For example, when building a production on a DigiMix-DigiMotion system, all your clips must be either Motion-JPEG lossless (uncompressed quality), or any combination of the lossy qualities. On DigiSuite DTV, all your clips must be either DV or MPEG-2 clips.

If you mix clips created using different compression types in the same production, your system may hang or become unstable when you preview your production. If needed, you can use the DigiTools Convert tool to change an *.avi* file's compression type as explained in "Changing the compression type of an .avi file" on page 55.

Note To play back your captured audio in Adobe Premiere 4.2, you must set your audio preview options to "Build to Disk/Play from Disk." To do this, choose **Make | Preview Options**, then select **Disk** under **Build** and **Play** in the **Audio** box.

Getting the best video quality for your production

You may find that your Video for Windows program isn't able to capture and play back lossless and other high-quality video without dropping frames. This is because Video for Windows has certain limitations that make it inefficient for capturing and playing back video at the high data rates needed for high-quality video.

Use DirectShow for high-quality video

DirectShow programs such as DigiTools, however, are designed to work with high-quality video. As a result, you'll get much better capture and playback performance using a DirectShow program than a Video for Windows program.

To get the best possible video quality for your production, you can use DigiTools together with your Video for Windows program as follows:

1. Use the Capture tool in DigiTools to capture your clips at the highest video quality you can without dropping frames. Take care not to create any files larger than 1 gigabyte (GB), which is the maximum file size supported by Video for Windows.

2. Build and edit your production using your captured clips in your Video for Windows program. Be aware that your program won't be able to smoothly play back your video clips because of the limitations imposed by Video for Windows.
3. When you're ready to render your finished production, select the appropriate Matrox codec to render your production to an *.avi* file at the same video quality at which you captured your clips.
4. Play back and record your *.avi* file onto tape using the Playback tool in DigiTools.

Important DigiTools **can't** play back audio stored in an *.avi* file. If your *.avi* file includes audio, you must extract the left and right audio tracks into separate mono *.wav* files. Give the files the same name as your *.avi* file, but precede the *.wav* extension with *.A1* for the left audio file, and *.A2* for the right audio file. For example, if your *.avi* file is named *Demo.avi*, name the associated left and right audio files *Demo.A1.wav* and *Demo.A2.wav*, respectively.

For instructions on how to use the Capture and Playback tools, see Chapter 3, "Working with Clips Using DigiTools."

Notes

DigiSuite Data Rates and Disk Space Requirements

This appendix provides the approximate disk space requirements for capturing or rendering material at various video and audio qualities.

Appendix

A

Audio sampling rates and required disk space

The following table shows how much disk space you'll need per minute of audio captured at different sampling rates.

Sampling Rate	Bits per Sample	File Size (MB/min)	Min/1 GB of Storage
44.1 kHz	16	5.0	204.8
48 kHz	16	5.5	186.2

Note These values represent mono audio. For stereo audio, simply multiply the required disk space by two.

Motion-JPEG qualities and required disk space

The following table shows approximately how much disk space you'll need per minute of video captured at various qualities using the Motion-JPEG lossy compression scheme, available on DigiSuite and DigiSuite LE.

Video Quality	Data Rate (MB/sec)	Compression Ratio	File Size (MB/min)	Min/1 GB of storage
Preview	0.1	160:1	6	170.7
Preview	1.0	20:1	60	17.1
Preview	2.0	10:1	120	8.5
Industrial	3.0	6.5:1	180	5.7
Industrial	4.0	5:1	240	4.3
Broadcast	5.0	4:1	300	3.4
Broadcast	6.0	3.3:1	360	2.8
Digital	7.0	3.0:1	420	2.4
Digital	8.0	2.5:1	480	2.1
Digital	10.0	2:1	600	1.7
Digital	13.0	1.6:1	780	1.3
Digital	15.0	1.3:1	900	1.1

Note The data rate for uncompressed (lossless) quality video varies considerably depending on the complexity of the source video, but the rate for average video is about 13 MB/sec. This gives you a file size of about 780 MB/min.

DV/MPEG-2 qualities and required disk space

The following table shows approximately how much disk space you'll need per minute of video captured at various qualities using the DV and MPEG-2 compression schemes, available on DigiSuite DTV.

Video Quality	Data Rate (Mb/sec)	Data Rate (MB/sec)	Compression Ratio	File Size (MB/min)	Min/1 GB of storage
DV*	25.0	3.13	5:1	188	5.5
DV50**	50.0	6.25	3.3:1	375	2.7
MPEG-2 I-frame	8.0	1.00	20:1	60	17.1
MPEG-2 I-frame	20.0	2.50	8:1	150	6.8
MPEG-2 I-frame	28.0	3.50	5.7:1	210	4.9
MPEG-2 I-frame	40.0	5.00	4:1	300	3.4
MPEG-2 I-frame	50.0	6.25	3.3:1	375	2.7
MPEG-2 IBP	2.0	0.25	63:1	15	68.3
MPEG-2 IBP	6.0	0.75	21:1	45	22.8
MPEG-2 IBP	9.0	1.13	14:1	68	15.1
MPEG-2 IBP	12.0	1.50	10:1	90	11.4
MPEG-2 IBP	15.0	1.88	8.3:1	113	9.1

*DV includes the DV, DVCAM, and DVCPRO formats.
**DV50 includes the DVCPRO50 and Digital-S formats.

Note The MPEG-2 IBP format is **not** available for capturing clips, but can be used for exporting video to an *.avi* file using Adobe Premiere RT or Speed Razor RT with the DigiSuite Effects plug-in.

Notes

Editing in 16:9 Format on DigiSuite

This appendix explains how to create a production in the wide screen 16:9 format on DigiSuite.

Appendix

B

Creating a production in 16:9 format

When editing on DigiSuite, you can choose to work with source video that's been recorded in either the 4:3 standard TV screen format, or the wide screen 16:9 format. To create a production in 16:9 format on DigiSuite, do the following:

1. Record your video onto tape with your camera set to the wide screen 16:9 format. The video will be recorded as horizontally compressed 4:3 video.
2. Start the DigiSuite Configuration program as explained in the installation manual for your DigiSuite system, select **16:9** under **Editing Aspect Ratio**, click **OK**, then restart your computer. Setting your editing aspect ratio to 16:9 ensures that the effects you create on DigiSuite will be displayed with the correct proportions when viewed in 16:9 format.
3. Capture your video clips as you normally would using either your nonlinear editing program or DigiTools. Select the 16:9 display option on your Program monitor to "unsquish" the video and play it back in wide screen format without distortion. If you're using Matrox DigiView to view your source material (see Chapter 2, "Displaying Video in a Window with Matrox DigiView"), make sure the aspect ratio of the window is set to 16:9.
4. If you create animations, titles, or graphics for your production using a program that lets you set the pixel aspect ratio, use the appropriate setting for 16:9 display:
   - On an NTSC system, set the pixel aspect ratio to 1.185.
   - On a PAL system, set the pixel aspect ratio to 1.422.

   If you can't set the pixel aspect ratio, increase the height of your text or graphic by 18% on an NTSC system, or 42% on a PAL system. Increase the height **without** changing the width so that the text or graphic appears elongated on your computer screen.
5. Edit your production as you would a standard 4:3 production. Be aware that if your Program monitor is displaying in 4:3 format, transitions such as circular wipes and borders added to 2D DVEs will appear elongated because of the horizontal scaling. Setting your monitor to 16:9 will display the effects with the correct proportions.
6. Record your finished production onto tape. Remember that you'll need a monitor capable of displaying material in 16:9 format to properly view your master tape.

DigiSuite Glossary

This glossary defines many of the terms used in the DigiSuite documentation.

Appendix

C

Glossary of terms

Use this glossary as a reference for many of the basic terms in the DigiSuite manuals.

Numerics

1394 *See* IEEE-1394.

4:2:2P@ML 4:2:2 Profile@Main Level. An international standard video compression profile introduced by MPEG-2. It supports 4:2:2 luminance/chrominance sampling at up to 720×608 pixel resolution, and data transfer rates up to 50 Mb/sec (6.3 MB/sec). This profile is used for high-quality distribution and for archiving. *See also* MP@ML.

A

A/B roll Typically, A/B roll is an editing technique where scenes or sounds on two source reels (called roll A and roll B) are played simultaneously to create dissolves, wipes, and other effects. On nonlinear editing systems, A/B roll refers to using two source streams (*.avi*, *.wav*, *.tga*, and so on) to create an effect.

accelerated print-to-disk The process of rendering to an *.avi* file a realtime sequence of effects on DigiSuite (excluding Inscriber/CG rolling and crawling titles). This is the fastest type of rendering available on DigiSuite. *See also* multi-layer compositing.

aliasing A display characteristic of computer-generated text or graphics that appears as jagged or stair-stepped edges on diagonal lines. *See also* anti-aliasing.

alpha key An effect that makes parts of a foreground image fully or partially transparent based on alpha (transparency) values stored within the image's file, so that an underlying image can show through.

analog component video *See* component video.

analog signal A video or audio signal that varies continuously, as opposed to a digital signal which varies only by fixed steps.

anti-aliasing A technique that smooths jagged edges in computer-generated text or graphics.

aspect ratio A width-to-height ratio. For example, a 12-by-9-inch image has an aspect ratio of 4:3 (four-to-three). Most TV screens have a 4:3 aspect ratio. HDTV screens have a 16:9 aspect ratio. *See also* pixel, square.

assemble editing Recording new video and audio material sequentially onto tape. Because all the signals are recorded (video, audio, and control track), the new material completely replaces any previously recorded material on the tape. *See also* insert editing.

attenuation A decrease in an electrical signal's amplitude.

A/V drive SCSI hard drive capable of storing high-bandwidth audio/video data.

B

backplane PCB (printed circuit board) on a Movie-2 bus connector.

base board Printed circuit board (and mounted components such as integrated circuits, etc.) that is inserted into the computer's expansion slot. A module board is often attached to the base board.

B-frame (Bi-directional frame) A frame created during the MPEG or MPEG-2 IBP compression process. A B-frame is generated by forwards and backwards referencing of the P-frames and I-frames respectively, which allows it to have the highest compression ratio of the three frame types. B-frames contain only predictive data (that is, not enough data to make up an entire picture), and therefore cannot be edited

independently. *See also* I-frame (Intra-frame) and P-frame (Predicted frame).

BIOS Basic Input/Output System settings for system components, peripherals, etc. This information is stored in a special battery-powered memory and is usually accessible for changes at computer start-up.

bitmap A graphics image in which a set of values defines each pixel's relative brightness and color.

blackburst A composite video signal that combines the sync information of a basic video signal with a pure black signal. Used as a reference in synchronizing the different video sources in a system. *Also called* color black.

burnt-in time code Time code that's superimposed onto each frame of video, generally created using the overlay feature of a VTR. Used for rough-cut and edit-list processing. *Also called* burn in.

bus 1. Electrical signal path between different physical connection points. 2. System bus on computers, represented by the expansion slot connectors. 3. Movie-2 bus.

C

capture The process of digitizing video or audio material, usually from a VTR, and storing it in a file on a hard disk.

card DigiSuite card as assembled and installed. For our purposes, a card is the final assembled product, whereas a board is simply one the of the printed circuit boards that make up a card.

card set One or more DigiSuite cards recognized by DigiSuite software as a single functional unit. If a card set contains two or more cards, these are connected by a Movie-2 bus. There may be more than one card set connected by a Movie-2 bus connector.

character generator A device or computer program used to create text that can be overlaid onto video.

chroma key An effect that makes portions of a foreground image fully or partially transparent based on the color of that image (or another source), so that an underlying image can show through. *See also* key source, self-key, and filled key.

chrominance The color portion of a video signal that carries the hue and saturation information. *See also* luminance.

codec Compressor/decompressor. A processor that compresses video to reduce its file size by eliminating redundancies in information. It also decompresses files to play them back.

color bars A standard test signal that appears as a series of vertical rows of color by which the chrominance and video levels of a camera's output or a recorded signal can be checked.

compile *See* render.

component video A video signal having separate channels for the video information, as opposed to a combined (composite) signal. On DigiSuite, analog component video refers to a signal containing three channels: Y (luminance), R-Y (red minus luminance), and B-Y (blue minus luminance).

composite video A video signal containing luminance and chrominance information that has been combined using a video standard such as NTSC or PAL. *See also* component video.

CON 1 and CON 2 1. Male connectors (usually with 90 or 70 pins) mounted at the top of a DigiSuite card closest to the center of the card. 2. Their female counterpart on a Movie-2 bus.

connector set Combination of the Movie-2 bus connectors CON 1 and 2 on a DigiSuite card and/or a Movie-2 bus.

contrast The difference in brightness between the lightest and darkest areas of an image on the screen.

control track A continuous, stable, low-frequency signal recorded onto tape. It is used to identify frame locations and control the playback of the video signal.

crawl Sideways movement of text across a screen. *See also* roll (1).

cut A direct switch from one video and/or audio source to another.

D

Digital-S A professional variant of the DV format developed by JVC that uses a data rate of 50 Mb/sec (6.25 MB/sec), which is double the data rate of most other DV formats. Video is sampled at 4:2:2 for both NTSC and PAL sources to give enhanced chroma resolution. It uses a 1/2" metal particle tape.

digital signal A signal representing video or audio information as binary digits that can be easily regenerated with no noise or distortion. *See also* analog signal.

Digital Video *See* DV.

digitize To convert analog information, such as a video signal from a VTR, into digital information that can be processed and stored by a computer.

dissolve A transition in which one image smoothly fades to another image. It is characterized by the gradual ending of one image occurring simultaneously with the gradual beginning of another.

DMC Dynamic Motion Control. The ability to change the playback speed of video and audio clips.

drop-frame time code For NTSC video, time code is normally produced by a generator that counts at 30 frames per second. NTSC color signals, however, actually have a display frequency rate close to 29.97 frames per second. Drop-frame time code compensates for this time difference by dropping two frames from the count every minute except for every tenth minute so that the time code matches clock time.

DV Digital Video. A standard digital bit stream and compression format used for recording video and audio onto a digital tape. DV is intra-frame based, saving each frame separately, and uses a fixed 5:1 compression ratio to reduce the size of video files. DV's data rate is fixed at 25 Mb/sec (3.13 MB/sec). Video is sampled at 4:1:1 for NTSC sources or 4:2:0 for PAL sources. *See also* DVCAM, DVCPRO, DVCPRO50, and Digital-S.

DVCAM A professional variant of the DV format developed by Sony that records a 15 micron track on a metal evaporated (ME) tape at a data rate of 25 Mb/sec (3.13 MB/sec). Video is sampled at 4:1:1 for NTSC sources or 4:2:0 for PAL sources.

DVCPRO A professional variant of the DV format developed by Panasonic that records an 18 micron track on metal particle tape at a data rate of 25 Mb/sec (3.13 MB/sec). Video is sampled at 4:1:1 for both NTSC and PAL sources.

DVCPRO50 A professional variant of the DV format developed by Panasonic that uses a data rate of 50 Mb/sec (6.25MB/sec), which is double the data rate of most other DV formats. Video is sampled at 4:2:2 for both NTSC and PAL sources to give enhanced chroma resolution. It uses the same type of tape as DVCPRO.

DVE Digital Video Effect. Generally, an effect that resizes and repositions a picture on the screen. On DigiSuite, a 2D DVE is referred to as a "video window."

DVE move Making a picture shrink, expand, tumble, and/or move across the screen.

E

Edit Decision List (EDL) A file containing a list of edit decision statements used to create a video production.

edit master The first generation (original) of a final edited tape.

EISA slot Connection slot to a type of computer expansion bus found in some computers. EISA is an extended version of the standard ISA slot design.

expansion slot Electrical connection slot mounted on a computer's motherboard (main circuit board). It allows several peripheral devices to be connected inside a computer.

F

fade to black A transition commonly used to signify the end of a scene, in which an image or sound smoothly fades to a black screen or silence (also called a fade-out transition). Similarly, you could start a new scene with a fade up from black (or fade-in) transition.

field One-half of the horizontal lines needed to make a complete scan of an interlaced video frame. In the NTSC system, two consecutive fields of 262.5 lines each create a frame of 525 scan lines. In the PAL system, two consecutive fields of 312.5 lines each create a frame of 625 scan lines.

filled key A key effect in which the key source image is different from the foreground image. Areas not keyed (that is, not made transparent) in the key source image are filled with the corresponding areas of the foreground image. *Contrast with* self-key.

FireWire Apple computer's original implementation of the technology that would be standardized as IEEE-1394 in 1995.

frame A single video image. An interlaced video frame is comprised of two consecutive fields (the odd and even fields).

G

graphics overlay Text or a graphics image that's superimposed on video.

genlock The process of synchronizing the timing between different video signals by generating a new video signal that is time-locked to the sync of the original signals. Genlock devices enable computer text and graphics to be superimposed onto video. *See also* blackburst.

GOP Group of Pictures. The sequence of I, B, and P-frames produced during MPEG or MPEG-2 IBP compression. This sequence of frames contains all of the information required to reproduce a complete video segment. The longer the GOP, the less editable it is.

GPI General Purpose Interface. An interface that controls an external device through a remote data signal. *See also* GPI trigger.

GPI trigger The signal sent by a GPI that instructs an external device to execute a particular command, such as to start or stop playback of a video effect.

H

hard key A key effect in which areas of the keyed image are either completely transparent or completely opaque, creating a hard edge between the keyed image and background image. *See also* soft key.

hardware-accelerated effect *See* realtime effect.

host bus Computer system bus to which a DigiSuite card is connected by insertion in the appropriate slot. This will be either a PCI, an EISA, or an ISA bus.

hue The tint or tone of a color. For example, the difference between the color green and red is its hue.

I

IBP compression *See* MPEG-2 IBP.

IEEE-1394 An international standard data transfer protocol created by Apple Computer under the FireWire trademark and standardized by the Institute of Electrical and Electronics Engineers (IEEE). It enables simple, low-cost, realtime data transfer between computers and consumer and prosumer electronics products, such as DV camcorders and DV decks. *Commonly referred to as* 1394.

I-frame compression *See* MPEG-2 I-frame.

I-frame (Intra-frame) A frame created during the MPEG or MPEG-2 compression process that contains all the information required to reproduce a complete image. It allows random access points within a video stream, and acts as a reference point for B-frames and P-frames to be built. I-frames are editable because they contain enough data to construct an entire video frame, unlike B-frames or P-frames. *See also* MPEG-2 IBP, B-frame (Bi-directional frame), and P-frame (Predicted frame).

insert editing Recording new video and/or audio material onto a prerecorded (or striped) tape. Insert edits can be made in any order, unlike assemble edits, which must be made sequentially.

inter-frame compression A video compression method that compares a series of frames in a video sequence and removes the redundant data. Inter-frame compression treats all the frames in the sequence as an interdependent group. As a result, most of the frames can't be edited independently. *Also called* temporal redundancy reduction. *Contrast with* intra-frame compression. *See also* GOP.

interlaced scanning A method of creating a video image by scanning only the odd numbered lines on the screen in one pass, then the even numbered lines in the next pass. Two passes are therefore required to create a complete frame of video. Non-interlaced scanning displays the odd and even lines sequentially so that the complete image is displayed in one pass. NTSC and PAL displays are interlaced, VGA displays are non-interlaced.

interpolate To create a gradual transition between different DigiSuite effect settings applied to a clip. For example, interpolating between a blue tint effect and a red tint effect makes the clip gradually change from blue to red. *See also* keyframe.

intra-frame compression A video compression method that removes redundant information from within a frame. Intra-frame compression treats each frame of a video segment independently. Several video compression formats use the intra-frame method. These include Motion-JPEG, DV, and MPEG-2 I-frame. *Also called* spatial redundancy reduction. *Contrast with* inter-frame compression. *See also* I-frame (Intra-frame).

ISA slot Connection slot to a type of computer expansion bus found in most computers. It's larger in size than the PCI slots found on most Pentium-based computers and provides connections to the slower ISA bus. A variation found in some newer computers is the EISA bus.

J

JPEG (pronounced "jay-peg") Joint Photographic Experts Group. A compression and storage standard used for still, digital images. *See also* Motion-JPEG.

K

keyframe A particular frame at which one or more DigiSuite effects have been defined on a clip using the DigiSuite Effects plug-in. Effects applied at a keyframe remain active on the clip until a later keyframe is defined to turn off or change the effects. *See also* interpolate.

key source The image that contains the colors or luminance values on which you key to create a chroma or luminance key effect.

L

lossless compression *See* mathematically lossless compression.

lossless video *See* uncompressed-quality video.

lossy compression A method of compressing video that results in loss of image information, and thus degrades the image quality. The loss of image quality, however, may not be visible. On DigiSuite, lossy compression performed using a high data rate creates video that's virtually lossless. *Contrast with* mathematically lossless compression.

LTC Longitudinal Time Code. Time code that is generally encoded as an audio signal onto a linear audio track of a tape. This type of time code can be read only while the tape is moving. *See also* VITC.

luminance The brightness portion of a video signal. The luminance of a pixel determines its brightness on a scale from black to white. *See also* chrominance.

luminance key An effect that makes portions of a foreground image fully or partially transparent based on the luminance of that image (or another source), so that an underlying image can show through. *See also* key source, self-key, and filled key.

M

mark in To select the first frame of a clip.

mark out To select the last frame of a clip.

mathematically lossless compression A method of compressing video without losing image quality. The video is identical to uncompressed video, but requires less disk space. *Contrast with* lossy compression. *See also* uncompressed-quality video.

M-JPEG *See* Motion-JPEG.

module board Printed circuit board and mounted components that is attached to the base board using screws and spacers.

mosaic An effect that "blurs" an image by copying pixels into adjacent pixels both horizontally and vertically. This gives the image a blocky appearance, often used to hide people's identities on television.

Motion-JPEG A compression and storage standard used for motion video. The JPEG compression process is applied to each video field, in succession. *Also called* M-JPEG.

Movie-2 bus or **Movie-2 bus connector** Over-the-top connector used for high-speed data transfer. These two terms refer to the assembled component, which consists of a printed circuit board (backplane) with attached connectors.

MP@ML Main Profile@Main Level. An MPEG-2 video compression profile that supports 4:2:0 luminance/chrominance sampling at up to 720×576 pixel resolution, and data transfer rates up to 15 Mb/sec (2 MB/sec). This profile is used for broadcast transmission and distribution on DVD. *See also* 4:2:2P@ML.

MPEG A video compression standard that specifies a series of compression profiles and image resolution levels, introduced in 1990 by the Motion Picture Experts Group. MPEG takes advantage of the redundancy inherent in video data through a combination of inter-frame and intra-frame redundancy reduction. The MPEG standard supports data transfer rates of up to 1.5 Mb/sec (0.2 MB/sec). *Also called* MPEG-1. *See also* MPEG-2, inter-frame (IBP) compression, and intra-frame (I-frame) compression.

MPEG-1 *See* MPEG.

MPEG-2 A video compression standard that improves upon the MPEG standard by supporting data rates of up to 100 Mb/sec (12.5 MB/sec), scalable modes, field or frame searching, and much larger screen sizes. *See also* inter-frame (I-frame) compression, intra-frame (IBP) compression, 4:2:2P@ML, and MP@ML.

MPEG-2 IBP An MPEG-2 compression type that uses inter-frame compression to create a group of I, B, and P-frames. *See also* GOP and inter-frame compression.

MPEG-2 I-frame An MPEG-2 compression type that uses only intra-frame compression (that is, only I-frames are created). *See also* intra-frame compression.

multi-layer compositing The process of rendering a sequence that contains multiple layers of realtime effects on DigiSuite for the purpose of playing back the effects or saving them to an *.avi* file. This type of rendering isn't as fast as an accelerated print-to-disk, but is faster than when you render sequences containing software effects.

N

nonlinear editing Random access editing that generally uses video and audio clips stored on disks. Nonlinear editing programs let you rearrange and edit clips without having to redo the entire production, and provide instant cueing to any frame in a clip without waiting for tapes to rewind.

NTSC National Television Systems Committee. The NTSC RS-170A standard defines a method of broadcasting a color signal that can be received by both monochrome and color TVs. It uses a composite interlaced display comprised of 525 scan lines per frame, refreshed at a rate of approximately 30 frames per second. Broadcast systems in North America and Japan use the NTSC standard.

P

PAL Phase Alternate Line. A video standard that uses a composite interlaced display comprised of 625 scan lines per frame, refreshed at a rate of 25 frames per second. This is the broadcast video standard for most of Europe.

PCI retainer bracket Bracket attached to DigiSuite PCI cards with the function of extending their length to line up with and be inserted in standard ISA card guides.

PCI slot Connection slot to a type of expansion bus found in most Pentium-based computers. It is smaller in size than older ISA slots and provides connections to the high-speed PCI host bus.

P-frame (Predicted frame) A frame created during the MPEG or MPEG-2 IBP compression process. A P-frame is created by using motion vectors to predict the differences between it and the closest previous I-frame or P-frame. This forward prediction allows for higher compression than with I-frames, but not as high as with B-frames. P-frames, like B-frames, contain only predictive data and therefore cannot be edited independently. *See also* I-frame (Inter-frame) and B-frame (Bi-directional frame).

pixel Picture element. The smallest portion of an image that can be written to a display. Each pixel in an image represents a single dot on the computer screen. A picture's resolution depends on the number of pixels on the screen. *See also* pixel, square.

pixel, square A pixel having equal width and height. Graphics programs normally create images with square pixels. NTSC and PAL video pixels, however, are generally rectangular. This means that graphics displayed on a TV screen will be distorted (for example, a circle will display as an ellipse), unless the pixel aspect ratio of the graphics is adjusted to suit video. On DigiSuite with the standard 4:3 screen format, NTSC pixels

have an aspect ratio of 0.9, and PAL pixels have an aspect ratio of 1.067. On DigiSuite with the wide screen 16:9 format, NTSC pixels have an aspect ratio of 1.185, and PAL pixels have an aspect ratio of 1.422.

posterization An effect that reduces the various luminance levels of an image so that it looks flat or two-dimensional, somewhat like a poster or paint-by-number picture.

proc amp An electronic device that adjusts the different aspects of a video signal, such as its hue, saturation, and contrast.

R

realtime effect An effect that is played back instantly, without having to be rendered by an editing program. *Also called* hardware-accelerated effect. *Compare with* software effect.

render To compute an image or effect using a nonlinear editing, compositing, or animation program. The result is generally saved in a file on the computer. *Also called* compile.

RGB video A component video signal that uses three signals to carry the separate Red, Green, and Blue channels of colored images.

roll 1. Vertical movement of text across the screen. *Also called* scroll. *See also* crawl.
2. Unwanted vertical roll of a video image, indicating unstable sync.

RS-232 A non-differential serial data transmission standard used for computer connections.

RS-422 A differential serial data transmission standard that is often used for linking video production equipment (VTRs, mixers, etc.). Because this standard is differential, RS-422 connections are less subject to interference and noise than RS-232 connections.

S

saturation A measure of the depth of a color. Fully saturated colors are vivid, while colors that lack saturation look washed out or faded.

scroll *See* roll (1).

SDI Serial Digital Interface. A communications standard for broadcast digital equipment in which data is transmitted and received one bit at a time over a signal line.

SDTI Serial Digital Transport Interface.

self-key A key effect in which the key source image is also the foreground image. *Contrast with* filled key.

serial control A method of remotely controlling a device via a data line. The control data is transmitted in serial form (that is, one bit after another).

soft key A key effect that has a fuzzy, soft edge or semi-transparent areas. *See also* hard key.

software effect An effect that must be rendered by an editing program before it can be played back. *Compare with* realtime effect.

soft wipe A split screen or wipe effect with a soft border or edge where the two images join.

spatial redundancy reduction *See* intra-frame compression.

striping a tape Preparing a tape for editing by recording continuous control track, time code, and a video signal (such as black or color bars).

S-Video *See* Y/C video.

sync A circuit or signal that directs the electron gun in a camera or TV picture tube to hold a picture steady on the screen. It also synchronizes the electronics of other video equipment.

sync generator An electrical device that generates sync (timing) signals used to

synchronize video equipment and keep pictures stable on the screen.

T

TBC *See* time base corrector.

temporal redundancy reduction *See* inter-frame compression.

tile A transition in which one image is gradually replaced by another image that appears part-by-part in successive squares. The squares follow a given pattern until the entire screen is filled with the new image.

time base corrector (TBC) An electronic device that, when connected to the output of a VTR, corrects the stability and timing of the VTR's playback video. This is achieved by stripping the unstable horizontal and vertical sync pulses from the video signal, and replacing them with new, clean sync pulses.

time code A sequential code number assigned to successive video frames on tape. Each frame has its own time code, which is electronically encoded on the tape in the form hours:minutes:seconds:frames. *See also* drop-frame time code, LTC, and VITC.

tint An effect that replaces the chrominance information of an image with a single color, but keeps the luminance levels of the image intact. The result is an image formed with shades of only one color. This is useful for simulating "old-time" sepia images.

U

Uncompressed-quality video Video that has the same image quality as uncompressed video, but has been compressed using mathematically lossless compression to optimize storage space. *Also called* lossless video.

V

Video window *See* DVE.

VITC Vertical Interval Time Code. Time code that is encoded onto the vertical blanking interval of a video signal. VITC can be read by a VTR whenever an image is displayed, but not usually during high-speed operation. *See also* LTC.

Voice over Narration added to a video segment and mixed in louder than the original background sounds.

W

wipe A transition in which one image is gradually replaced by another image that is revealed in a given pattern. For example, the second image could be revealed from the top of the screen downwards until it fills the entire screen.

Y

Y/C video A component video signal in which the luminance (Y) and chrominance (C) information are separate. S-VHS videocassette recorders use the Y/C video format. *Also called* S-Video.

Y, R-Y, B-Y video An analog component video signal comprised of three channels: Y (luminance), R-Y (red minus luminance), and B-Y (blue minus luminance).

Customer Support

This appendix explains how to reach us to obtain customer support.

Appendix

D

DigiSuite customer support

If you have a problem that you're unable to solve by referring to your DigiSuite documentation, please contact your Matrox DigiSuite representative. He or she should be able to help you quickly correct any installation or system configuration problem.

If your representative is unable to solve your problem, you may contact Matrox for further information and assistance.

Contacting us

Matrox is proud to offer worldwide technical support. Please use the contact information for your area.

United States & Canada

Telephone 1 800 810-2550

Fax 1 514 685-2853

Email ..... video.techsupport@matrox.com

Europe, Middle East, & Africa

Telephone (France) ..... +33 (0) 1 45 60 62 09

Telephone (Germany) ..... +49 (0) 89 61 44 74 57

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Email ..... video.tech.europe@matrox.com

All other countries

Telephone ..... 1 514 685-7230, ext. 2388

Fax 1 514 685-2853

Email ..... video.techsupport@matrox.com

World Wide Web

We also invite you to visit our World Wide Web site for up-to-the-minute information about Matrox products, free software updates, access to our support databases, and a complete list of computer equipment compatible with the DigiSuite platforms.

Internet ..... www.matrox.com/video

DigiForum

If you'd like to join your peers on DigiForum, send Email to:

```
listproc@matrox.com
```

The **body** of the message should contain:

```
SUBSCRIBE DIGIFORUM <your name>
```

Substitute your first and last name for `<your name>`.

Only customers who've purchased and registered a DigiSuite product will be allowed to join DigiForum.

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