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Preface

Velocity is a non-linear desktop video editing and special effects software package for your PC. You can use it to interface with video capture hardware to digitize video source material. You can work with a wide range of digital video, audio, image and animation files. In addition to a wide range of pre-made transitions and effects, you can create your own customized transitions and effects. Velocity has various output options as well, including DVD and web distribution and playing or printing to videotape.

When you install Velocity it will recognize any Leitch real-time multiple stream video capture hardware you have installed and it will be optimized to work with that hardware.

The Quattrus hardware can play four streams of compressed or uncompressed video simultaneously. This means Velocity can use up to four streams of video in real time for transitions and composited (layered) effects. Six graphics buffers on the Quattrus hardware mean you can play up to eight still, rolling or crawling titles simultaneously over video.

The Altitude hardware can support up to two uncompressed streams of High Definition (HD) video with two graphic streams simultaneously. Altitude will also support multiple SD video or alpha streams with eight graphics buffers which allow you to play eight still, rolling or crawling titles simultaneously over video.

Note: In order for your Altitude hardware to support two uncompressed HD video streams, you must have the optional SCSI adapter card, which fits onto the main board, and two sets of four striped drives. If you have the optional DVE effects module, you can use one DVE to manipulate any of those layers.

Chapter 1
Software Installation

To optimize Velocity to work with your Quattrus or Altitude hardware with all its real time capabilities enabled, you must have your Quattrus, or Altitude board (and optional SCSI video drive) fully installed before installing the Velocity software. See the hardware user's guide for details on how to install this hardware.

Velocity requires the Windows XP operating system. You need a CD ROM drive to install the software. When fully installed, Velocity software needs about 2 GB of hard drive space. When you are capturing video with audio, you also need to have space available on a system drive to store the audio files. Video image data may be stored on a dedicated SCSI drive connected to the Quattrus or Altitude board. A network drive or a system drive may be used as well.

To download drivers and software updates from the Leitch website at *www.leitch.com*, you need a modem or other internet connection, or a way to transfer large files from an online system to your Velocity system.

System Requirements

Ultimately, the type of work you are planning to do determines the system requirements.

VelocityHD System Requirements

- Intel Pentium-4 2.8 GHz dual-processor or higher required
- 1GB RAM
- 300 Watt system power supply.
- One unobstructed full-length 64-bit bus mastering PCI slot (or a 32-bit slot that will accommodate a 64-bit board). Additional slot required for digital I/O card.
- At least 2 GB of available system hard drive space for drivers and software plus additional space for audio storage.
- 1024x768 24-bit color display (minimum)
- Microsoft Windows XP Professional

- Microsoft Internet Explorer 5 or greater.
- Dedicated system/boot drive.
- Dedicated hard drive for audio/graphics/project files recommended.
- Dedicated SCSI video hard drive array [striped 10,000 RPM drives are sufficient to achieve simultaneous playback of four streams of compressed video (2:1 compression or more; 10MBytes/sec or less per stream); striped 15,000RPM drives are required to take advantage of multiple streams of uncompressed video]
- CD-ROM drive, standard keyboard and mouse.

VelocityQ System Requirements

- Intel Pentium-4 2.8 GHz processor or higher (dual Xeon processors recommended)
- 1GB RAM
- 300 Watt system power supply.
- One unobstructed full-length 64-bit bus mastering PCI slot (or a 32-bit slot that will accommodate a 64-bit board). Additional slot required for digital I/O card.
- At least 2 GB of available system hard drive space for drivers and software plus additional space for audio storage.
- 1024x768 24-bit color display (minimum)
- Microsoft Windows XP Professional
- Microsoft Internet Explorer 5 or greater.
- Dedicated system/boot drive.
- Dedicated hard drive for audio/graphics/project files recommended.
- Dedicated SCSI video hard drive array [striped 10,000 RPM drives are sufficient to achieve simultaneous playback of four streams of compressed video (2:1 compression or more; 10MBytes/sec or less per stream); striped 15,000RPM drives are required to take advantage of multiple streams of uncompressed video]
- CD-ROM drive, standard keyboard and mouse.
- NTSC or PAL video monitor.

Motherboard

Please refer to the Leitch website (*www.leitch.com*) to check on the most recent list of compatible motherboards for VelocityHD or VelocityQ.

SCSI Video Drives

Depending on the quality you are trying to achieve, your hard drive requirements will vary. In fact, in some applications you may not need SCSI video drives at all. However, for most systems, a pair of AV-rated SCSI drives is sufficient. For a more detailed discussion of system requirements please see your hardware user's guide.

Initial Software Installation

After physically installing the hardware in your computer, the next time you power up, the New Hardware Wizard will run (if you are using Windows XP only). Cancel this Wizard. A second New Hardware Wizard will run. Cancel this Wizard as well.

Installing Velocity (including supplemental software)

Place the Installation CD in the CD-ROM drive of the computer that contains your Quattrus or Altitude board. If autorun doesn't automatically launch, use Windows Explorer to find autorun.exe and double click on it.

A splash screen opens. Click **Install**.

Follow the instructions as you continue through the series of screens. The drivers will be installed (along with any supplemental software if you have selected them). If you have Quattrus system equipped with a DV module or OHCI-compliant DV board in the system, you may also choose to install Soft DV or Hardware DV support.

You will need to reboot once all of the software has been installed.

If this is your first installation of Leitch software and hardware on this system and you have added dedicated SCSI media drives to the onboard SCSI controller, you must format these drives before you can use them with Velocity. Please see your user's guide for more information on formatting your hard drive s and initial configuration of your system.

Registering Your Velocity System

You will need to submit your completed registration form in order to receive a reg key. In the meantime you have a 30-day grace period in which to complete the registration process. You can use the "Register Leitch Software" program on your Velocity system, or you can register on the Leitch web site at *www.leitch.com* (follow the link on the Software Registration warning window), or you can activate your Registration by phone or mail if you don't have internet access. See the Quattrus or Altitude User's Guide for more information.

QTools Software (Quattrus Only)

If you have the Quattrus hardware, you can use the Qtools software application which comes with the VelocityQ software. This software application provides features such as manual trigger and time lapse recording, as well as simple interfaces for capture, data management and playlist-style video editing. For more information about Qtools, please see the Quattrus User's Guide.

ATools Software (Altitude Only)

If you have the Altitude hardware, you can use the ATools software application which comes with the VelocityHD software. This software application provides features such as manual trigger and time lapse recording, as well as simple interfaces for capture, data management and playlist-style video editing.

Fusion DFX+

The bundled version of Fusion must be installed in the same computer as your Quattrus or Altitude board. Its hardware locks to your hardware board, so it does not require a dongle. Once the software installation is complete, you must follow the registration procedure as outlined in the Fusion manual.

You have a 30-day grace period in which to complete the registration process. Note that the Registration page on the eyeon website (*www.eyeonline.com*) is not intended for Leitch customers who have received Fusion or DFX+ as part of a Leitch package.

For more information on DFX+ integration with Velocity, see Chapter 22.

Update your Velocity Install

If you wish to update your installation, say from an update file or the CD, click on the autorun.exe file in the folder you wish to update from.

A splash screen opens. Choose **Install**.

If you have previously installed Velocity on the system and not done an uninstall, this screen will open:

Repair - updates the installed components, but will not add anything that wasn't installed before.

Modify - Opens a check list allowing you to choose which components you would like to add, and which you would like to remove. If, for example, you did not install SoftDV initially, you would choose the Modify option to add it later.

Remove - uninstalls everything Leitch-related.

Click next to take you to the Leitch Hardware Options screen. Four choices are available. Select the items you wish to update and click next. The selected components are installed in your computer.

Choose whether or not to reboot your computer and click **Finish**.

Starting Velocity

To start Velocity, double-click on the Velocity icon on your desktop, double click DPSNLE.exe in your Velocity folder, so click on the Start menu in Windows, then select **Programs > Leitch > Velocity(HD/Q) > Velocity(HD/Q)**.

The first time you launch Velocity, you must set various preferences for what will happen each time you startup Velocity, and how you wish to organize projects and file saving within Velocity. These settings are covered in depth at the start of Chapter 2. You can go through them now, or for Quick Start check BOTH New Project Options.

Click **OK**. A window opens with two buttons: **New Project** and **Load Existing Project**. Click the **New Project** Button and give your project a name. Use the **Browse** button at the end of the Project System Folder Project to select a system drive (if you have more than one drive do not select your C: drive) and a media Volume. Folders and Default I/O Folders are created for you and an information screen opens. Click the **OK** button to start working on your Project.

(Following the instructions in Chapter 2, you can go back and change the default settings later.)

Start-up Image

When you reboot your system and the Quattrus or Altitude drivers start, a Velocity logo appears on your video monitors. Also, when you start Velocity, the same logo appears in your trim window. You can change this image (for example, to the name of your company, or the name of your or project).

Rename your .bmp logo STRTRTN.bmp and copy it to the Data folder within Velocity's directory (the same folder as contains your dpsNLE.exe file) overwriting the BMP file of the same name.

Plug-In Filters

Plug-in filters are third party special effects filters which can be applied along with existing filters. Velocity can host most standard plug-ins.

There are various Character Generator programs you can use with Velocity. For an up-to-date list of programs that work with Velocity, you should check the Leitch website at *www.leitch.com*.

Plug-in character generators are third party programs which can be used with Velocity to create various types of rolling, crawling and still titles. Velocity works with Inscriber from Image North and Power CG from Cayman Graphics, among others.

Installing the Plug-ins

Launch the installer for your plug-in. The installer may ask where you would like the plug-in placed. Change the default path to point to the Velocity\Plugins directory, or for Inscriber, to the Velocity\CG directory.

Once the installation is complete, use the Windows Explorer to view the contents of the "Plugins" directory. The directory will contain some new files ending with the PRM and 8BF extensions.

In some instances, there are no such files, but there will be new directories created by the installer. In this case the files may reside within one of the new directories. They must be moved to the "Plugins" directory.

Accessing Installed Plug-ins

Depending on the support and plug-in type, you will see it appear in one of three areas of Velocity.

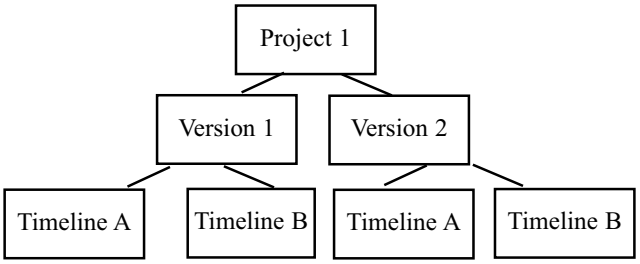
Character Generators can be accessed from the right-click floating menu of the gallery.

Custom Transitions and some title generators are available on the right-click menu of timeline transitions. A new item called "Plugin Transitions" appears under "Rendered Transitions".

Custom Filters are available from within the Apply FX dialog box. The drop-down list under "Filter Categories" has additional plug-in filters. The individual filters can be selected from the "Available Filters" list.

If your plug-in does not appear in any of these three areas, it may mean that Velocity does not support your plug-in. This does not necessarily mean that you can not use this plug-in. You may have to use it as a stand-alone product, and then import titles or video as still image files or image sequences into the gallery.

Chapter 2
Working With Projects



Internally, the material you make your projects up out of is organized by type - video files in folders or even their own drive, stills, video, audio, effects, timelines and galleries always on a system drive. But for usability purposes, all material is organized into projects.

The contents of a project are versions, timelines, galleries, and settings files. timelines, versions and galleries can contain media, such as video, audio, effects and titles. The same media may be used in multiple projects. A project can open without all the media, but it does require project and timeline files.

Project management also aids in many types of clip linking.

- Synchronized audio, which is stored separately from video, links with the video as soon as you play it back.
- Render Bank technology keeps track of rendered clips even as you move them on the timeline.
- A clip rendered from Velocity in DFX+ can be re-opened as a Flow file later.

Project Management settings allow you to save files for retrieval as a project. They allow you to back up your project and delete unwanted or unneeded files during later stages of your project.

Contents of a Project

A project is a collection of one or more timelines, versions and galleries. All the video and audio, titles and other sorts of media as well as settings files organized in those galleries, timelines and versions are part of the project.

Each project you create has a name that you define and may include a series of folders to contain the media for that project.

Video Storage

Video files include captured clips, rendered files and temporary files. You can capture, render and play back video files from a network or system drive, or from a dedicated SCSI media drive. For best results use a dedicated SCSI drive attached to your on-board SCSI controller.

When you name a project, a Project Media Folder may be created in your VTFS Media drive (usually P) or system drive. This folder shares the project name, with a _Video tagged onto the end of the root

Your media drive may have a Default I/O Media folder to store captured video files for all projects (not just the project you are working on now), depending on your start-up options.

System Drive

When you create a project, you also create a Project System folder named after that project on your system drive. The root of the project's folder on the system drive contains a Database folder, a Media folder and a VPRJ project file. The VPRJ file is what you will select when you wish to open this project in the future. If you have set your Start-up options to include your Default I/O Folders within the Project folders, you will also see a Media directory. Otherwise, this Media directory will not be located in your Project directory, but elsewhere on your drive (the root, for example).

The Media Folders

When you open the Media folder on your system drive, you are faced with nine sub-folders. When you create files in Velocity, they are automatically saved to the correct folder within this structure so that all the files in a project stay together.

The nine sub-folders are as follows:

Audio - WAV files

FX - WFX mask files, etc.

Graphics - Still image files you may integrate into your project

Misc - All other files that have to do with your project

Multimedia - Multimedia output files (non-LTA or WAV) used in your project

Settings - OST files for creating output settings

Title - Files that you create in Quick Titler or another CG

LtaIn/DvaIn - Capture and import files

LtaOut/DvaOut - Movie output files that you have created

If you have chosen to store video files on your system drive, you will also have a tenth folder in the Media directory. This folder shares the name of your project followed by _Video. This folder is where your renders will be saved and where default video pointers will look to save and retrieve clips.

Keep in mind that when you start a new project, these folders will always be created whether you use them or not.

The Database Folder

The Database folder contains one subfolder, entitled version. In this folder, you will find a folder for each version of the project you have created. There can be up to 20 versions in a project. Each version contains timelines (.tle files) and galleries (.gy files) along with pointers to their associated files.

Setting Your Velocity Project Directories

The first time you launch Velocity, the Startup Options window opens. This is where you must set preferences for each subsequent time you launch the software.

If you choose nothing and click **OK**, the only folders you will be asked to create are on the Default Folders screen (next section).

If, on the Start Up Options screen, you choose **Remind me to set new folder locations for each new project** only, you can choose to place the folders in another project's folders, or create new ones.

If you choose **Place Default I/O folders within the Project folders** only, Folders will automatically be placed in the Project System folder and the Default I/O Media.

Folder will automatically be set to the same folder as your Project Media Folder. Use this method if you want to keep the media for each project separate from the media for all other projects.

If you choose both options, you will be reminded to create new project folders, and the files will be placed within those project folders or not, as you determine.

Note: You can always access media from other projects, even if the projects do not share the same Default I/O Folders.

If you wish to change the settings on this screen later, the same options are found on **File > Preferences** in the main menu. Select the General tab and click **Startup Defaults**. The changes will take effect when you start your next project.

Default Folder Locations

After you have set your startup options, the Default I/O Folder window will appear. Your default folders are the places where media for this Project (or media that may be shared between all projects) is stored.

In the Default System I/O Folder field, select a folder in a System drive, where audio, titles, stills, etc. may be stored.

In the Default Media I/O Folder field, select a folder in your system, network or (for optimum performance) VTFS (P:\) drive, where video files may be stored. The folder name ends in _Video, to indicate that it contains that file type.

Preferences button

Note: These settings are always available by selecting **File > Preferences** in the main menu and clicking on the **Project Management** tab (you can also right click the timeline and choose **Preferences**), by clicking the Preferences button in the toolbar at the top of the timeline, or by pressing Hotkey (default) F5.

Create New Project

After you click **OK** on the Default Folders screen, the Startup window will open asking you what you want to open.

New Project - This will allow you to start a new project from scratch. You can import galleries and timelines from other projects into this project if you so desire.

Load Existing Project - Opens a browse window where you can search your system drives for the project you wish to work on. If you're just starting using Velocity, you may not have any files to choose from.

Most Recent Projects - This will allow you to open projects that have been recently opened. Unless you have used Velocity before, this option will not be available (ghosted).

Save Project

If you choose to start a new project, the Save Project window opens.

At the top of the screen, give your project a name. Each project must have a unique name. You can't keep using the same project name and save destination. If you try to, an error message will ask you to please choose a unique name because a folder by that name already exists.

Review the locations for the Project System Folder and Project Media Folder. If you wish to change one or the other, press the Browse button to the right of it.

While you can change the destinations of these files (keeping the system drive folder in a system drive, and the media drive folder in a system or media drive), you cannot change the name of the folder that is created. The folder always shares the name of its project.

When you save your project subsequently, it will be saved in the same folders. This window will not open again unless you save a new project.

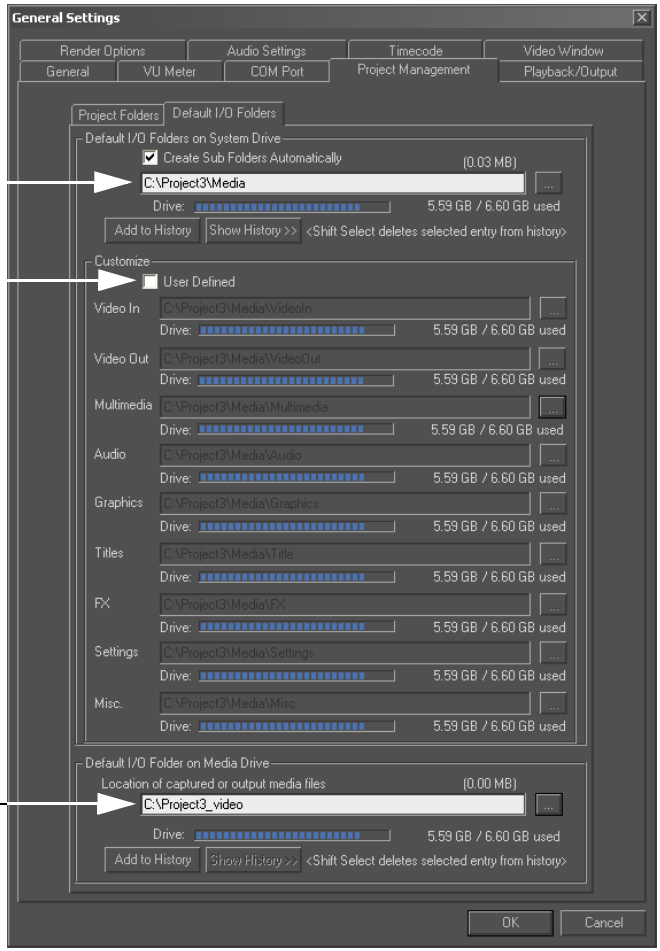
New Folder Location for Each Project

If you chose to set new folder locations, the General Settings (Preferences) window will appear. If you did not choose to set new folder locations, your new project will open and you can begin editing.

Assigned system file folder

Click the User Defined check box to re-assign subfolder files

Default folder that will be used for your video files



Default I/O Folders on System Drive

This section of the Default I/O Folders tab shows the system folder you chose in the Default Folders screen.

Create Sub Folders Automatically - This check box, which is already checked by default, verifies that Velocity has already created the nine sub folders in your system drive media folder. If you uncheck this box, Velocity

will send all files directly to the Media folder, and not in their respective sub folders.


Browse button

If you click on the Browse button next to the Default I/O Folder on the System Drive, you will see that the nine sub-folders listed below have already been created.

You may want to add your system folder to a history, so you can keep track of what system folders you have used in the past. If you wish to do this, click on the **Add to History** button. Click on the **Show History >>** button to show your previously saved system folder locations. If you want to delete items in your system folder history, click on the **Show History >>** button, then press SHIFT and click on the item you want to delete.

Customize

This section simply lists all of the system drive's sub-folders, as well as their location and used memory.

User Defined - If you do not wish to use the default sub folders, uncheck this box and all of the sub folders' browse buttons will all become available, so you can re-assign the save locations for all these files. This allows you to redirect save locations for new media later in the project. If you leave this box checked, these are the Default I/O Folders that you will use for this project (and may draw on for multiple projects).

Default I/O Folder on Media Drive

This section shows the location of your chosen default folder on your Media Drive, as well as its memory usage.

The Project Folder tab on this screen shows you the settings you previously made for default folder locations. These locations cannot be changed unless you create, rename or copy a project. This screen is there for informational purposes only.

When you change a target directory in this settings screen and click **OK**, a warning prompt will open. Press **Yes** to apply your changes or **No** to cancel and have all individual directories continue to point where they were previously.

Note: This window is always available by choosing **File > Preferences** form the main menu and selecting the Project Management tab and then the Default
I/O Folders tab under that.

Note: There is a limit of 2048 files per folder in your VTFS video drive (usually your P:\ drive). If you do a lot of rendering and have very long projects, you may need to create another folder at some point or flush out older, un-used renders.

Next Time you Launch Velocity

The next time you launch Velocity, you will not have to choose Startup Options again. Instead, you can choose to start another new project, load an existing project, or open a drop-down menu of projects that have most recently been saved on the system.

When a project opens, the interface is laid out in a similar working environment to when it was last worked on. Velocity remembers the last position and zoom level of the timeline, position of the playhead, first opened gallery, preview/trim window and VU meters as part of a project.

You can save a project (or abandon changes) and switch to another one at any time.

Creating, Opening and Saving Projects

Velocity can only have one project open at a time. A project can, however, open galleries and timelines from various projects.

Creating a New Project

New Project button

Select **File > New Project** from the menu, or click on the New Project button in the button bar below the menus.

A window opens offering the opportunity to save the currently open project (if there is one open). Choose to save or not save, and the old project closes.

A blank timeline and gallery will open, but on top is a Save Project window. You have two choices:

Cancel - Velocity loads nothing.

Save - Click this button to create your new project. However, you may wish to enter a new name and check the project folder locations before doing so.

In the Project System folder and Project Media folder fields, folders are named after the project's file name. Use the browse buttons to choose new locations on the System and Media drives to place these folders. You cannot change their names. If you have chosen to be reminded to set new Default I/O Folder locations with each new project, another window will open, and you can set your default media folders as well.

The new project opens with the playhead in the timeline set to zero timecode, so if you begin the project by placing clips from the trim window to the timeline, those clips will start butted up against the start of the timeline, unless you move the playhead.

Opening a Previously Saved Project

Open Project button

To open a previously saved project:

1 Select **File > Open Project** from the menu and then choose from previously saved projects (if any) located on your hard drive. You may also click on the **Open Project** button on the toolbar.

Note: You may also open recent projects directly from the File menu. The recently opened projects are listed at the bottom of the menu. If you choose to open a recent project, then it will launch automatically.

2 Choose a project file (.vprj extension) to open.

3 Click **OK**.

Note: If the currently opened project has not yet been saved, a message asks whether to save or abandon changes to the current project. Click **Yes** to save the current project before opening the new one.

The newly selected project is loaded.

Missing Media

When you open a project, if clips are not in the locations where Velocity expects to find them, a message appears reporting that missing media has been found.

The spaces on the timeline and in the gallery where these clips should be are filled in with virtual clips. You can perform most timeline and gallery functions even when media is missing from your project. See Chapter 8 for more information on working with virtual clips.

To replace these clips at any time:

1 From the main menu, select **File > Replace Virtual Clips in**. You then have two choices:

- **Active Tle/Gal** - This selection only replaces virtual clips in the active timeline and gallery.
- **All Tle/Gal** - This selection will replace all virtual clips in the project. Use the browser that opens to find clips or replacements for them.

Saving a Project

Save Project button

To save your project, select **File > Save Project**, or press the **Save Project** button. As it saves your project, Velocity saves any associated timelines and galleries also.

Handling Projects

Renaming a Project

If you wish to change the entire project's name, select **File > Rename Project**. All components of the project that contain the project's name -- the project folders in the system drive and in the VTFS media drive, as well as the project.vprj file itself -- are renamed. Note that this does not create a copy of the project. If you go looking for the folders or files under the project's old name, they will not be there.

If you subsequently create new galleries or timelines, they are saved in the Project's System Folder. If you open galleries from other projects, they launch as part of the current project, but remain in their old save location.

Copying a Project

To copy your project, choose **File > Copy Project** from the main menu. The Copy Project window (which is the same as the Save Project window) opens.

Essentially, this duplicates your entire project into new folders with new project names. Velocity creates a new folder in your system drive for storing copies of all the media for your project. It also creates a new folder on your VTFS media drive for all your video data. This creates a replica of the project while leaving the current project with the same name.

Consolidating a Project

When you back up your project for archival purposes, you can choose one of two Consolidate options from the File portion of the main menu (**File > Consolidate Project** or **File > Consolidated Copy**.

Consolidate Project - This option displays Project System Folder and Project Media Folder fields for information only. You cannot alter the places where the Consolidate folders are saved. They are always within the project's media folders.

The Consolidate Project option gathers information about all of the media and other files needed by your project. If it finds system files that are not already in a Project Folder, it copies them to a Consolidation Folder in your Project System Folder. If it finds media files that are not already in your Project Media Folder, it copies them to your Project Media Folder. Note that Consolidate copies system files to system folders and media files to media folders.

Consolidated Copy - This option gathers ALL of the system files and media files needed by your project, including the ones that are already in Project Folders, and copies these files to any SYSTEM folder you choose (i.e. system files and media files are copied to a system folder). The system files are copied to a sub-folder that uses your Project name and the media files are copied to a sub-folder that uses your Project name followed by "_MediaDrive".

For example, if you use Consolidated Copy on a Project called "Tutorial", and name your Consolidated Copy folder "D:\Archive" for both system and media files, then you will see "D:\Archive\Tutorial" and "D:\Archive\Tutorial_MediaDrives\Tutorial" folders on your drive.

There are two modes to choose from on the Consolidate screen:

Original - This option copies complete clips from one folder in your VTFS Media drive to the other.

Compact - This option copies only the trimmed portions of clips that you used. So for example, if you had a ten-second clip but only used two seconds of it, it only copies that two seconds. The timecode of the clip will be retained, if you need to batch recapture it.

In Compact mode for both Consolidate Project and Consolidated Copy, you have the option to add handles by checking the **Add Handles** box and selecting the appropriate Head and Tail values.

In both the Consolidate Project and Consolidated Copy screens, you have the option to **Consolidate media only for open timelines**, which means that all media located in the gallery will be ignored during the consolidation process, as only media in open timelines will be consolidated.

When you have made all of the desired settings, click the **Consolidate** button.

Note: Both Consolidate Project and Consolidated Copy take into account all media files in both timelines and galleries. So if untrimmed clips exist in the gallery, using Compact mode will copy the entire clip(s). If you only want to consolidate the trimmed portions that exist on the timeline, close the gallery before entering Consolidate Project/Consolidated Copy.

Restore

To restore a project backed up using one of the consolidation options, or to place it on another computer, copy the entire system folder onto a system drive of the computer you are restoring the project to and copy the entire media folder onto a volume of that computer's media drive. There are normally two folders to completely copy from the backup folder: <Project>, which would be copied into a system drive, which would contain the audio,

image, effects and title files, etc., and <Project>_MediaDrive\<Project>, which would be copied onto a VTFS or system drive.

Crash Recovery

Auto back-up can protect you from sudden closure of Velocity (for example because of a power failure). Velocity is set up to automatically backup your current timeline every one minute.

After a crash, at the next time you open Velocity, a warning prompt will open, reporting that there was an abnormal exit detected and that the project will load the last automatically saved version of the project or the last manually saved version, depending on which is more recent. Click **OK** to proceed.

If you wish to open a previously saved timeline, from the main menu choose **File > Timeline > Recover**. The Select Recovery Option window opens. Listed in the window will be a log of exactly when your project has been saved (date and time).

Autosave

The autosave function is designed to help protect your working project in case a crash occurs. Velocity will automatically save your project every minute to ensure that significant work is not lost in the case of a crash, etc. You also have the option to have Velocity back up the active timeline every minute during the rendering process, which can be changed in the General Preferences (see Chapter 25 for more information).

After an "abnormal exit", Velocity will always load the most recent automatically saved version or the last manually saved version. Also, the crash recovery version will not be overwritten the next time an autosave is performed. The recovery version will also have a timestamp suffix added, and will be stored for use at any later point. *All* timelines will be saved after an abnormal exit.

Delete Project

In addition to the need to back up, restore and save your projects, when you are done with a project you will most likely need to delete it and all the files specifically associated with it.

To delete all files associated with a project:

1 Go to the main menu and select **File > Delete Project**. The Delete Project(s) window will open.

2 Choose the appropriate drive where the project(s) is/are stored by using the drop-down menu at the top of the window.

3 Click the **Scan** button to have the software search for projects stored on the selected drive.

4 Double click the project(s) in the Available Project(s) section you wish to remove from your drive. They then appear in the list in the Delete Project(s) section of the screen. Double-click the project again if you wish to remove it from the list.

5 Click the **Delete** button. A warning message will appear asking you if you are sure you want to delete the project(s), as deleted projects can not be recovered. Click **OK** to delete the project(s).

All files associated with the project are then removed.

Note: If files in the selected project are used in another project, you cannot delete the project. All files that are in the system project and media project folders, including video files, titles, audio files, galleries and timelines, are removed from the system.

Versions

A project can contain different versions. Each version has at least one timeline. Versions allow you to manipulate the project for different needs or markets - different sound tracks with language dubs, or different titles depending on the market a program will be viewed in. The versioning process allows you to create these different programs without having to destroy the original or save and copy media as a separate project.

If you want to save your timeline and gallery information the way they are and continue working on them as a different file, you should save the project and then create a new version.

In the main menu, select **File > Version**. You will have three choices:

New - Creates a new timeline and new galleries as copies of the old ones, so you can save them without overwriting the others. All common temp files and rendered files are shared between the versions, which saves you drive space and render time. You can copy and paste clips and sequences of clips from one version to another.

When you select this option, then New Project Version window will open. There will be a default version name in the name field (Version 1, Version 2, etc.) that can be edited.

In the Method section of the window, you have two choices:

- Create new version with blank timeline

- Create new version with copy of current timeline(s) if any

Switch - Switches to a different version of the same project.

Delete - Removes the current version and all version directory/sub-directories from the project.

A version can contain up to 100 galleries and 100 timelines. while a project can contain up to 20 versions.

User Profiles

User Profiles allow multiple users easy access to their preferred configuration settings.

To create a user profile:

1 Go to **File > User Profiles > Login**. A login screen will appear.

2 Click on the **New** button. The New User Profile screen will appear. Enter a User Name and a Password. Click OK.

3 Velocity will ask you to close the program and re-launch to ensure that all the settings are reset.

To log into a user profile:

1 Go to **File > User Profiles > Login**. The login screen will appear.

2 Select the appropriate user profile and then type in your password.

Note: The User Name you choose will be used in the file name of your user profile. For example, if you choose your User Name to be "John", the filename of your user profile will be "John.usr."

3 Velocity will ask you to close the program and re-launch to ensure that all of the settings are reset.

If at any point you want to reset a user profile, go to **File > Reset User Profile**. A warning screen will appear asking you if you are sure that you want to revert the user profile to the default settings. Click Yes if you are sure. Velocity will then ask you to re-launch the program to make sure the settings have been reset.

Project Transfer

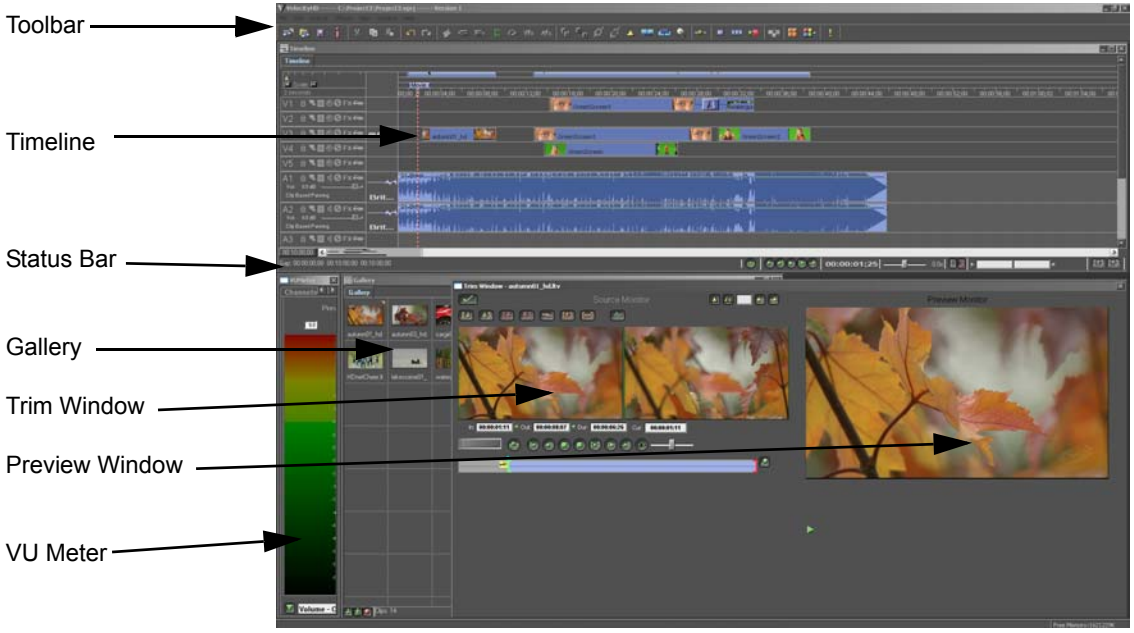
There are various types of projects from related systems that you may occasionally need to open.

Loading a VelocityQ 8.1 or 8.2 Project in Velocity 9.1

Projects created or loaded in Velocity 9.1 cannot be opened in earlier versions of Velocity. If you think you may want to re-open a project in the earlier version of Velocity, make a copy of the entire System Project directory BEFORE continuing to load the project.

VelocityQ 8.x timelines can be opened in VelocityHD 9.1.

Chapter 3
The User Interface



The Velocity interface has four main areas: timelines, galleries, the trim window and the VU Meters. Each of these areas has settings, buttons and sliders specific to that area. In addition, the menus, buttons, and mouse and keyboard shortcuts give you access to most functions.

You can switch focus (the part of the interface that your keystrokes or mouse actions affect) between the timelines, galleries and trim window by holding down the CTRL key and pressing Tab on your keyboard.

Clips can be organized into galleries and timelines, of which also can be organized into bins. A version of a project can contain up to 100 galleries and 100 timelines.

A bin is a window that contains at least one tabbed gallery or timeline. Adding more bins to your project will not increase the number of galleries or timelines you can have open at a time. Bins are for organizational purposes only.

Auto Tile

The trim window, gallery and timeline bins and VU meter are all moveable in Velocity. You may occasionally want to put everything back where it came from.

When you launch Velocity without a project loaded, Velocity places all the windows in the positions they last held. Velocity loads in the default Auto Tile setting, which can be verified when you click on the Auto Tile Select button on the toolbar.

When you open a project, the windows are placed in the positions they last held in that project.

Creating Your Own Auto Tile Layout

Auto Tile Select button

To create your own auto tile layout:

1 Arrange the windows in the Velocity interface to your liking.

2 From the main menu select Window > Create Auto Tile. You may also press the Auto Tile Select button and choose Create Auto Tile from the menu. The Create New Auto Tile Layout window appears.

3 Give your layout a descriptive name.

4 Click **Save**. The new auto tile layout is added to the list of available Auto Tile layouts.

Applying a Different Auto Tile Layout

To apply a different auto tile layout (if any), select **Window > Auto Tile**, or press the Auto Tile Select button in the Velocity toolbar. Then choose the auto tile you wish to use. The currently active (or last used) auto tile is given the check mark in the list.

Auto Tile button

To return to the check-marked auto tile layout, press the Auto Tile Hotkey (default is B), or press the Auto Tile toolbar button.

The Velocity default auto tile layout is always available at the bottom of the list.

If the project you are currently working on has more bins than the auto-tile configuration you select, some bins may be minimized. If the project you are currently working on has less bins than the auto tile configuration you select, windows will be placed in auto tile positions closest to their current locations.

Deleting an Auto Tile Layout

Only 15 user-defined auto tile settings can be listed in the menu. If you have more than 15, no auto tile settings are deleted. However, only the most recently used settings can be viewed. To view other auto tile settings, you must delete some.

To delete an auto tile layout:

1 From the main menu choose **Window > Delete Auto Tile**. The Delete Auto Tile Layout window opens.

2 Choose the Layout you wish to delete from the pull down menu and press the Delete button.

If the checked Auto Tile Layout is deleted, then the check should default back to the Velocity default layout.

Note: If you delete the dpsNLE.INI file from your system drive, your user-defined auto tile settings will be gone forever.

You can also overwrite auto tile layouts, saving you the trouble of deleting them.

Working With Bins

A bin is a window that has at least one and up to 100 tabs in it. Velocity has two types of bins: timeline bins and gallery bins.

If you have multiple bins in your project version and you save and close the project then reopen it, the multiple bins will still be there. However, if you close a bin, you cannot reopen it. You must create a new bin and re-open the various timelines or galleries into it.

Bins can be moved around the screen. Just click on the bin's header bar with the mouse, hold down the left mouse button and drag the bin to its new location.

Bins can be resized. Place the mouse cursor any edge of the bin, press down the left mouse button and drag. When the bin reaches the desired size, release the mouse button.

Bins can be minimized. Click the third button from the right in the top right corner of the screen. Minimized bins line up left to right at the bottom of the Velocity working area.

Creating a New Bin

To create a bin, select **File > Timeline > New Bin** from the main menu for a new timeline bin or select **File > Gallery > New Bin** for a new gallery bin. The New Timeline/Gallery window will appear with a default name for the new timeline. You may change the name of the timeline if you wish to.

This creates a new window with a tab in it. This does not close the old bin. Adding more bins to your project does not increase the number of galleries or timelines that you can have open at a time.

You can also create a new bin by dragging the tab of a gallery or timeline onto a bare space on the Velocity interface, or onto a different bin. Don't drop it in the Tab area of that bin, or you add that gallery or timeline to the bin.

Closing a Bin

To close a bin, click on the X in the top right corner of the bin.

If you close a bin by clicking on the X in its top right corner, the bin will cease to exist. The galleries or timelines within the bin can still be re-opened into another bin, or the bin can be recreated by opening a new bin (**File > Gallery > New Bin** or **File > Timeline > New Bin** from the main menu). Then you can re-import the files to the new bin.

A bin cannot be empty. If you remove the last gallery or timeline from a bin by dragging it to another bin, the bin automatically closes.

Naming / Renaming a Bin

By default, gallery and timeline bins are named after the first gallery or timeline that is placed in the bin. The bin does not change its name as you change the names of the contents of the bin.

To rename a bin, right click on a blank area of that bin, select **Gallery Bin > Rename** if the bin contains galleries, or **Timeline Bin > Rename** if that bin contains timelines. In the window that opens, type a new name and click **OK** to change the name of the bin, or **Cancel** to keep the old name on the bin.

Drag and Drop Tabs

To change the order of tabs in a bin, you can drag a timeline or gallery tab over another tab. The one you have selected takes the position of the one

you've moved it over, and the rest of the timelines or galleries ripple their positions.

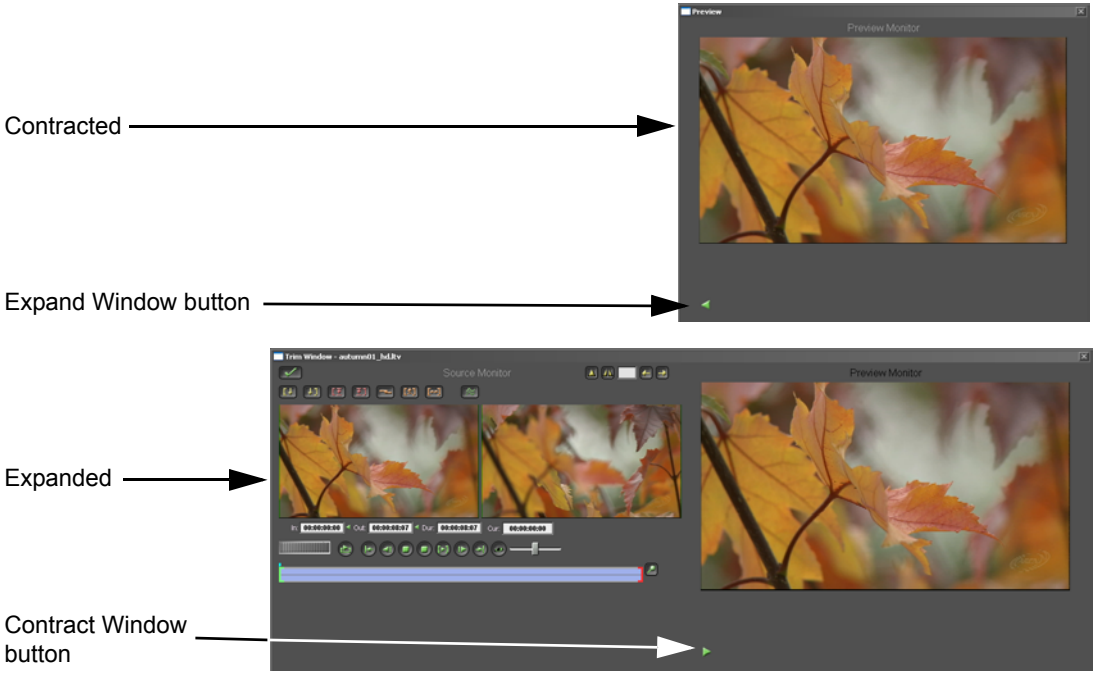
You can also drag galleries between gallery bins and timelines between timeline bins. Drop the gallery or timeline in the tabbed region of the bin. If you drop it somewhere else, you may create a new bin instead of placing the tab within a bin.

If you drag a gallery or timeline from one bin into another bin, the operation is similar to a cut and paste, not a copy -- the gallery or timeline only exists in one bin, not both.

If you drag all the galleries or timelines out of a bin, that bin closes. You cannot have an empty bin.

Viewing the Preview/Trim Window

The trim window has two modes: expanded and contracted.



When you scrub or play back the timeline, your video appears in the right, or timeline, side of the trim window. When you double click on a clip in a bin (in a gallery or timeline), it opens in the left, Trim side of the trim window. If

the trim window is in its contracted state, it expands to show you the In and Out preview screens.

You can also close the trim window by clicking on the X in the top right corner of the trim window.

Reopen the trim window by selecting **View > Preview/Trim Window** from the main menu.

You can make the preview / trim window larger or smaller by placing the cursor over an edge pressing the left mouse button and dragging.

Status Bars and the Toolbar

Velocity has three status bars and a toolbar.

The main Velocity status bar at the very bottom of the interface provides information about program resource usage. It can be turned off from the main menu by selecting **View > Status Bar**. Follow the same procedure to turn it back on.

The timeline status bar provides information about the entire contents of the selected timeline, or about individually selected clips. It can be turned off from the main menu by selecting **View > Timeline Status Bar**. Follow the same procedure to turn it back on.

Note: The same Timeline Status Bar information is displayed underneath the preview window.

The gallery status bar provides information about the entire contents of the selected timeline, or about individually selected clips. It can be turned off from the main menu by selecting **View > Gallery Status Bar**. Follow the same procedure to turn it back on.

The toolbar features buttons for very common editing procedures. It can be turned off from the main menu by selecting **View > Toolbar**. Follow the same procedure to turn it back on.

For more information about the Gallery Status bar, please see Chapter 4. More information on the timeline status bar is provided in Chapter 5.

Chapter 4
Working With the Gallery

A gallery bin contains at least one, and possibly up to 100 tabbed windows. Each tab is a gallery. Gallery files are stored in your project's system folder with a GY file extension. (This extension is added automatically to gallery files.)

When you create a new project, it starts with a single gallery bin, which contains one gallery. That gallery's default name is Gallery.gy.

Velocity galleries allow you to collect and display all your multi-media files. They can hold video clips, sound clips, images, and animations, as well as Fusion or DFX+ Flows.

Once your clips have been placed in the gallery, you can rearrange them to help you decide on the playing order. You can then print the gallery out to provide a basic storyboard.

You may want to use different galleries for different types of source clips, such as different subject matter, different sources (e.g., different video tapes), or different copyright owners.

Changes you make to a gallery are saved whenever your project is saved.

Creating a New Gallery Bin

To create a new gallery bin, go to the main menu and select **File > Gallery > New Bin**.

This creates a new window with a gallery in it. This does not close the old bin. Adding more bins to your project does not increase the number of galleries that you can have open at a time.

You can also create a new bin by dragging the tab of a gallery onto a bare space on the Velocity interface, or onto a different bin. Don't drop it in the Tab area of that bin, or you add that gallery to the bin.

Closing a Gallery Bin

Click on the X in the top right corner of the bin.

If you close a bin by clicking on the X in its top right corner, the bin will cease to exist. The galleries within the bin can still be re-opened into another bin, or the bin can be recreated by creating a new bin (**File > Gallery >**

New Bin from the main menu). Then you can re-import the files to the new bin.

A bin cannot be empty. If you remove the last gallery from a bin by dragging it to another bin, the bin automatically closes.

Dragging and Dropping Tabs

To change the order of tabs in a bin, you can drag a gallery tab over another tab. The one you have selected takes the position of the one you've moved it over, and the rest of the galleries ripple their positions.

You can also drag galleries between gallery bins. Drop the gallery in the tabbed region of the bin. If you drop it somewhere else, you may create a new bin instead of placing the tab within a bin.

If you drag a gallery from one bin into another bin, the operation is similar to a cut and paste, not a copy -- the gallery only exists in one bin, not both.

If you drag all the galleries out of a bin, that bin closes. You cannot have an empty bin.

Renaming Galleries and Gallery Bins

By default, gallery bins are named after the first gallery that is placed in the bin. The bin does not change its name as you change the names of the contents of the bin.

Rename a gallery bin by right clicking on a blank area of the gallery bin and selecting **Gallery Bin > Rename**.

Rename a gallery by right clicking on it and selecting **Gallery > Rename**, or by going to the main menu and choosing **File > Gallery > Rename**.

In either case, in the window that opens, type your new name and click **OK**.

Opening, Closing and Creating Galleries

To create a new gallery, use the main menu to select **File > Gallery > Add New**, or right click in a gallery bin and select **Gallery > New**. A gallery window will appear in the currently selected bin with the file name Gallery#.gy (where the # will be incremented each time you create a new gallery).

To open an existing gallery, from the main menu select **File > Gallery > Open Project Gallery**, or right click in a gallery and select **Gallery > Close**. The Open Gallery File window opens. Browse to and select the gallery you want to open (its file name ends in GY) and click **OK**.

To close a gallery, select the specific gallery window, and select **File > Gallery > Close** from the main menu, or right click in the gallery and choose **Gallery > Close**. If you have made changes (added clips or subtracted clips from the gallery, moved clips around the gallery, etc.) you will be asked if you want to save those changes before the gallery closes.

Properties of a Gallery

Select **View > Gallery Info** from the main menu to open an information window. Gallery information consists of a Gallery Name, Saved Date, Gallery File Size, Title, number of entries, thumbnail size and a brief description and title.

The description and title can be edited by selecting the **Edit > Gallery Info** option in the main menu. Once this is selected, the Edit Gallery Information window will appear. You can then edit the title or the gallery and include any notes is necessary. Click **OK** to save your changes.

Printing a Gallery

You may print a gallery by selecting **File > Print Gallery** from the menu. There are three options:

Thumbnail and File name - prints the thumbnail plus the clip's file name and some space for you to add information.

Thumbnail and Detail - prints the thumbnail plus the Detail information, whether it is visible in the gallery or not.

Detail text - provides the clip's details, as in the Detail view of the gallery.

A Print Setting dialog box appears. Select the print range and click **OK** to send the gallery to the printer. If you are in a Detail mode and have adjusted the column widths, that change will be respected on your print out.

If you wish to know what your gallery will look like when printed, choose **Print Preview - Gallery** from the File menu.

Copying or Moving Clips Between Galleries

Copying and moving clips both function in much of the same way.

To copy clips between galleries, select as many clips as you wish to move by holding down the CTRL key as you click on them with the mouse. Drag those clips from one gallery to the label tab of another. This leaves a copy of the clip in the original location, as well as placing a copy in the new location.

To move clips between galleries, hold down the SHIFT key while dragging selected clips to move the clips from one gallery to the other. This deletes the clip from the original location while placing it in the new one.

There are two preference settings you can use to adjust how clips are copied from gallery to gallery. In the main menu, choose **File > Preferences** and click on the General tab. There are two options (which are already checked by default):

Keep In/Out when moving or copying to or from Gallery - This option allows clips to retain their In and Out points while they are copied or moved from a gallery.

Keep effect/filter when moving or copying to or from Gallery - This option allows clips to retain their effects and filters while they are copied or moved from a gallery.

You can also select a gallery and right click, select **Cut** or **Copy**, and then move the mouse cursor to another gallery and select **Paste**.

To move a series of clips to an as yet uncreated gallery:

1 Select the clips you wish to move.

2 Select **Edit > Split Gallery** from the main menu. The Split Gallery window will open.

3 Choose a name for the new gallery. The selected clips are placed there.

Deleting a Gallery

To delete a gallery:

1 Select the gallery you want to delete by clicking on it

2 Right-click on the gallery and select Gallery > Delete, or select File > Gallery > Delete from the main menu.

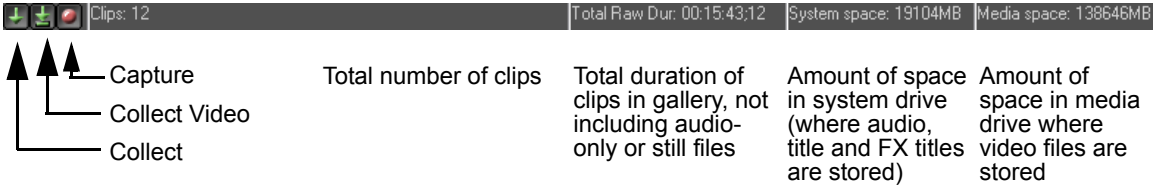
3 A warning prompt will appear asking you if you are sure you want to delete the gallery. If you are sure, click Yes.

The gallery will then be deleted from your system hard drive. However, the contents of that gallery are not deleted from your system or media drive. If you wish to have them available to your project, you can re-import them from their drive locations.

Gallery Status Bar

There is a status bar at the bottom of the gallery bin.

When a clip is not selected, the gallery status bar provides information about all the clips in the gallery.



When a clip is selected, the information describes that clip.

You can turn on or off the Gallery status bar by choosing **View > Gallery Status Bar** from the main menu.

Collecting Clips into a Gallery

In the left bottom corner of the gallery Status bar, there are three buttons.

Collect - Use this button to browse to the media folder of your system drive.

Collect from Video Drive - Use this button to browse to the location of your video (LTV/DPS) files (this may be on a system drive, or on a dedicated media drive, most commonly the P drive).

Capture - Opens the capture application.

You can also access the collect options by right-clicking in the gallery and selecting **Collect** or **Collect from Video Drive**.

More information about collecting clips can be found in Chapter 8. There is more information about capturing video in Chapter 7.

Gallery Viewing Options

There are several options for viewing the clips in your gallery. These options are available if you right click a blank spot in the gallery, or by choosing **View** from the main menu. Each option also has a Hotkey.

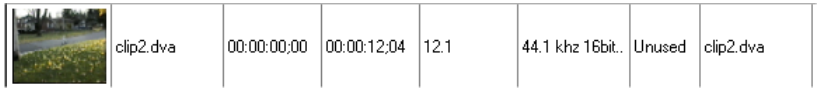
The gallery thumbnail viewing options are:

Thumbnail and Filename (hotkey SHIFT + F5) - This option shows the clip thumbnail and the filename of the clip.

Thumbnail and Title (hotkey SHIFT + T) - This options shows the clip thumbnail and the title of the clip. If the clip doesn't have a title assigned, this option shows the file's name without the file type extension

Thumbnail and Note (hotkey SHIFT + F6) - This option shows the clip thumbnail and any notes you have assigned to the clip.

Thumbnail and Detail (hotkey SHIFT + F7) - This option shows the clip thumbnail, clip name, the trim In and Out points, the trim duration, the reel name (if there is one), the clip title (if there is one), notes, whether is it used, the file type, compression, pixel depth, audio data, and the clip file path.



Detail Text (hotkey SHIFT + F8) - This option shows the same categories as the Thumbnail and Detail option, except it does not show the clip thumbnail.

Adjust the width of the columns in the Detail and Detail modes by hovering the mouse over the dividers between two column headers. When the cursor changes to a vertical line with arrows going left and right, press the left mouse button and hold it down. Drag it left or right to change the position of the dividing line between those two columns. Changes to gallery column widths are printed when you print the gallery.

View Alpha

There are two ways to activate viewing the alpha channel on video and still clips in a gallery.

1 Right click a blank space in the gallery and select **View > Alpha**. Deactivate it by choosing the same option again.

2 Assign a Hotkey to using the User-Definable Hotkey interface found in the main menu under **File > Preferences** on the **General** tab. This Hotkey is called Alpha view Toggle. Once you have assigned a Hotkey to this feature, press it to view the Alpha channel (on clips that have an alpha channel only). Press it again to view the clips in YUV mode.

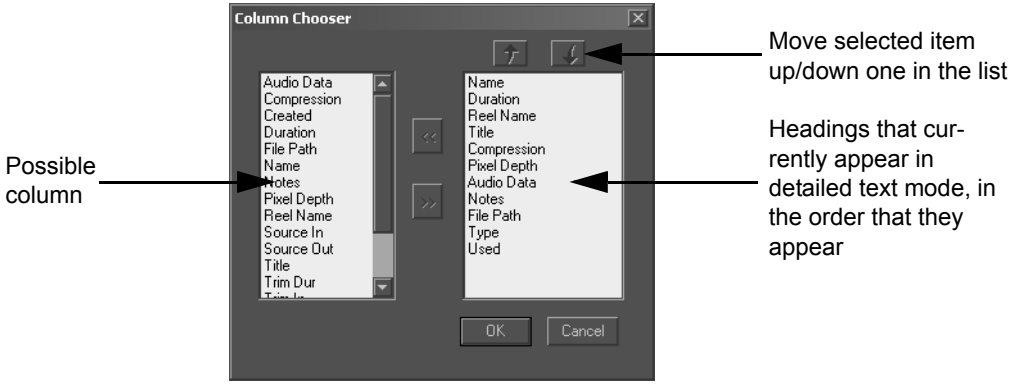
All clips without alpha channel still show their YUV icon. Clips with an alpha channel show alpha, except those clips which are virtual, rolling or crawling titles.

Customizing Your Columns in Detail Text Mode

You can adjust the appearance of your galleries by scaling the column width or defining the order and content of the columns.

To adjust the column widths, place the mouse over the divider between two columns, hold the mouse down and drag the mouse left and right until the column is the width you want. Then release the mouse button.

To choose items for column headers, and to determine their order, right click in the gallery and choose **Configure Detail Text**. A window opens:



To add an item to the columns that will appear in a detail view, select it in the left list, and press the **>>** button to add it to the right list. To remove an item, click on it in the right side and press the **<<** button. An item can appear multiple times, or not at all.

To change the order of columns, select the item you wish to move and press the up arrow or the down arrow to switch it with the item above or below it.

Detail Text Mode Column Options

Audio Data - Data rate -- kilohertz, number of bits, and whether the clip is mono or stereo.

Compression - Uncompressed or the compressed data rate of the clip (listed in Mb/second).

Created - When the file was captured or created. In the case of a new sync group, the video's creation date is used.

Duration - The untrimmed length of the clip.

File Path - Where the clip is found on the system or media drives. In the case of a video file, only the audio "pointer to video" portion of the clip is listed.

Name - The file's name and extension as it is saved on the system or media drive.

Notes - A longer description of the clip that you can add during capture, or by right clicking on the clip in the gallery or timeline.

Pixel Depth -24 or 32-bit, video or still image.

Reel Name - The video tape from which video was captured. This is either added during Batch Capture or Timecode capture, or can be added later by right clicking on the clip in the gallery or timeline.

Source In / Source Out - This is either added during Batch Capture or Timecode capture, or can be added later by right clicking on the clip in the gallery or timeline. If the clip was not captured with timecode, the Source In will default to 00:00:00:00, and the Source Out will be equal to the duration of the clip.

Trim in / Trim Out / Trim Duration - The numbers here are based on the Source In and Source Out of the clip, so if the clip does not have timecode, the numbers will start referencing the clip from 00:00:00:00. Any adjustments to the In and Out points of the clip are reflected in these fields. All the media is still available for editing.

Title - A more descriptive name for the clip that can be added during capture, or later on by right clicking on the clip.

Type - DPS or LTV video, DVA or LTA audio, WAV audio, TARGA or graphic file.

Used - Marks all clips as Used or Unused. This keeps track of clips that are used in the currently open version of the current project only. Clips that are used in another version or another project, but are not used in this project, are marked as Unused.

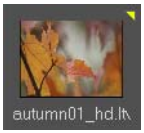
Viewing Clips in a Gallery

The clips in the gallery are normally seen as thumbnails -- stamp-sized images used to represent clips. For audio clips the thumbnail shows a waveform. You can change the size of the thumbnail by right-clicking in the gallery and selecting **View > Size** and choosing either **Small**, **Medium** or **Large**.

Small

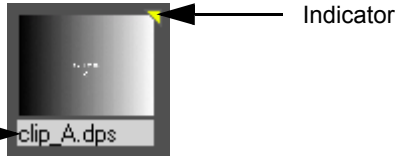
Medium

Large



Click the thumbnail image to play the video clip. Double click to open the clip in preview/trim window, or click the file name to select the clip without playing it

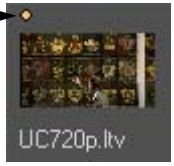
A thumbnail image conveys a great deal of information about a clip. There are indicators in the thumbnail that show how the clip is being used in the project. In the example below, there is an indicator in the top right corner of the thumbnail.



A **White dot** in the upper left corner means that the clip is 32-bit (contains an alpha channel).

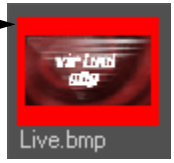
An **Orange dot** in the upper left corner means that the clip is uncompressed.

Orange dot indicating that the clip is uncompressed.



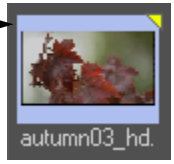
A **Red border** around the thumbnail means that it is considered missing media. Missing clips become invalid when they don't have sufficient information to be self contained. Clips could lose all their information and become invalid if Velocity has shut down unexpectedly or if you open an old gallery from which some of the clips have been deleted.

Red border indicating that the clip virtual (or missing).



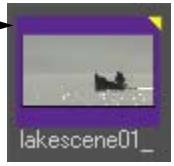
A **Light Blue border** around the thumbnail means that the clip's video standard does not match the timeline's current video standard.

Blue border indicating that the clip's video standard foes not match the timeline's.



A **Purple border** around the thumbnail represents that a flow from Digital Fusion has been applied to it.

Purple border indicating that the clip has Digital Fusion effects applied to it.



A **Yellow triangle** in the upper right corner means that the clip is used somewhere in the project. Only clips that are used in this particular project have the Used marking. If a clip is used in another project, the triangle does not appear.

Yellow triangle, indicating that the clip is being used somewhere in the project

An **Orange triangle** in the upper right corner means that the clip is used in the currently active timeline.

Orange triangle, indicating that the clip is being used in the active timeline

The clip's file name followed by a number in parentheses (for example, Snowflake(2).dva) indicates that this is a copy of a clip that is already represented in the gallery.

Playing a Gallery Clip

In order to play a clip in a gallery, **Auto Play** must be enabled in the gallery. To enable Auto Play, right-click on the gallery and select **Auto Play**. The Auto play option will have a check mark next to it if it is enabled.

Single click a clip in a gallery and it plays in the Preview side of the trim window. If, while you play back that clip, you press the I and O keys (default keys for setting In and Out points on the clip), these In and Out markers are preserved in the gallery, for you to use when you load the clip into the trim window or timeline.

Thumbnail Update

By default, a clip's thumbnail shows the first frame of the clip. You can change this when a clip is open in the trim window. If you drag the playhead to the frame of the clip you would like to use as your thumbnail and press the T key on the keyboard, the clip's thumbnail image in the gallery updates when playback stops.

Highlight

Highlight is a visual cue. A yellow title (if the clip is being viewed as a thumbnail and title or name), or a yellow bar for the entire information strip of a clip visually communicates that the highlighted clip belongs to a group of media. Highlighting on its own does not alter a clip in any way.

A single clip in the gallery is highlighted when it is clicked once. when that same clip is clicked on a second time with the mouse, it becomes Selected. A selected clip can be modified (trimmed in the trim window, etc.).

Right-click in the gallery and choose **Highlight**. A window opens with the following options.

Audio - Wav files.

Video - DVA/DPS or LTA/LTV clips.

Images - Still files.

Titles - DPT, ICG files that can be either rolling, crawling or still titles.

Fusion Flows - FLW files made for rendering video in Fusion

Uncompressed - Video clips that had no compression applied to them during capture.

32-Bit Video - DPS or LTV files with an alpha channel. These clips take up two streams of video on the hardware.

32-Bit Graphics - Graphics with alpha channel. These graphics can be overlaid on other clips without applying transparency.

All - All clips that are currently in the gallery.

A highlight stays on until a new highlight command is issued.

There are also four options beneath the Highlight menu item.

Highlight None - Unhighlights everything.

Select Highlighted - Select is different from highlight. The status of being selected is as if a clip has been clicked on, so it is ready to be moved to the timeline or trim window, or to have some other action applied to it.

To select all the highlighted clips, right click in the gallery and choose Select Highlighted. All the clips that are currently highlighted become ready to be modified. (In Detail Text mode, you can place all the selected clips to the timeline using the Append to Timeline feature or Hotkey F).

Select Used - Allows you to select all items that have a yellow triangle because they are used in the current project and, for example, drag them to an empty gallery. Now, if you print the new gallery, you have a record of the clips that have been used.

Select Invert - Unselects the items that are selected, and selects the items that are not.

Arranging Thumbnails

Thumbnails are usually placed in the gallery in the order that they are collected or captured.

You can reorder clips in a gallery by either Name, Title, File Type, Date Created, Duration, In timecode, Out timecode or Reel name by right clicking in the gallery, choosing **Sort By** and then the appropriate choice.

Sort By

Right-click in the gallery and choose **Sort By** to choose a sorting option, or choose **View > Sort By** from the main menu. The sorting options are:

Name - Alphabetically sorts the files, ignoring type.

Title - Alphabetically sorts the files, ignoring type.

Type - Places BMP files first, then DPS, LTV, LTA, DVA, DPT, TGA, TIF and WAV.

Date Created - Oldest to newest.

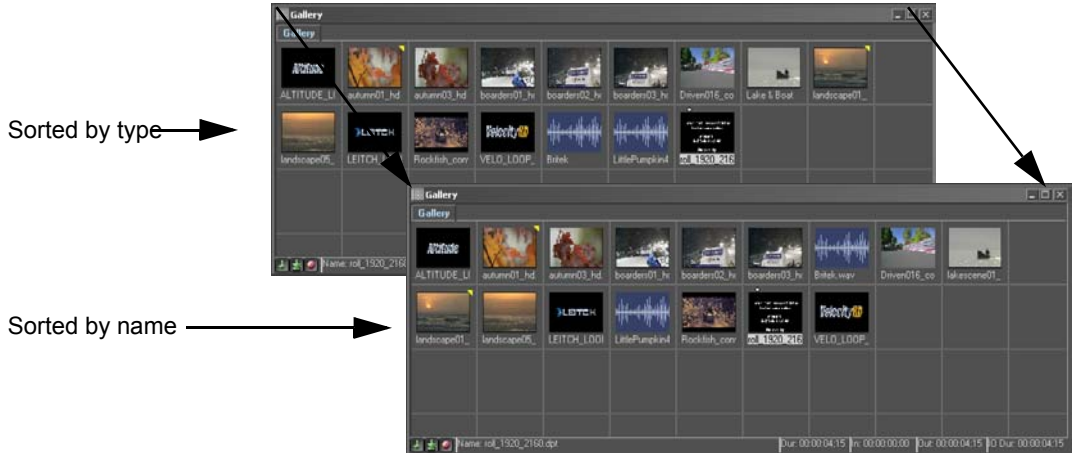
In Timecode - Stills, titles and other files with no duration, followed by clips with no source timecode (00:00:00:00), followed by clips from lowest to highest start timecode, ignoring reel name.

Out Timecode - Stills and titles followed by with no source timecode sorted by duration, potentially mixed in with clips with source out timecodes.

Duration - Stills first, then other clips by length.

Reel Name - Stills and other clips with no reel name first, then clips by reel, sorted alphabetically.

All icons are sorted and arranged starting in the Upper Left and filling right leaving no spaces and wrapping to the next row after all columns in the visible area are filled.



When scaling the window the right margin will not contain a new column of grid spaces until an entire grid space can be contained.

Manually Sorting Clips in a Gallery

To move a clip, select it and drag the cursor to an existing clip location. At the new location a film strip icon appears, and when you release the mouse button the clip appears at the new location, shifting all the existing clips to the right.

When dragging an icon to a occupied grid space, the Thumbnail occupying the space is always bumped right.

Thumbnail Bumping happens when a clip is placed into a grid space occupied by another clip. The first clip inserts itself into the second clip's position and the second clip moves to the next space to the right.

Manual Arrange

Manual arrange mode allows you to leave spaces in the gallery between clips.

To turn on Manual Arrange mode, right click in a gallery and choose **Sort By > Manual**. The menu closes. If you look at the menu again, there is now a check next to Manual.

Now, if you drag a clip to a new location within a gallery, the space it vacates is left empty, and when you try to move clips to the locations currently held by other clips, those clips are bumped to the right.

If you go to **File > Preferences**, on the General tab there is an option labeled **Always create new Gallery in Manual arrange mode**. If you turn this on, all galleries will automatically allow you to move clips in this manner, unless you turn the option off individually for a gallery.

Resizing a Gallery

If you are not using manual arrange, you cannot have spaces between clips in the gallery. If you drag the sides, top or bottom of the gallery, the clips shift so that all thumbnails can be seen, until the point where the gallery is so small that there is not room for all the clips in it to be visible at the same time. Then a slider appears at the right side of the gallery so you can scroll up and down to see all the clips.

If Manual Arrange is turned on and you rescale the gallery so that it is smaller or larger, thumbnails do not auto arrange. Rows and columns can be created outside of the current window. When you bump a clip, spaces are consumed (an empty space can be filled in by bumping clips). New clips appear after the last clip in the gallery. Both Vertical and Horizontal scroll bars appear on the screen if necessary to allow you to see all the clips in a gallery.

Working with Clips in the Gallery

Dragging Clips From the Gallery to the Timeline

You can drag clips directly from the gallery to a position on the timeline (and then trim them there or in the trim window later). See Chapter 10.

Loading Clips One By One into the Trim Window

Load a clip into the trim window by double clicking on it. Use the trim window to assign In and Out points on the clip before placing them on the timeline. See Chapter 11.

Append to Timeline

You can also select a clip in the gallery and press "F" on your keyboard to append the clip to V1 or A1. If you are in Detail Text view mode, you can multi-select clips and then press "F" to append them all to the timeline at the same time in cuts or you may press hotkey "0" (zero) to add the clip with a transition.

In this way you can create a very rough cut of your movie. If you have used drag and drop features of your gallery to set up an order for your clips, then moved them to the Timeline in order, now you can playback your project or move to Chapters 11 and 12 to fine tune your project.

Navigating the Gallery

Once a clip is selected in a gallery, you can use standard keyboard keystrokes to navigate. For example, up and down keys allow you to move to the clip above and below. If you are in a Thumbnail and Title, File Name or Note mode, the left and right arrows move to the clips to either side of the selected clip.

Home and End allow you to go to the first and last clips of the gallery, when you are in Detail mode only.

Searching

The gallery search option allows you to find a clip from very little information.

Notes

Right click a blank space in the gallery and choose **Search > Notes**. The Search Notes window opens.

There are options to search just the titles of the clips (note this is not the same as the clip's file name), the clip notes, or both (if both options are checked).

Enter the text you wish to search for. The search disregards upper/lower case distinctions. Press the Find Next button to execute the search, or Cancel to close the window. If you press the Enter key, the window just closes without searching as well.

When a clip is found, that clip is highlighted in the gallery. Press Find Next to move onto the next clip with the keyword that you are searching for. If there is no clip with a matching keyword in the title or notes, a message appears. You can refine your search criteria and search again.

If you don't assign titles or notes to clips, this feature will not find anything.

Timecode

Right click a blank space in the gallery and choose **Search > Timecode**. The Search Timecode window opens.

If a reel name is not specified, there may be more than one clip that has any given timecode. In that result, click the Find Next button.

Otherwise, enter the timecode and reel name of the clip you wish to find. Click the **Find Next** button. The desired clip is highlighted in the gallery.

When you are done searching for timecodes, press the X in the top right corner of the window to close it.

Adding Clips from the Timeline to the Gallery

Select a clip on the timeline.

Press the F key on the keyboard or right click on the clip and select the **Add to Gallery** option.

The clip appears in the currently selected gallery. If you have multiple clips selected, they are added in timecode order to the gallery.

Chapter 5
Using Timeline Bins

Timelines allow you to place clips in sequence and layer them for transitions and effects.

Like galleries, timelines are grouped together in bins. In Velocity, you can have up to 100 timelines open.

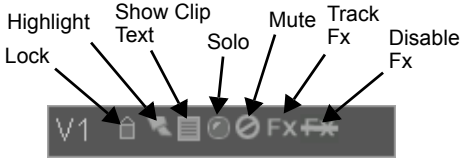
Timelines

A timeline is marked by a Tab in a timeline bin. Timelines can be divided into various areas, some of which are static, and some of which can be scrolled. A timeline provides huge amounts of information about the project you are working on, so it is important to become familiar with the information it provides.

Track Headers

Both the audio and video track headers provide important information.

Video Track Header



Video tracks are labeled with a V followed by a number that tells that the track is a video track. The tracks are numbered starting from 1. Video tracks are layered with track 1 as the background.

Each video track header has seven buttons allowing you to perform several functions to the track.

Lock - This button locks the track so no changes can be made to the clips on that track. When the track is locked, the lock button will be orange. Click the button again to unlock the track.

Highlight - This button allows you to work with a single track (as if it was the only track on the timeline, for instance). Once this button is clicked, all other tracks will be muted and locked. When a track is highlighted, the highlight button will be yellow.

Show Clip Text - This button lets you choose whether you would like the clip text on each clip in the track to be shown. The text will already be shown by default, but if you would like your clips to contain no text on them, then click the button. The button will be blue when you've selected no clip text.

Solo - This button allows you to single out a track (or multiple tracks) during playback. Once this button is clicked, all other video tracks will be muted and only the soloed track will be shown during playback. This button will be red when a track is soloed.

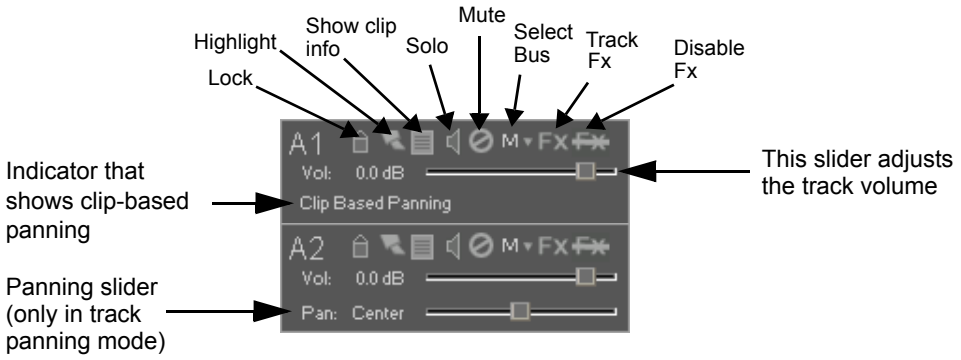
Mute - This button allows you to mute a track during playback. Once this button is clicked, the track will not be shown during playback. This button will be red when a track is muted.

Track Fx - This button opens the Apply Effects window, allowing you to add video effects to all clips on the track.

Disable Fx - This button disables the effects on the selected track. You may reapply the effects by clicking on the button again. This button will be red when the effects are disabled on a track.

Audio Track Header

Audio tracks are labeled with an A followed by a number that tells that the track is an audio track. Audio track headers have the same seven buttons as the video track headers do (see the previous section for specific button functions), but the audio track headers have one additional button (Select bus) that allows you to select which bus to which you wish to route the track.



Select Bus - This button allows you to choose which bus you would like to use. Simply choose the appropriate bus from the pop-up menu.

By default, panning is clip-based. You will see an indicator that says "Clip Based Panning" in the track header. However, you may choose your track(s) to be track based. Right click in the track header then choose **Panning**, then select **Track Based**. You will then see a panning slider appear where the Clip Based indicator was previously located. For more information on audio panning, see Chapter 13.

Track Height

The Track height is the vertical scale of the timeline. To adjust the height of a track, place the mouse over a dividing line between track label markers at the left edge of the timeline. The cursor turns to an up and down arrow. Hold the mouse button down and drag the line. When you drag it up, the track above the line is compressed. When you drag it down, the track is expanded.

Change all video and audio track heights at once by holding the CTRL key while dragging. If you hold CTRL while changing a transition track height, it will change all transition track heights on the timeline. The changes won't actually take place on all the tracks until you release the mouse button, but you can view the changes on the track you are actually dragging immediately.

Once a track height is shortened past the point where one line of text can be properly drawn on the clips on that track, the text is no longer displayed.

To compress all the Audio or Video tracks at once, right click in the timeline and select **Track Height**, or select **View > Track Height** from the main menu. There are four options:

Contract Audio - Compresses the audio track display so they no longer take up much space on the timeline. Or hold down the SHIFT key and press 1 on the main keyboard. **Note**: When an audio track's height is small, volume and panning adjustments are disallowed, making it easier to grab clips.

Contract Video - Compresses the video track display so they no longer take up much space on the timeline. Or hold down the SHIFT key and press the 2 button on the main keyboard.

Expand All - Resets all tracks that have been shrunk in height so they are the default height while not affecting tracks that are larger than the default height.

Reset All - (or hold down SHIFT + 3 on the main keyboard) - Resets all tracks so that they are a uniform height. Tracks that have been expanded so they are taller than the default height are made smaller, and tracks that are shorter than the default height are made taller. To reset the tracks to their default heights, press SHIFT + 4 on your keyboard.

Number of Tracks

When you launch a timeline in Velocity, it starts with six video tracks and eight audio tracks by default. You can add to this any time you need to.

To add a track, make sure the timeline is selected and choose **Edit > Add Track** from the main menu, or right click on a blank space on the timeline and choose **Add Track**. The Add Track(s) window will appear asking you how many of each type of track you want to add. Add the appropriate number of tracks and click **OK** when you are done.

To delete a track, from the main menu choose **Edit > Delete Track**, or right click on a blank space on the timeline and choose **Delete Track**. The Delete a Track window will appear, allowing you delete the appropriate number of video and/or audio tracks. Click **OK** when finished.

Note: Only the last track(s) of the selected type can be deleted if empty. Also, video tracks V1 and V2 can NOT be deleted.

Show/Hide Audio and Video Tracks

You can also hide video and audio tracks without actually removing them from the interface.

To hide a track, right click on its track header and choose **Hide Track**. The track no longer appears on the interface. Settings that had been applied to that track -- solo or mute, or in the case of an audio track, whether it appears on the VU meter, are unaffected.

To un-hide a track, right click on any track header and choose **View Track Status**, or make sure that the timeline is selected and choose **View > View Track Status** from the main menu. The View Track Status window will open.

The left side of the window lists all the video tracks on the timeline. The right side lists all the audio tracks. Hidden tracks have a check mark beside them. Click in the check box (removing the check) to make a track visible.

You can also hide tracks in this window by clicking in the boxes (placing check marks) beside them. Click **OK** to confirm your changes and close the window.

Assigning a Label to a Track

You have the option to assign a short label to accompany a track. This can help for organizational purposes.

To add a label to a track, double-click between the track indicator (V1, A1, etc.) and the Lock button in the track header. A typing space will appear to allow you to enter a short label.

Note: To give yourself more room to type a label on a track header, expand the track header to the right by clicking and dragging the bar separating the track header from the eyecon view.

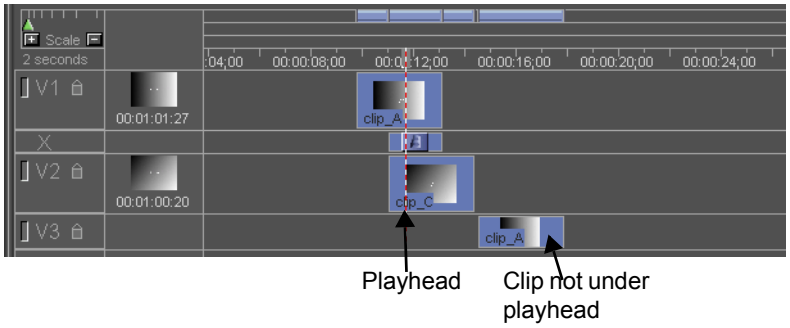
Eyecon View

The Eyecon view is a column to the right of the track headers. The eyecon view can display thumbnails of the clips under the playhead, timecode of those clips, or both.

To open the Eyecon view (if it is not visible), hover the mouse over the right edge of the Track header until the cursor becomes a left-right arrow. Click on the edge and drag. You may also right click a blank space on the timeline and choose **Show Eyecon View** from the menu that appears, or press hot-key F4.

You can expand and contract the column, making it wider or narrower, by hovering the mouse over its right edge until the cursor becomes a left-right arrow. Now, click on the edge and drag. The width of the Eyecon view

expands.



Eyecon view can also show the frame by frame movement of audio tracks. To access eyecon view settings, from the main menu select **File > Preferences** and click on the General tab. Press the **Eyecon View Options** button to open a settings window. Or, right click in the Eyecon View column of the timeline and select **Eyecon View Options**.

Chapter 25 has complete settings information for the Eyecon View. However, briefly, the left side of the screen determines what is displayed in the Eyecon View, while the right side of the settings window determines when eyecons update (i.e., during playback, smooth scrub, etc.)

Timeline Clips

Timeline clips can be displayed with a title or the clip's file name. These settings are found in the main menu under **File > Preferences**. Choose the **General** tab and click on the **Timeline Clip Display** button.

Video Clips

Video clips appear on the top portion of the timeline. They can be stacked up or down. All valid clips are displayed as dark blue bars. Invalid clips (such as clips that are missing media) are red on the timeline.

Video Track Display Settings

If you right click on the header of a video track, there are various audio display options:

Swap A/B Track - When selected on an expanded transition track, the two video tracks on that transition track will swap positions. This is best used for projects where you create a lot of transitions on the same track. If you wish

to add or remove a clip from the transition pattern, this option will prevent you from replacing every transition on the track.

Note: This option only works on expanded transition tracks (see below).

Mute Track - This option mutes the track.

Solo Track - This option singles out the track while all other tracks are muted.

Lock Track - This option locks the track so no changes can be made.

Hide Track - This option hides the track. Select View Track Status and uncheck the track to make it appear again.

View Track Status -This option allows you to choose which track you want shown. To hide a track, check the box next to it.

Define Track Transition Modes - When selected, the Track Transition Modes window will open. You can choose to expand or collapse a track. When a track is collapsed, you can create transitions in a single track. When a track is expanded, the track is split into two parts (V3a and V3b, for example) with a transition track (labeled with an X) placed in between. Note that when a track is expanded, you will not be able to perform single track transitions in that track.

Define Track Header Display - When selected, the Define Track Header Display window opens. You can choose which buttons you want displayed. To hide a button, uncheck the box next to it. If you want that button hidden for just that one track, uncheck the **Apply To All Video Tracks** box, otherwise the button(s) will be hidden on all video tracks.

Clip Picons

Picons are frames from the video that appear on a clip in the timeline. To activate or deactivate picons on a clip, right click on that clip and choose **Picon View**. There are four options:

None - No picons appear.

Middle - A single picon appears in the middle of the clip. The image is the trimmed first frame of the clip.

Begin - End - Picons appear at both the beginning and end of the clip. The images are the trimmed first and trimmed last frames of the clip.

All the way - Picons appear back-to-back all the way across the clip.

There are also global settings for turning picons on or off for all clips on a timeline. In the main menu under **File > Preferences**, choose the **General** tab. Click the **Timeline Clip Display** button.

In addition to the above-listed options for number of picons on a clip, you can choose to display the video, alpha or both video and alpha as picons, and you can choose the aspect ratio.

Picon View settings are applied to new clips that are added to a timeline but not to clips that were on the timeline prior to changing the settings. To apply these defaults to all clips on the timeline, regardless of individual clip settings, right click a blank space on the timeline and choose **Set All Picon View Clips to Defaults**.

See Chapter 25 for more information on these settings.

Audio Clips

Audio clips always appear on tracks lower than the video tracks. They are a slightly lighter shade of blue.

Audio Track Display Settings

If you right click on the header of an audio track, there are various audio display options:

Show Volume - The volume is displayed as a line initially set at 100%. This means that your input signal is being played without any changes. You can adjust the volume line from -inf to +6 dB.

Show Panning - The balance between the right and left audio channels is displayed. You can adjust the balance line from 100% right to 100% left. For stereo audio clips, initially the panning is set to 100% left output (top) for the left audio track and 100% right output (bottom) for the right audio track. For mono audio clips, initially panning is set to 50% left and 50% right (center) to give you an equal balance between the right and left output channels.

Show Waveform - This shows you the audio output as a waveform so that you can easily identify loud or quiet areas of the sound track. You may adjust the volume of the audio track from -inf to +6 dB using the volume line displayed in the middle of the waveform. When you display the waveform keep in mind that drawing the waveform takes time, which may slow down your timeline refresh rate if you are scrolling back and forth quickly.

You can also view an individual clip's waveform on the timeline by right clicking on that clip and selecting **Audio Clip > Show Waveform**. That clip's waveform is drawn on that track, but the rest of the clips on that track continue to display using the setting chosen for that entire track. If you change the track's setting, this clip will continue to display a waveform. To remove the show waveform setting from the clip, right click on it. Select **Audio Clip** and select **Show Waveform** (which should have a check mark) to remove the check mark.

Show All Tracks' Waveforms - This displays the waveforms for all audio clips.

Displaying the waveform of a single clip rather than a whole track helps to conserve system resources, since the waveform has to be rebuilt and refreshed as the timeline scrolls.

Panning - When selected, you will have the option of using Clip Based Panning or Track Based Panning. Clip Based Panning (already selected by default) allows you to adjust the panning for a for individual clips on a track. When Track Based Panning is selected, a panning slider will appear in the track header, allowing you to adjust the panning for the entire track.

Note: Adjust the height of the audio track if you can't see the Track Based Panning slider.

Show FX Automation Track - This option opens an effects track that primarily shows the track's audio effects status. Right click the track header and select Hide FX Automation Track to hide the track.

Mute Track - This option mutes the track.

Solo Track - This option singles out the track while all other tracks are muted.

Lock Track - This option locks the track so no changes can be made.

Hide Track - This option hides the track. Select View Track Status and uncheck the track to make it appear again.

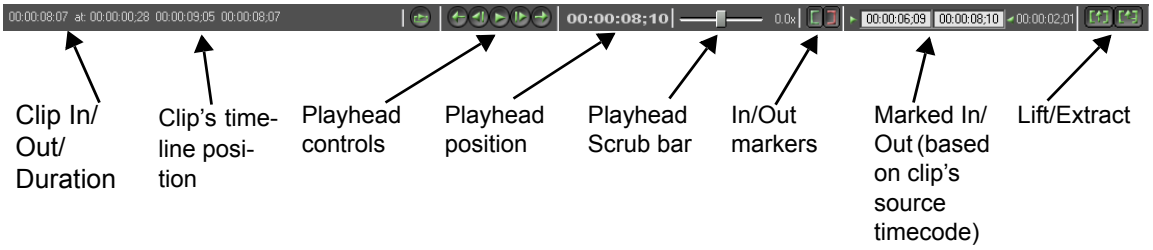
View Track Status -This option allows you to choose which track you want shown. To hide a track, check the box next to it.

Define Track Header Display - When selected, the Define Track Header Display window will appear. You can choose which buttons/controls you want displayed by checking or unchecking the appropriate check box. Items to be displayed must be checked. If you want that button hidden for just that one track, uncheck the **Apply To All Audio Tracks** box, otherwise the button(s) will be hidden on all video tracks.

Note: When an audio track's height is small, volume and panning adjustments aren't allowed. This makes it easier to grab clips.

Status Bar

At the bottom of the timeline, below the navigation bar, resides the Timeline Status bar.



You can turn the Timeline status bar on or off by going to the main menu and choosing **View > Timeline Status Bar**.

At the left side of the status bar, information changes as you edit. The information that can be displayed here includes:

Highlighted range duration - updates dynamically as you drag a range on the timeline Once you release the mouse from the highlighted range and move it around the timeline, the status bar displays information for the clips you hover over. To see the length of a highlighted region again, place the mouse at the top of the highlighted range on the timeline timecode bar.

In-out duration, in point and out point timecodes (or frame numbers, if that is the mode you are viewing the timeline in) - This is editable.

Clip feedback information - If you hover the mouse over a clip, you can see the In, Out and duration of the clip, plus its position on the timeline. This information appears regardless of the type of clip -- be it video, audio, graphic, title, or transition. If a track is empty and you hover the mouse over it, you will see the duration of the entire timeline. If you hover the mouse over a gap between clips, you can see the duration of the gap. You can also see the duration of the Movie bar by hovering the mouse over it.

Use the Playhead controls and the Playhead Scrub bar to assist in moving around the timeline.

Use the In/Out markers to mark timeline ranges for output, or enter timecodes in the two (white) fields next to them. When an In and an Out are marked, the region to the right of them updates to reflect the amount of time between them.

The Lift and Extract functions are discussed in the Chapter 12.

Timeline Settings

The basic settings you can make to a timeline include its duration and its start time. These are useful tools to be able to adjust when you are importing other projects or outputting via EDL or print to tape.

Timeline Duration

Timelines are created with a duration of ten minutes. To change that duration, select **Edit > Timeline Info** from the main menu, or press the timeline information button in the bottom left corner of the timeline. The Edit Timeline Information window will open. You can set any duration up to 24 hours.

If there are already clips on your timeline and you attempt to set a duration shorter than the amount of time between the start of the timeline and the end of the last clip, the duration will automatically be set longer so as not to remove any clips from the timeline or alter their spacing.

Timeline Start Time

Choose **Edit > Timeline Info** from the main menu or right click on the tracks area of the timeline and select **Timeline Info**. The same Edit Timeline Information window will open.

Enter a timecode in the Timeline Start Time field. (You can add a title and notes to your timeline on this screen as well.)

You can also enter durations to arrive at more complicated start times. For example, if your original start time was 00:00:00:00 and you enter -30:00, the timeline will start at 23:59:30:00.

Click **OK**. This window closes and your timeline is updated.

Opening and Closing Timelines

Because timelines are where you combine clips together into sequences, it stands to reason that you should be able to easily open and close them to try out new things.

Opening Timelines

To open a previously saved timeline, right click in an empty space in an existing timeline and select **Timeline > Open**. The Open Project Timeline

window will open. Browse to a project and then look to the Available Timeline(s) section to choose a timeline. Click **Open** to open the timeline.

To open a new timeline, right click in an empty space in an existing timeline and select **Timeline > New**, or from the main menu, choose **File > Timeline > Add New**. This adds a timeline in the selected bin. It also opens a window so you can rename the timeline immediately.

From the main menu, select **File > Timeline > Rename** to save your timeline with a new name. Or right click in a blank space in the timeline and choose **Timeline > Rename**. This does not create a new copy of the timeline. To work on a new copy of the existing timeline, use **File > Copy Project** or **File > Version > New**.

Copying Timelines

To copy a timeline to a new timeline, select **File > Timeline > Copy to New Timeline** from the main menu. You may also right click on the timeline and choose **Timeline > Copy to New Timeline**. This opens a new timeline in the same bin, allows you to assign a name to this timeline, and copies the contents of the first timeline to the new timeline.

Reopen a timeline by choosing **File > Timeline > Open Project Timeline** from the main menu and browsing to that timeline's location. You can also get to this option by right clicking a blank area of a timeline and selecting **Open Timeline**.

You can cut, copy and paste between multiple open timelines. For information on moving edited segments from one timeline to another, please refer to Chapter 12.

Closing Timelines

If you wish to close a timeline without closing the Project, choose **File > Timeline > Close** from the main menu, or right click in a blank space in the timeline and choose **Timeline > Close**. If you've made changes to the timeline without saving it, a message will appear asking you if you would like to save your timeline.

Deleting Timelines

If you wish to remove a timeline from your project forever, choose **File > Timeline > Delete** from the main menu, or right click in the timeline and choose **Timeline > Delete**. This deletes the current timeline from the

project without saving it. All associated timeline temp files will also be deleted from the Project directory.

If Velocity has stopped suddenly, perhaps because of a power failure, you may be able to recover the timeline you were working on last. From the main menu, choose **File > Timeline > Recover**. A window opens listing the most recent backup versions of your timeline, listing them by date/time. Choose the one you want and click **OK**. The file that is opened overwrites the previously saved version of that timeline.

These functions can all be assigned to Hotkeys using the User Definable Hotkey interface.

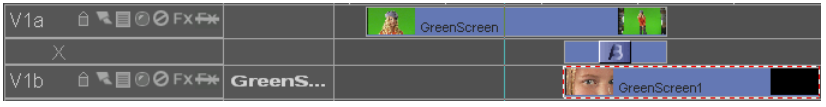
Viewing Timelines

Collapsing/Expanding Tracks

Velocity can display tracks as an A/B roll with a transition track between them. You can also view them as a single track.

Collapsed

Expanded



In this mode, transitions are indicated by horizontally demarcated segments. If a transition is added between clips that are both on the same track, clips are automatically moved to the other track in order that the transition may take place correctly. The condensed track operates as an a/b roll.

Note: The hotkey to collapse/expand all tracks is F2.

Display Video Tracks Stacked Upward

Found on the Preferences screen, this option allows you to view your video tracks stacking with V1 at the bottom rather than the top of the list. It can also be changed using Hotkey F3.

Timeline Viewing Options

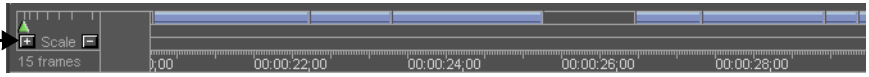
As you work on your project, you can adjust the view range and the tracks that are visible.

When you launch a Velocity timeline, it defaults to be measured in two second increments. There is an extensive range of options, running from 1, 2, 4, 6, 8, 10, 12 or 15 frames, to 1, 2, 4, 10 or 20 seconds, and 1, 2, 4 or 10 minutes.

There are four ways to change the time scale:

Press the + and - buttons in the Scale area in the upper left corner of the timeline. The current scale is indicated just below these buttons. Or press the + and - buttons on your keyboard's number pad.

The + button zooms in while the - button zooms out



Drag the green triangular slider above the + and - buttons in the upper left corner of the timeline. This is also useful for when you have expanded your tracks and you want your eyecons to increase in size.

Time Scale

Use the main menu to select **View > Time Scale**. A submenu listing all available time scales opens. Select the one you want. The timeline view is immediately updated.

Select **View > Zoom In/Out** or click on the magnifying glass button in the toolbar. To increase the time scale, click the left mouse button. To decrease the scale, click the right mouse button. The Zoom In/Out tool will always center on the playhead, even if it is off screen. To leave zoom mode, press the Escape key or drag the mouse over the gallery bin title bar.

View in Frames / View in Timecode

From the main menu, choose **View > View in Frames** to see the timeline and all clip info, etc. divided into frames of different video formats, depending on the mode in which you are operating your system. To return your system to the default display of timecode, choose **View > View in Frames** again, unchecking it.

Navigating a Timeline

The timeline scrolls ahead if you play ahead, and it scrolls backwards if you play backwards. It also moves backwards and forwards as you adjust the scrub bar at the bottom of the timeline bin. But you can also navigate without playing or scrubbing the video.

Quick Navigate

Quick Navigate cursor

The Quick Navigate function allows you to zoom out to a view that includes all present clips on the timeline, then zoom back in to a chosen point at your previous viewing scale.

To activate the Quick Navigate function, make sure the timeline window is active and select **View > Quick Navigate** from the main menu, or press the Hotkey Shift Z. The timeline view immediately zooms out to show all the present clips on the timeline as the cursor turns into a stylized magnifying glass. With this magnifying glass, click on the point on the timeline that you wish to return to. The view refreshes to the new selected area at the previously used time scale.

Pan Mode

Pan Mode cursor

Pan mode turns the mouse cursor into a dragging tool so you can pull the timeline up, down, left and right until you find the spot you are looking for. To activate Pan mode, make sure the timeline window is active and select **View > Pan mode** from the main menu, or right click in a blank area of the timeline and select Pan mode, or press Hotkey N.

To terminate pan mode, drop the cursor into the gallery area of the screen.

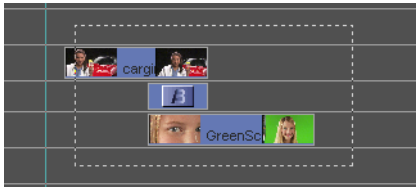
Middle-Button Zoom

Zoom button

If you have a three-button mouse, you can zoom the timeline with the middle button. Hold the button down and drag the mouse left to zoom out, and hold the button down and drag the mouse to the right to zoom in on the mouse's position on the timeline.

Lasso Zoom

You have the option of zooming in on a specific part of the timeline by performing a lasso zoom.



To perform a lasso zoom, hold down SHIFT + CTRL and left click a point on the timeline and drag to create the box-shaped area to be zoomed in to. Let go of the mouse in order for the zoom to take place.

Find Clip

If you have placed many clips on your timeline you may have trouble finding and moving to a specific clip. Right click a blank space on the timeline and choose **Find Clip**, or press CTRL F. The Find Clip window will open, listing of all the clips on the timeline. Click on any item in the list and click OK, and the timeline position is adjusted so that item appears (and is selected) at the left edge the screen.

You can choose to sort the clips by Start Time, Track, Duration and Clip Name.

Note: When you sort by clip name, all clips whose titles begin with capitals are placed before all clips whose names begin with lower-case letters.

Reverse Sort - Check this box if you want to reverse the order of the listed clips.

Print list to text file... - Opens a window so you can choose a location and save your list as a TXT file.

Go to a Timeline Location

If you want to move to a specific timecode location on your timeline:

1 Right click a blank space on the timeline and choose Go To, or press CTRL + G. The Go To window opens.

2 Enter the timecode you want to go to and select whether you want to go to the clip's In point or Out point.

3 Click OK in this window and your timeline playhead moves to the timecode you entered and shifts your view to that area.

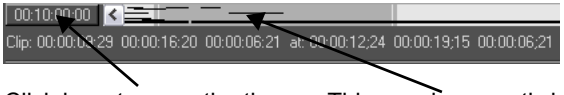
Zoom Highlighted Region

Hold CTRL while using the right mouse button to drag a highlighted range. You can also press SHIFT + H after the range has already been defined.

When you release the mouse button, the timeline zooms and adjusts so the entire range appears on the screen.

Timeline Navigation Tool

The Timeline Navigation tool allows you to view your entire timeline at a glance, locate and jump to any point of your timeline, zoom in and out of your current timeline view, and scroll your timeline to any desired location.



Click here to open the time-line information window.

This area is currently in view on the Timeline.

The Navigation Bar is the length of the timeline. The left-most side of the Navigation Bar represents the beginning of the timeline, and the right-most side represents the end of the timeline, regardless of whether there are clips spanning the entire timeline. If your timeline is very long and only has clips at the very start, much of the navigation bar will appear empty.

The Timeline Navigation Tool shows the first eight tracks on the timeline in the Navigation Bar. Each clip is represented by a line. Video clips are dark gray and audio clips are black.

Any change you make to the timeline is automatically made in the Navigation Bar simultaneously. For example, if a clip is added to the timeline, it also appears simultaneously in the Navigation Bar.

To change the portion of the timeline that you are currently viewing, grab the dark gray "in view" marker on the Timeline Navigation tool by its middle and drag it left or right to scroll the timeline. The timeline updates as the slider is being dragged.

To change the zoom level of the timeline, grab the left or right edge of the "in View" marker and drag it right or left. The zoom level of the timeline changes to the nearest increment.

Search

The timeline search option allows you to find a clip from very little information.

Notes

Right click a blank space in the timeline and choose **Search > Notes**. The Search Notes window opens.

There are options to search just the titles of the clips (note this is not the same as the clip's file name), the clip notes, or both (if both options are checked).

Enter the text you wish to search for. The search disregards upper/lower case distinctions. Click the **Find Next** button to execute the search, or **Cancel** to close the window. If you press the ENTER key, the window just closes without searching as well.

When a clip is found, that clip is highlighted in the timeline. Click **Find Next** to move onto the next clip with the keyword that you are searching for. If there is no clip with a matching keyword in the title or notes, a message appears. You can refine your search criteria and search again.

Timecode

Right click a blank space in the timeline and choose **Search > Timecode**. The Search Timecode window opens.

If a reel name is not specified, there may be more than one clip that has any given timecode. If this is the case, click the **Find Next** button.

Otherwise, enter the timecode and reel name of the clip you wish to find. Click the **Find Next** button. The desired clip is highlighted in the timeline.

When you are done searching for timecodes, press the X in the top right corner of the window to close it.

Printing Timeline to a List

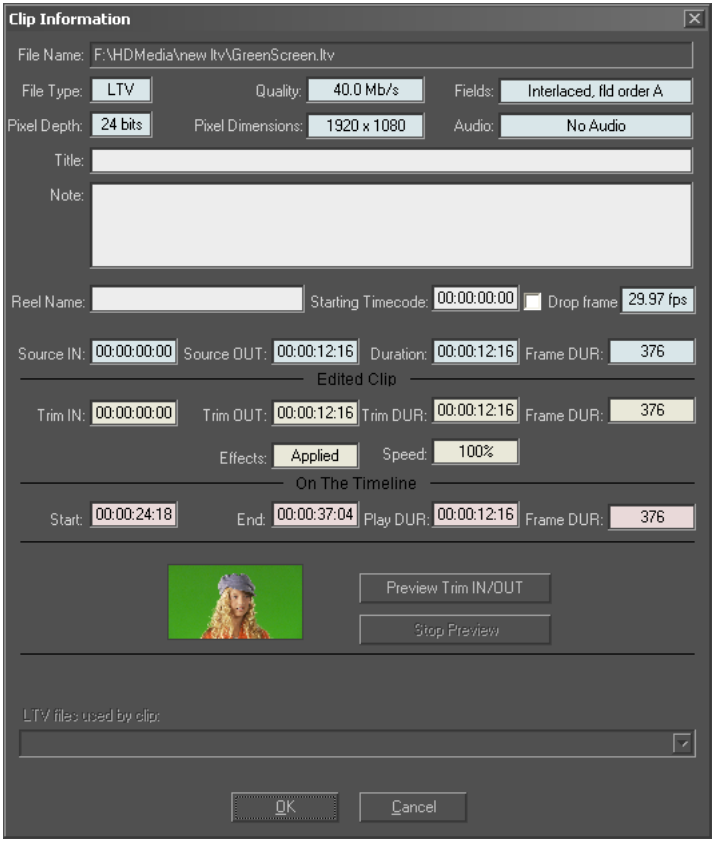
There is an option where you can export all of the information of a timeline onto a text file. This information includes the names and location of clips used in the timeline, the timecode representing these clips, any effects used, audio information, etc.

To print a timeline to a list, make sure the timeline is active and select **File > Print Timeline to txt file** or use hotkey CTRL P.

Chapter 6
Using Clip Information

Whether a clip is on a timeline or in a gallery, it carries with it a basic set of information.

Right Click on a clip in the gallery or timeline and select **Clip Info**, or select **View > Clip Info** from the main menu. This displays the Clip Information window.



This window lists specific information on the selected clip.

The File Name, File Type, Pixel Dimensions (video only), Pixel Depth (video only), Fields (video only), Quality (video only) and Audio (audio only)

sections directly refer to the selected clip's properties and can not be edited through this window.

Through this window you can edit the selected clip's title and notes through the Title and Note sections.

You can also edit the starting timecode and reel name of the clip through this window.

The Source IN, Source OUT, Duration and Frame DUR sections again refer directly to the clip's properties and can not be edited through this window.

Drop Frame - When checked, the selected clip will show the drop frame timecode mode in which is an accurate representation of the real time of a video program. Because video actually runs at 29.97 frames per second and not 30 frames per second, two frames are dropped every minute to make up for this discrepancy.

The Edited Clip section refer's to the clip's edited information. The Trim IN, Trim OUT, Trim DUR, Frame DUR, Effects (if any) and Speed sections are listed and can not be edited through this window.

The On the Timeline section of the window lists the information of how the clip falls on the timeline. The Start, End, Play DUR and Frame DUR sections can not be edited through this window.

Preview Trim IN/OUT - Click this button to play a preview on the clip you are currently viewing information about. The clip will play in the Preview Window

Stop Preview - Click this button to stop the clip preview.

LTV/DPS files used by clip - If a synced clip is selected for Clip Info, this drop-down menu will show all video files associated with the audio files to compose of the synced clip.

Viewing Clip Info in the Gallery

Clips can also store with them attributes, such as filters and speed change information. Two preferences settings allow you to determine what gets moved when you copy a clip, especially from timeline to gallery. Access these settings from the main menu by selecting **File > Preferences** and choosing the **General** tab.

Keep In/Out when moving or copying to or from Gallery - The In and Out in question are the trimmed In and Out of the clip. All original material is always retained as well.

Keep effect/filter when moving or copying to or from Gallery - Effects include speed change and reverse.

Viewing Clip Info on the Timeline

Timelines default to display clips with their file name, link and sync information, effects and speed change.

You can switch this to the clip title by selecting **File > Preferences** from the main menu and clicking the **Timeline Clip Display** button on the General tab. These settings are for the entire timeline and cannot be applied to individual clips.

Clip Name/Title - If you choose to display clip identifying information, you must choose whether to display the name or the title. If you would like the clip to show its file extension, check the **Show File Extension** check box. If a clip has no title, it appears with its file name without the video/ audio file extension on the timeline.

FX - (#)FX listed in the top left corner of the clip. The number sign indicates how many effects are applied. In this position, there may also be an FD indicator. This alerts you that there is a fade on the clip. If there are effects in addition to a fade on the clip, they will be both displayed (FX+FD).

Speed Change % - A percentage in the top right corner of the clip.

Sync - S(#) in the top left corner of the clip.

Link -L(#) in the top left corner of the clip.

Clips that share a sync indicator S# or that share a link indicator L# are part of a group. Synced or linked clips move together. See Chapter 12 for more information.

Other timeline clip indicators that you cannot turn on/off include:

Uncompressed - An orange dot in the bottom left corner of the clip.

32-Bit - A '32' in the top right corner of the clip.

Picon View Defaults

View Mode - Determines whether picons appear, and where they appear on the clip. You can choose None, Middle, Begin-End, or All the way.

Buffer Type - If you choose Video or Alpha, the picons display as a single row, showing that information. If you choose Both, they are displayed as two rows of picons, video in the upper row and alpha in the lower row.

There is more information on Picons in Chapter 5. These settings are also described in Chapter 25.

Chapter 7
Working with Capture

Velocity can capture three types of files:

- LTV/DPS video files.
- LTA/DVA audio files which contain synced audio associated with that video, along with a pointer to the video file. You can't capture audio files without an associated video file.
- Audio-only WAV files.

You can specify the video compression and the audio quality.

There are various media capture modes in Velocity.

Quick mode - Captures clips one at a time as you view the source tape.

Timecode mode (with the proper equipment) - As well as adding deck control, you can capture individual clips with timecode and Reel name.

Batch Capture - An extension of timecode mode which allows you to import or create a batch list and then capture that list.

Batch Recapture - Recapture clips previously captured using timecode mode or a batch capture list, or import an EDL and recapture the clips on it. This is useful if you want to capture initially with low-resolution clips and then recapture just the portions of clips that you need at a higher resolution.

Voice Over - Play your timeline with video and up to eight tracks of audio as you capture another layer of audio which is immediately aligned on the timeline.

Note: Capture is not allowed during Live Feed. If you have Live Feed enabled (this is a right-click menu option on the timeline) capture will not launch.

Hardware Setup

Before you can capture media, you must hook up video and/or audio and/or timecode inputs to your breakout box or breakout cable.

Please refer to your Quattrus or Altitude User's Guide for details.

Video

If you plan to capture video to your Quattrus system, attach your video source to the proper video input on your breakout box. Standard video input options are Component, S-Video and Composite, in descending order of quality. You should always use the highest-quality video input you have available.

Optionally, you may have the Digital I/O board (Quattrus only) which allows you to capture Digital SDI video. If you have a DV module on your Digital I/O card or an OHCI-compliant DV card, you can also connect to its DV input.

If you are using an Altitude system, you will use the SDI inputs which are capable of carrying HD and SD video signals. You can also capture DV in NTSC or PAL modes via IEEE-1394.

Audio

If you plan to capture audio to your Quattrus system, you may connect the audio output from your VTR, camera, CD player, microphone or other audio device to the breakout box. There are two unbalanced (RCA) audio inputs labeled L IN and R IN and two balanced (XLR) audio inputs labeled L IN and R IN.

If you wish to capture audio from a CD, you can also use the Quattrus card's input from your computer's CD-ROM drive.

If you purchased the Digital I/O hardware option (Quattrus only), it provides you with AES/EBU audio input (balanced and unbalanced) as well as S/P DIF (unbalanced) via a 15-pin Digital connector. Depending on which options you purchased you may also have SDI audio input.

If you are using DV audio, it travels through the same cable as the video. If your DV source (camera or VTR) has separate audio outputs, you can capture the audio through those as well.

If you plan to capture audio to your Altitude system, you will be able to use AES or SDI with embedded audio inputs. If you are capturing DV with the Altitude hardware, the audio will be captured through the same cable as the video.

Timecode

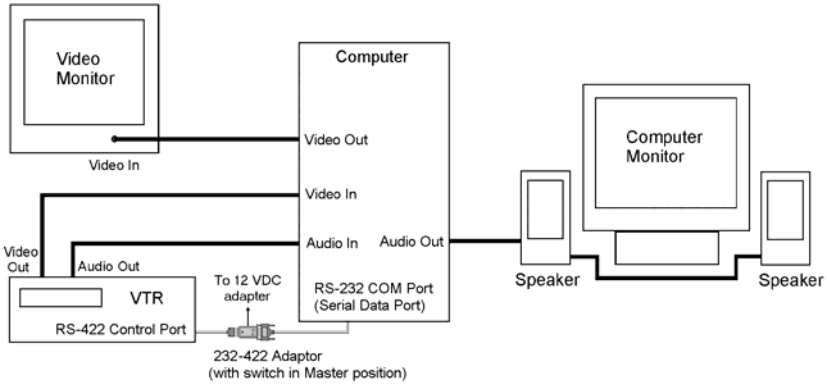
When you capture via DV, timecode is part of the signal. For other types of video, if you want to use Timecode capture, batch capture or batch recapture, you need to hook up timecode directly to your system or through your

breakout box. You can input via RS-422 using either LTC or VITC time-code.

RS-422

To properly do timecode capture, Batch capture or batch recapture, you must have deck control. If you are not using DV inputs, you must have an RS-422 controllable VTR.

Before the your computer receives any RS-422 output, the RS-422 signal must first be converted to RS-232, the output that your computer will be able to process. You must have either a 232-422 adapter which connects to both the VTR and your computer's serial port, or a breakout box (see image below). Both options will be able to convert the RS-422 output to RS-232.



Connect the RS-422 to a COM port on your computer and to the deck you intend to capture from, with the VTR in slave mode to the computer. You can also control an RS-422 compatible DV device in this way.

You can also use an external controller connected to the computer. The external controller can control the VTR as well as triggering record.

Software Setup

There are a few settings you may need to take care of before you launch the capture interface.

RS-422

If you are using RS-422 deck control, you must also define which COM port is used by the VTR. This setting is available in the main menu under **File > Preferences > General > COM Port**. From the drop-down menu beside Batch Capture, select the serial communications port used by your VTR.

Project Management

Before you begin capturing clips, consider creating separate directories for each project to help keep your clips organized and to make them easier to find. Check your Project folders and Default I/O folders by clicking the "i" button in the toolbar.

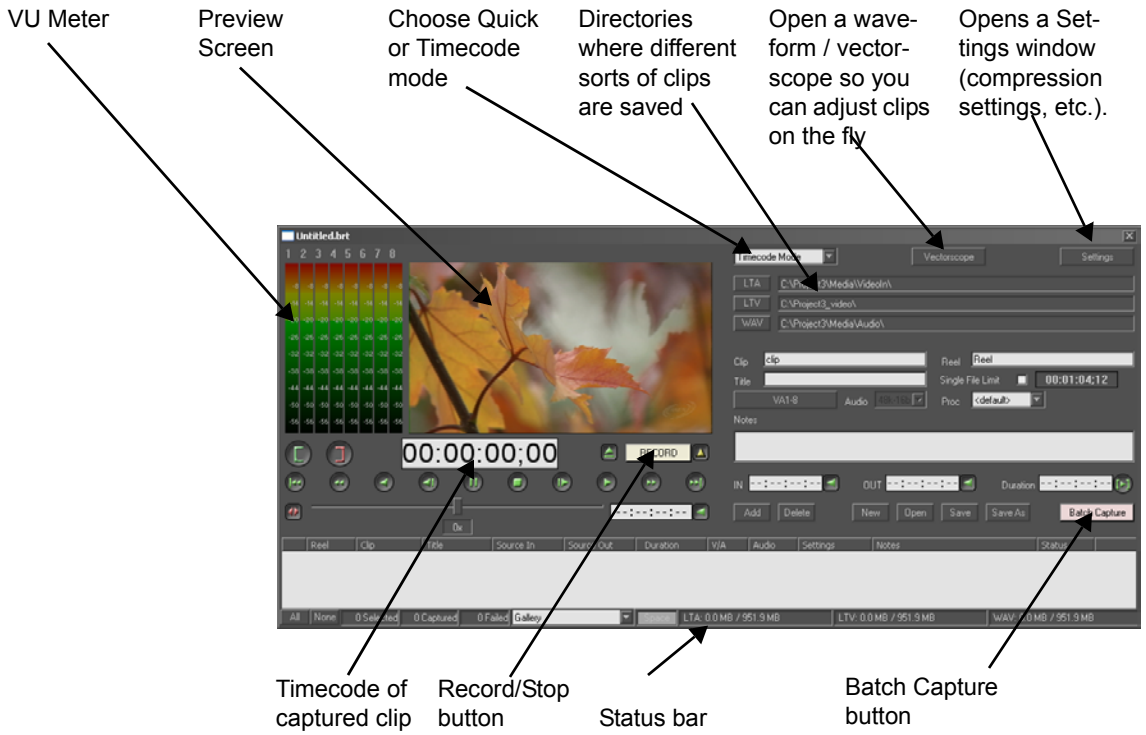
System Sounds

Note: If you are using a system WAV driver to play system sounds, you should disable system sounds before capturing. They can interfere with VU meter feedback.

Launch the Capture Interface

Capture button

To launch the capture interface, click on the capture button at the bottom left of a gallery, or right click in a gallery and choose **Capture**. The Capture window will open:



Capture Modes

Velocity has two capture modes, selectable from the drop menu at the top of the screen:

Quick Capture - Capture individual clips without timecode as the video signal is being played.

Timecode Mode - Use with a VTR which can be controlled by the RS-422 protocol and which is connected to your computer, or with a DV/HDV device.

When you choose this option, the bottom half of the screen opens up to display deck control options and a Batch Capture list. A capture list specifies the start and end time codes that will be used to capture clips, and then con-

trols your VTR or DV/HDV device to record all the clips on the list. Timecode mode also allows you to capture single clips that include timecode and reel name, which can later be recaptured (as can clips captured from a batch list).

Capture Settings

Before you do any sort of capturing, you should check your capture settings. Click on the **Settings** button on the top right corner on the **Capture** window to access the settings options.

Video Input

Locate the Input Source drop-down menu in the Capture Settings window.

If you are using the Quattrus hardware, video can be captured using either the Composite, S-Video, CAV - Component, or DV inputs.

If you are using Altitude, video can be captured using either the SDI, DV, or HDV inputs.

Based on which input source you have chosen, you will then get to choose which video standard you wish to capture in the Video Standard drop-down menu, which is also located in the Capture Settings.

General Video Capture Settings

Create DVA/LTA even w/o audio - When this option is checked, a DVA/LTA file is created for each capture even when no audio is recorded. This may be useful for organizing all your clips in one DVA/LTA directory. If this box is not checked, clips with no audio are recorded as DPS/LTV files only.

Audio follow video - When this is checked (on), your audio is automatically captured from the same source as your video. For example, if you choose DV as your video input, your audio input automatically changes to DV on the Audio Settings screen. If you choose SDI as your video input, your audio input changes to SDI audio. If you do not have this option checked, the audio and video input are totally independent of each other and you could capture audio from your CD-ROM as an audio file attached to a video file you captured from DV. *This check box is only available if you have a Digital I/O board.*

Do not Overwrite Existing Files - When doing batch capture or batch recapture, if this is checked, Velocity captures all clips which do not already exist. If this is not checked, newly captured clips will overwrite existing files.

Auto Sync Audio/Video - When this option is checked and you capture video with audio, Velocity creates a DPS/LTV file with a stereo DVA/LTA synced to it. When this is not checked, Velocity creates a DPS/LTV file and a stereo WAV file which are not synced in the gallery or on the timeline. *This affects digital video only.*

Sticky Mode Jog/Shuttle - If this is unchecked and you use the Jog/Shuttle deck control, it goes back to "stop" when you release the control. If you check this box, the Jog/Shuttle control stays where it is when you release it. *This affects deck control only.*

Automatically Add New Row - When this is not checked and you are creating a batch capture list, you must manually add entries to the Batch list by clicking the Add button or pressing Hotkey CTRL A. When this is checked and you mark an In point and then an Out point and another In point, a new batch list entry is created. *This affects Batch Capture only.*

Batch Export from timeline - Not currently supported.

Stop Capture at broken timecode - When in Timecode mode, if your hardware detects a break in timecode, capture is aborted. You may want to set this option to on if you will be recapturing your clips later, so that each clip has accurate timecode. *This option only has an effect when you are in Timecode Capture mode.*

Create new clip for new timecode - If there is a break in the timecode and this option is checked, Velocity stops the capture at the breakpoint and starts a new capture where the new timecode starts. If this option is not checked, capture continues even over broken timecode. This can make batch recapture difficult later, as Velocity does not count every frame of timecode, but stores the first number and arrives at the others by adding frames to it. *This option only has an effect when you are in Timecode capture mode.*

Disable A/V Preview during Batch Capture - Turns off the VU meters and Preview window during capture. This may improve capture accuracy on some systems. *This affects batch capture and batch recapture only.*

Fail recording on error - If Velocity detects an error during recording and this option is checked, capture is aborted. If this is not checked, Velocity will continue to attempt to record the clip.

Retry Failed Recording (3 attempts) - If the first attempt to capture a clip fails and this option is checked, Velocity will try to capture it again, as many as three times. *This affects batch capture and batch recapture.*

Keep Files after Failed Recording - If this is checked and recording fails, the file is saved anyway. If this is not checked, the clip resulting from a failed recording is discarded.

Keep Files after Partial Capture - If this is checked and capture is aborted before the capture of a clip is complete but after it has begun, the clip is saved. If this is not checked, the partially captured clip is discarded.

Automatic Update In/Out Time - When this box is checked, you can change the In or Out time of an item in your batch capture list by selecting the In or Out time and then using the jog/shuttle knob to go to a new time. The time will automatically be updated to reflect the new time shown on the counter. When the Automatic Update box is not checked you must click the In or Out button to update the time to the new time shown on the counter. *This affects batch capture and batch recapture.*

Append Captured Clip to the Timeline - When this is checked, as each clip is captured it is added to the end of the timeline. Using this function, you can finish capturing clips and have a rough cut of your edit completed at the same time.

Delete Existing Files before Recapture - This option applies to batch recapture only. If you wish to remove the clips that are being batch recaptured automatically, check here. Otherwise they will continue to take up space on your media drives. *This affects batch recapture only.*

Replace Using Original Names - If you have chosen to delete the original files before batch recapture, this option becomes available. When it is unchecked, newly recaptured file names are appended with a numeric suffix. When it is checked, clips have the same name as the originally captured clip. *This affects batch recapture only.*

When this option is checked and a long clip has been divided on the timeline and trimmed so there are two portions of the clip with an unused portion from the middle, one clip with continuous timecode will be captured. If this option is not checked, two clips, containing only the portions of the clip that were used plus handles (if selected) will be captured.

With Meta Profile - Not currently supported.

User Defined Hotkeys - Use this button to open the User-Defined Hotkeys screen for Capture. This window is described in Chapter 26.

Handles

Handles are extra frames before the In time or after the Out time defined for a clip. When a clip with handles is collected into the gallery, it has the In and Out points that were assigned prior to capture, but the extra media captured before the In point and after the Out point is also available when you load

the clip into the trim window or place it on the timeline. Handles are only applied to batch captured and batch recaptured clips.

Add Handle (frames) - Activates the Handle feature.

Head - The number of frames added before the marked In point of a clip.

Tail - This is the number of frames added after the marked Out point of a clip.

Note: In VariCam batch capture, the Handles option will be disabled, as there is no way to accurately predict how many frames will actually be added as handles when dealing with VariCam's active frame paradigm.

Timecode

Timecode options become available if you choose SDI, Composite, S-Video, or CAV - Component as your Input Source.

Override - (NTSC Only) Many VTRs with a 422 control port send a signal that allows the program to determine if it is using a drop frame (;) or non-drop frame (:) timecode. If your VTR does not have this feature, check the Override check box and choose the appropriate timecode format from the radio buttons below it.

Drop Frame/Non-Drop Frame - Non-drop frame labeling uses 30 frames per second (fps). For example, NTSC video it is actually captured at 29.97 fps, not 30 fps, so a project with a duration of one hour using non-drop frame timecode labels has a run time of 1 hour, 3.6 seconds. Therefore, when you use non-drop frame timecode labeling, the timecode is always be a little shorter than the actual running time of the video, although it is close enough for many uses.

Drop frame labeling "drops" some of the frame labels (the 2 frame labels at the beginning of each minute except each 10th minute). Over one hour, 108 labels, or the labels for 3.6 seconds are dropped, exactly the amount it is over using non-drop frame labeling. Thus a 01:00:00;00 drop frame timecode label corresponds to exactly 1 hour of video. (Note the semi-colon in the drop frame label.) No actual video frames are "dropped".

Use the radio buttons button to select NDF/DF timecode labeling for your captured clips. This is the timecode that will be used for your clip when you use any function that references the timecode, such as trimming the clip, adding index points, or viewing the duration of the clip.

You can also change the timecode labeling of clips in the gallery or timeline. Right click on the clip and select Edit Time-code.

Timecode Type - If you are capturing from a VTR and not a DV/HDV device, select the type of timecode your VTR sends. Velocity has two time-

code options when capturing from analog tape. LTC (Longitudinal Timecode) is designed to be recorded on standard audio tape. When recorded to video, LTC is placed on one of the linear audio tracks of the video tape. LTC is the original SMPTE timecode standard; older video tapes, if they contain timecode at all, will be striped with LTC. VITC (Vertical Interval Timecode) is recorded within the video picture, during the vertical blanking interval. It can be present in a video signal without being visible on screen. Compared to LTC, VITC offers two distinct advantages for video editing: it can be read from a still frame; and it provides field-rate (half-frame) accuracy. Where video and multi-track audio transports must be synchronized, both VITC and LTC may be used together. In audio-only productions, LTC is normally used.

Velocity acquires its timecode for Batch Capture through the RS-422 port or IEEE-1394 cable, not as a part of the video signal.

Timecode labels video frames incrementally, using a hh:mm:ss:fr (hours : minutes : seconds : frames) format.

If you have chosen DV as your input device, the above does not apply, since DV always uses drop frame timecode. If you are using HDV, however, you have the option to use drop frame or non-drop frame timecode.

Audio Settings

Click on the Audio Settings button to open the VU Record Meter Options window. Go to Chapter 25 for more information on this window.

Note: If you have selected HDV or DV as your video input type, there is no Audio Settings button. The VU meters on the capture interface are defined by the settings found in the main menu under **File > Preferences**. Choose the VU meter tab, and under that, VU Record Meter.

Input - You must choose which type of audio input you will be recording. If you do not have the Digital I/O board installed (Quattrus only), you can choose balanced or unbalanced audio, CD or AUX. If you have installed the optional Digital I/O card you may also have AES, SDI, S/PDIF, DV (auto) and DV (manual).

If you have the optional Digital I/O board there is an Advanced button beside the Input drop-down box. If you choose SDI input, this box becomes active. Click on this button to select audio channels and group to capture.

If you have the DV module on your Digital I/O board, there are also two DV options. DV Auto detects and records at the native DV sample rate and frequency. DV Manual lets you set the sample rate yourself.

Default - When you click this button, the Hardware sliders will be reset to 0 dB (no gain). The VU Meter will not be affected.

The other settings in this window are described in detail in Chapter 25.

Clip Options

This section of the Settings window relates more towards video settings for capture.

Video Settings

The VTFS stores video in a 16-235 color range. Its native format is YUV. The maximum number of video files per folder is 2048.

Compression Rate - Choose the video compression to use during capture. If you are using Altitude, you can set a compression rate depending on your video format settings.

PAL: 22.5-158.2 Mb/S

NTSC: 22.8-160 Mb/S

720/24p: 24-168.5 Mb/S

720/50p: 50.1-351.5 Mb/S

720/60p: 60.2-421.8 Mb/S

1080/24PsF: 108.4-759.3 Mb/S

1080/60i: 135.5-949.2 Mb/S

If you are using Quattrus, you can set a compression rate between 4Mb and 120 Mb/S.

Note for Quattrus users: Just because you set your compression to the maximum compressed rate does not mean that is the rate it will be captured at. The M-JPEG compression algorithm that Velocity uses is not based on compression ratios. It is based on quality settings. The video compression rate is a target, not an absolute. M-JPEG calculates compression on the basis of quality, not data rate.

It is possible that something will compress well at a high quality setting, meaning that it will take up less space than expected on the hard drive. This is dependent on the video data that is being encoded. A series of images that do not have a lot of variation within or between the individual frames may not be captured at the maximum compression rate.

Uncompressed - Check this box to capture uncompressed video. When you choose Uncompressed on the Quick Capture Settings screen, the data rate specified will be overridden. When you select the Uncompressed option, the Padding checkbox is disabled.

10 bit (Altitude only) - This option allows you to capture video at the 10 bit rate.

Vectorscope - Opens a Waveform Analyzer and Vectorscope. (See Chapter 17 for details.) Your hardware passes the video input signal through its processing circuitry to the video output monitor. You can see the effect that each control has on the video signal interactively in real time. When in the Batch/Hybrid/Recapture Settings screen, you also have an option to Reset the Proc Amps to standard CCIR settings.

The waveform/vectorscope here is different from that described in Chapter 17 only in that it appears as one large screen (including a preview monitor) rather than a series of tabbed windows, and it includes a preview window.

Set Default - Click this button to set your video settings as the default every time you access the Capture Settings window.

Video Settings Files

Save - Once you are satisfied with your settings, you may want to save them for future use. Click the Save button and you will be able to give your capture settings file a name.

Load - If you have already saved a settings file that you want to reuse, you can click the **Load** button to re-set all the settings.

Deck Options

Deck Options only have an effect when you use Deck Control from Velocity.

Delays

Some VTRs may experience a small delay between receiving a command from the computer and executing that command. This will result in recordings that are off by a few frames. The VTR delay slider can be used to compensate by +/-5 frames.

Preroll - A setting of greater than five seconds ensures that your tape player is up to speed when capture begins.

Deck Responsiveness (DV only)

If you have HDV or DV selected as your Input Source, then you will see a section called Deck Responsiveness located within the Deck Options section of the Capture Settings. See the Soft DV Settings section for more details.

Machine Seek Time

If clips in the capture list are more than the set time apart, the play head lifts off the tape, and fast forwards to the next spot. This saves wear and tear on both the deck and the tape.

Deck Settings Files

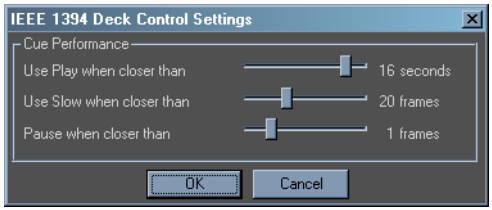
Save - Once you are satisfied with your settings, you may want to save them for future use. Click the Save button and you will be able to give your capture settings file a name.

Load - If you have already saved a settings file that you want to reuse, you can click the **Load** button to re-set all the settings.

DV Options for the DV Module on the Digital I/O board (Quattrus only)

If you choose DV as your input type and you have a DPS DV module, the menu contains options of Sony, Canon or RS-422. Choose the correct manufacturer for the hardware you are using. If you are controlling your DV device via RS-422, choose that option instead.

If you choose DV and your DV deck type is Sony or Canon, you can click on the Advanced button. This window opens:



These settings allow you to alter the speed at which the DV device approaches the target timecode during batch capturing. This can make the deck more accurate.

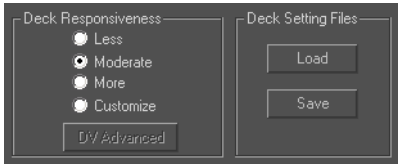
Soft DV Settings

If you have installed an OHCI-compliant DV board (and the Soft DV codec, which is available on the Leitch website at *www.leitch.com*, and which is also on your Velocity installation CD) and choose to capture DV, deck control options appear near the bottom of the settings screen.

You can capture video from that card and convert it into DPS/DVA files for storage in the VTFS and/or use in Velocity projects.

Below the Input field in the top left of the screen, if you are using Soft DV, a Deck Control menu appears. Choose DV or RS-422.

Soft DV deck control options appear at the bottom of the screen:



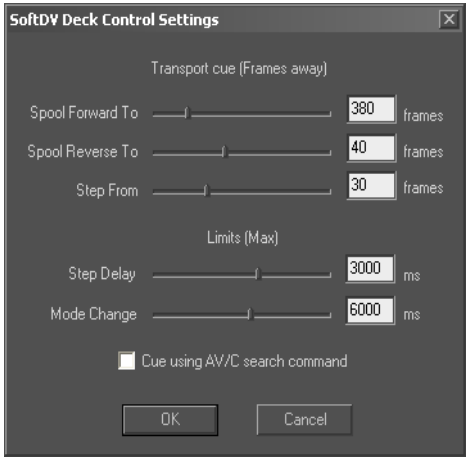
Deck Responsiveness - This setting determines how Velocity interacts with your deck. If the deck is very responsive, click **More**. If it is somewhat responsive, click **Moderate**. If it is not very responsive at all, click **Less**.

There have been custom deck settings created for some decks. You can search for and download these files from the Leitch website at *www.leitch.com*. Once you have placed these settings in a logical place on your system (with the project if you will not be using that deck again, or in a more general location if you use this deck on a regular basis), click the **Load** button in the Deck Settings Files section of the screen. Browse to the location of that file and double click on it to open, or click on it once and press the **Open** button.

You can view the custom settings file by clicking the **DV Advanced** button on the Settings window.

When this file is loaded, Velocity uses settings that are chosen to interact the best with that make and model of DV deck or camera. If there is not a custom settings file available for your particular unit, you can create one your-

self. With the Custom option selected under Deck Responsiveness, click the **DV Advanced** button. Another window opens.



Spool Forward/Reverse To - Fast forward or fast reverse with no tape head contact. The deck goes forward or backward in this mode until it falls within the range you specify before the start of the clip. Then it switches to normal play mode.

Step From - In this mode, the deck moves forward one frame at a time. There is no pre-roll on a DV deck, so the tape cues up to the exact frame it needs to start recording at.

Step Delay - The maximum amount of time between single frame steps when in step mode. If there is more time between steps than this, you will see an error message.

Mode Change - The amount of time allotted for the deck to switch from Spool to Play or Play to Step before Velocity returns an error message. If your deck has poor response, set this to a higher number.

Cue using AV/C search Command - Some decks have the capability for Velocity to tell it what timecode to find and it uses its built in search command. If your deck has this capability, check here and it will be used. Note, however, that on some decks it is not very accurate, does not provide timecode updates to Velocity while searching, and the only way you can cancel during the search is by stopping the deck manually. If the deck gets the wrong timecode, Velocity falls back on its own transport controls to search for the proper timecode.

Click **OK** when you are satisfied with your settings. The Custom Settings window closes.

To save the settings file so you can use it again, click the **Save** button in the Deck Setting Files section of the screen. Give the file a descriptive name and save it in a logical place on your computer.

Note that these settings files are also used with Print to Tape.

Soft DV Crash Record (Quattrus only)

Velocity has support for crash record, which records media to your DV device. Recording will start from wherever the playhead it located on the timeline.

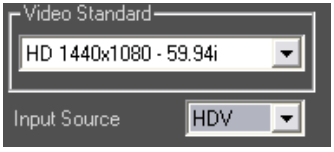
Go to **Output > SoftDV Crash Record** in the main menu. A dialog will appear, telling you to make sure that the DV device connected to your machine is in record mode. Place the playhead at the appropriate location on the timeline and click Start to start the recording process. Click Stop to stop the recording process.

HDV Support (Altitude Only)

VelocityHD supports the capturing of media from an HDV source.

Note: You must genlock to either the analog output of the HDV device or to a proper sync source via SDI in.

Make sure you select HDV as your input source in the capture settings before you start HDV capture.



Capture Setup

The Capture screen has many settings that you will want to set once in a capture session. Before starting any capture session, you should review these settings.

Directory Locations

The default location for DVA, DPS, LTA, LTV and WAV files shows in the associated input boxes. Normally you will not need to change these defaults, but if you do want to change them, click on the appropriate (DVA, LTA, DPS, LTV or WAV) button.

The DVA/LTA and WAV directories should be on a system drive. Clicking on either of these buttons opens a standard Windows browser.

For example, the LTV button opens the Video Paths window.

As one drive fills up, Velocity automatically switches to the next directory, meaning you shouldn't have to stop capturing until all your drives are filled up.

Video files can be captured to a system drive, or to a sub-folder of the folder, in a drive volume folder on the dedicated media SCSI drive. You cannot save video files to the root of your dedicated SCSI drives. (Use the Windows Explorer or the Leitch Hardware Manager to create new folders on your video drives. See the hardware User's Guide for details.) If you want to capture video to your system drives, in the main menu under **File > Preferences**, choose the **Playback/Output** tab and put a check mark next to **Allow creating video files on system drives**.

Capture Drive Space

Capture duration can be limited by the amount of space in your video drive or the amount of space in your audio drive. Change between 'Video only' or 'Video and Stereo Audio', to see the maximum capture number change, so you can see if your space is limited by video drive space or audio drive space.

Capture File Size

If you wish to limit the maximum size of each captured file, place a check in the Single File Limit box. In the Timecode field beside it, enter the maximum duration you would like each clip to have. If you do not set a capture limit, the duration field automatically displays the maximum file size according to the amount of room on the video drive.

Capture Channels

Choose which video/audio channels you wish to capture. Click the VA 1-8 button to the left of the Audio label. The Capture Channels window will open.

To make sure video is captured, check the **Video** check box. You also have the option to capture up to eight channels of audio. If you check the **Stereo Mode** check box, Channels 1 and 2 will be automatically selected, representing a 2-channel WAV or LTA file to be captured. When you click **OK**, the button's label is updated to indicate which channels are to be captured.

Audio Sample Rate and Data Bits

From the drop-down menu to the right of the Audio label, choose a sample rate and data bits. Higher quality audio settings will result in larger DVA or LTA files. (Larger numbers are generally higher quality).

Make sure that the Default I/O folder's AV directory has enough space to store the audio information during capture. At 44kHz/16 bit/stereo (CD quality) allow roughly 70 MB per 5 minute capture. All AES/SDI audio is 48 kHz with Altitude.

Proc Amps

From the Proc Amp drop down menu, you can choose a settings option to apply to your video.

Default - The default settings apply no change to video.

Customize - The Clip Options section of the Settings window opens so you can customize the Proc Amps for this particular clip.

Load File - From the window that opens, choose a previously created (and saved) batch capture settings file. Batch Capture Settings files end with the file extension BRS.

Note: You can change any of these parameters for any clip between captures.

Quick Capture Mode

Quick Capture is useful in situations where accuracy is not important, where you do not have a vast number of clips to capture, where you have a live feed which cannot be recaptured later, or where you do not have a video source where DV/HDV capture or RS-422 capture is possible.

When you use Quick Capture, you cannot capture timecode or reel name for your clips, meaning if you wish to recapture them at a higher data rate later,

you will not be able to use the re-batch capture function of Velocity. If you wish to capture clips "On The Fly" (without creating a batch list) but retain that information, you You can use the Timecode Capture function without creating a batch list. This function is described fully later in the chapter.

To quick capture a clip:

1 Check your settings (see p. 72).

2 Select a unique name that identifies the material being captured and place it into the **Clip** box. When you capture a clip, audio and video files are created using this name. When you successfully capture a clip, the text in this field automatically increments so you can capture another clip immediately. Clip names can NOT contain punctuation characters, such as ( ) [ ] ! : . , etc.

3 Optionally, in the field below Clip, you can assign a title to the files, as well. Titles can be longer, and can contain any keyboard character, unlike a clip name. Titles can contain punctuation characters. You can sort by titles and display titles on timelines and in galleries.

You can also add notes to the clip by typing them in the Notes field. Notes and titles are saved in the gallery with the clip and can be searched later.

4 When you get to the part of the tape that you want to capture, click on the **Record** button, or press Enter on your keyboard.

5 To place index marks in your clip as you capture, click the Index button. Index markers will be numbered sequentially in the clip. See Chapters 11 and 12 for the myriad uses of indexes in the trim window and timeline.

6 When the segment you wish to capture is over, click the **Stop** button, or press the Enter key on your keyboard. If you set a Capture Limit, the capture will stop automatically when the capture limit time is reached. The Capture Limit is the maximum time that you will capture in any one clip. No matter what number you choose as a capture limit you may use the Stop button to end a capture at any time. If you don't know the length of the clip you intend to capture, uncheck the Capture limit box. (The capture time available depends on the amount of hard drive space remaining and the Quality setting selected.)

Your capture is automatically saved. Assuming a video and audio capture, this creates a DVA/LTA file that consists of the audio data and a pointer to the DPS/LTV file saved on your media drive.

Repeat the above steps to capture more clips.

If you do not change the clip's name, each clip will be sequentially numbered.

If you wish to terminate a capture without saving the video and/or audio files to disk, press the **Esc** button. You can overwrite an aborted capture using Quick Capture, using the same clip name, title, notes, etc. Overwriting the previous capture is handy if you want to keep trying to capture an elusive camera event and want to use the same name for every trial. If you abort

capturing MyClip020, the next clip will be called MyClip020 (unless you have chosen to save each aborted capture in the Capture Settings window).

You cannot capture to a file with the same path and name as a **saved** capture file.

Keyboard Shortcuts for Quick Capture

When the Quick Capture interface is open you may use the Enter key on the keypad to Record and Stop.

To place index markers on a clip as you capture it, press the Comma key.

See Chapter 26 for a complete list of Velocity shortcut keys.

Monitoring Audio Levels During Playback

When capturing audio, you can control the input level using the Velocity VU Meter. You do not want the audio peaks to be so loud that they cause distortion or the overall level to be so low that it is barely audible. Velocity has a VU (Volume Unit) meter that allows you to adjust the audio level during recording and playback.

The sound level should stay primarily in the green region (below -12 dBfs, or, if you have enabled Analog Simulation, below 8dB).

If you are capturing audio from a properly recorded source, you should be able to set the audio gain to 0 dB. This means that the level of the audio signal that you record matches the audio signal of the source. Your audio input level (shown by the colored scale) should hover around 0 dB (-20 dbfs). If it is lower (due to under-recording), you may encounter signal/noise problems. If it is higher (due to over-recording), you run the risk of audio saturation.

If the sound level is too high the meter will go into the red region. This indicates that your signal is too loud to be recorded without some distortion. Use the sliders to reduce the audio level before recording.

If the audio signal is very quiet, the audio scale barely lights up, staying at the bottom of the meter. If you know that you are playing back a very quiet section, this is normal. However, if you know that the audio was under-recorded, turn up the sliders to increase the audio level. Increase the signal by up to 12 dB.

Even when there is no audio signal being played back there will be a very small signal indicated. This is audio “noise” and it is common to all analog recording devices. As long as it is a very low signal it should not be noticeable in your final production.

Capturing Still Images

If you need to capture a series of non-consecutive single frames from video using Quattrus, the QTools applications have a Manual Trigger/Time Lapse recording function. ATools (for the Altitude hardware) also supports this feature. It creates a single video file containing all the images. If you need to name them individually, copy them out of the VTFS onto a system drive and then name them individually.

Capture Status Bar

Whether you are using Quick capture or creating a batch capture list, keep an eye on the status bar at the bottom of the window for important information.

Here you can keep up to date on how much hard drive space you have available in the various drives you capture to and how many clips you have captured.

The gallery drop-down menu determines the gallery that the captured clips will be sent to when the capture session is finished. If you alter the setting partially through a capture session, the first clips will go to one gallery, and the latter clips will go to another.

Timecode Mode

Clips that are captured using Timecode mode include reel name and timecode, which means they can later be re-batch captured. Timecode Mode allows you to control an external device to digitize multiple video clips from a source tape. There are two deck control options:

RS-422 - Using Timecode mode with an analog video tape requires a VTR that is capable of being controlled by the RS-422 protocol, an RS-232/RS-422 converter (such as Leitch Part #774-542) connected to the host computer's RS-232 serial port, and a serial cable connecting from the converter to the VTR's RS-422 port. You can also use RS-422 with the DV module or OHCI-compliant DV capture card.

DV - This works with the optional DV module on the Digital I/O board. DV device control can be handled through the IEEE-1394 cable without further setup.

HDV - HDV device control can be handled through the IEEE-1394 cable without further setup.

Once the VTR or DV/HDV device is connected to the computer it can be controlled by Velocity.

Use a batch capture list to create low resolution clips which may be used while editing. When you are ready to create the final output, create a batch recapture list using your timeline trim points and replace the low resolution clips with new high resolution clips using the new batch recapture list. You can also use batch lists, in combination with saved galleries, image files and a timeline, to archive your project in case you need to recreate it again at a later date. See Chapter 2 for more information about archiving projects.

Timecode mode allows you to view a tape, marking in points and out points and assigning names and settings for individual clips, before going back and capturing them later all at once.

Capturing on the Fly

Capture on the Fly is like Quick Capture, in that you view the tape and push the record and stop buttons. It is like Batch Capture, in that you can control a deck via the computer interface or an external JOG controller, and you can capture timecode and reel name information, facilitating batch recapture later.

If you are using RS-422 control, you must assign the COM Port for capture (found under **File > Preferences**, click the COM Port tab and choose the correct COM Port from the Capture drop-down menu).

To capture on the fly:

1 Launch Capture by either choosing **File > Capture** from the main menu, or right clicking in a gallery and choosing Capture, or by pressing the capture button in the bottom left corner of the gallery.

2 If the Capture window is in Quick Capture mode, select **Timecode Mode** from the capture mode drop-down menu.

Press the Settings button to open a Settings window (see page 69 for more information on all the settings). Pay particular attention to the input, timecode type, and deck option delays settings. When you are done with the Settings screen, click **OK** to save your settings and return to the Capture window.

3 Adjust the clip settings in the top half of the Capture screen. These settings are described in detail on p. 81.

In the field labeled Reel, enter a name for the tape you will be capturing from. This common name will identify all the clips captured from this tape, should you need to recapture them again. You can also sort by reel name in galleries.

4 Put a tape in your VCR and press play, or use the deck control buttons. You should see the video on your video monitor and preview window and hear the sound from your speakers.

5 When you see the video that you want to capture, click on the **Record** button. Its label switches to say Stop.

To place index marks in your clip as you capture it, click the Index button or use the Hotkey (Comma). When you subsequently load your clip into the trim window or timeline, you will be able to view and snap to these index marks. They will be numbered sequentially in the clip.

6 Press the **Stop** button to end the capture and save the clip or press Esc to abort the capture. If you set a Duration (by checking off the single file limit box and entering a number), capture stops automatically when the duration is reached.

This creates a DVA/LTA file that consists of the audio data and a pointer to a video DPS file that you have also captured (assuming you set up your capture to use both video and audio and create DVAs/LTAs with your DPS/LTV files).

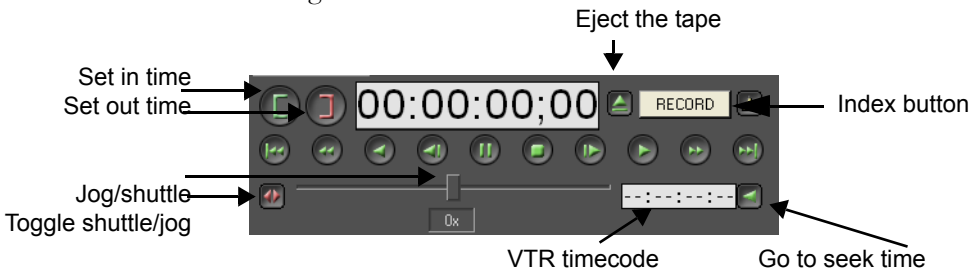
A new entry appears in your batch list every time you capture a new clip. The status of the clip is listed as Done as soon as you click the **Stop** button.

You can record another clip by repeating steps 5 and 6. The clip name will be automatically advanced (clip1, clip2, etc.), or you can enter a new name every time. You cannot capture to a file with the same path and name as a **saved** capture file.

While you are capturing and a tape runs out of timecode, the capture process will automatically be stopped.

Deck Controls

For the Jog/Shuttle wheel and the VTR buttons, there are corresponding settings.

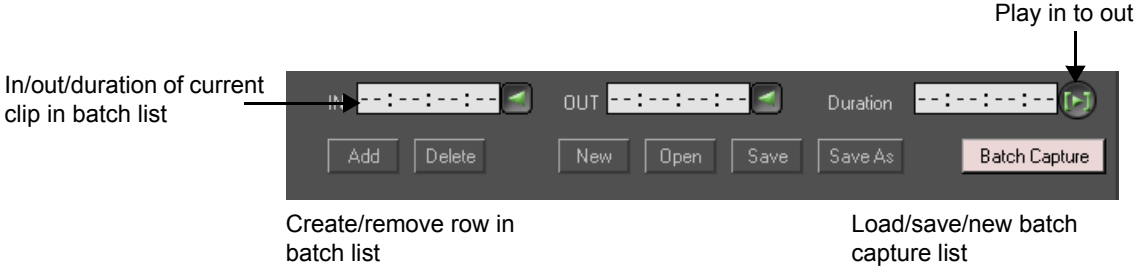


If you have a JOG-4000 or JOG-5000 editing controller, you can use it to perform the same deck control and Batch Listing functions. See Appendix C and D for more information.

Batch Capture Lists

A batch capture list provides information to describe the clip to be captured.

To alter an item on the list, click on its row. The fields above update to reflect that clip's data. As you alter that data, the entry in the batch list is updated.



Creating Batch Lists

To create a batch list:

1 Adjust the settings that you will probably be assigning only once during a tape or capture session. This includes Reel, V/A, Proc settings and Audio. See p. 69. Once you have set it, this information gets copied from line to line. When creating a Batch Capture list that draws from multiple reels, be sure to change information for relevant entries.

2 Put your source tape in your VTR and use the buttons at the left of the Batch Capture window to control its playback. When you have located the section that you want to use for a clip, you are ready to create an entry in the Batch Capture list.

3 Set the In point of your first clip Source In).

You can set this to the currently displayed timecode by clicking the In button (the green bracket). You may also highlight the In time and type in the timecode either in the top half (the data entry portion) of the screen, or in the batch list (spreadsheet portion of the screen).

4 Set the Out point of your first clip (Source Out). You can set this to the currently displayed timecode by clicking the Out button (the red bracket). You may also highlight the Out time and type in the timecode either in the top half (the data entry portion) of the screen, or in the batch list (spreadsheet portion of the screen).

5 If you have the Out time highlighted while you are using the Batch Capture controls to play the clip, the time showing when you press Stop is entered as the Out time.

6 If you wish to have a specific duration, type plus (+) and a number in the Out field and press Enter. The new number is added to the In time to generate a new Out point. (If you type +500 in the Out field, the out time is five seconds after the In point.)

7 Assign a unique name in the Clip field. If you do not assign a name, the clip name automatically increments (Clip001, Clip002, etc.).

8 (Optional) Click the **Play In to Out** button to the right of the Duration field. This allows you to play the tape from the In point to the Out point without capturing the clip.

Enter information in the Notes and Titles field. These fields remain blank unless you enter information in them. These settings are not integral to the successful capture of a clip.

A batch list normally has many entries. To create another row in the list:

If you have chosen the option in the Settings screen of "Automatically Add new row" and you mark an In and an Out, and then you mark a new In,

another line in the Batch Capture list is created, automatically with this new In point.

Press the **Add** button on the Timecode Mode screen or F5 on the keyboard. A new blank row is created.

After you enter the In and the Out, press Enter and the focus moves to the Duration field. Press Enter again, and you are ready to add another In and Out point.

As you create an entry, it will take on the attributes of the entry before it, so it will have the same audio settings, etc. You can alter these on a clip-by-clip basis. You can create as many entries in a batch list as you wish.

You can also copy entries using the F4 Hotkey. This might be useful, for example, if you are capturing footage from a multiple-camera shoot and wish to use multicam editing on the timeline later. Just change the reel name and file name for duplicate shots from other cameras.

If you need to change a piece of information in several clips, such as Reel Name, Proc Amps, Audio, V/A, etc. you can click on multiple rows (holding down the Shift key to select a range, or the Control key to select individual clips). Now, change the piece of information you need to change in the appropriate field in the data entry area in the top portion of the interface, and it is updated for all the selected clips.

If you type a name for all the clips selected, it names them and puts an incrementing number after the clip name.

When your Batch capture list is complete, save it using the Save button.

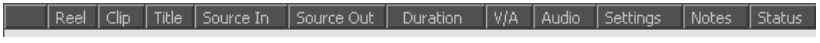
Saving Batch Lists

To save your batch list, press the Save or Save As button. The first time you save your file, a Save As window opens. Browse to the location where you want to save the file. It is saved as a BRT file.

If you have already saved your batch capture file and have made changes to it, pressing the **Save** button automatically saves your updates.

Columns in the Batch Capture List

Resize the columns by dragging the dividers between column headings. Resize the list portion of this screen vertically by adding rows to the list.



To sort a batch list, click on any column header. If you sort by the Reel Name, all clips from the same reel will be together.

Check Box - The first column allows you to select individual clips for capture by either checking or unchecking them.

Reel - This is the name of the particular media from which the video/audio will be captured. It does not have to be unique. However, if all your Reels have the same name, capture may be aborted as Velocity encounters Batch List entries with timecodes that are not available. A Batch Capture list with multiple reels will normally be sorted by reel so that all clips on one tape are captured before moving onto the next reel, etc.

Clip - Each clip must have a unique file name. File extensions of DVA, DPS or WAV are automatically added to indicate the type of file.

Title - Another name for the clip, which does not have to be unique. Clip titles are usually more descriptive. Clips can be labeled and sorted by title or by clip name on timelines and in galleries.

Source In/Out - The tape time when capture will start (In) and stop (Out).

Duration - The Out time minus the In time (inclusive) provides this number.

V/A - Determines whether you will capture video, audio or both.

Audio - Audio quality - mb/s, mono or stereo.

Settings - Either custom, default, or loaded from a settings file. Video format, compression, proc amp settings, etc.

Notes - Information typed here is carried with the clip in the galleries and timeline.

Status - Capture, Done or Incomplete.

Opening Batch Lists

If you have a previously saved batch list file, you can open it by pressing the Open button. A window opens. Browse to the location of the BRT file you wish to open.

Creating a Batch List on Another Computer

If you have a Quattrus board, you can install the qCapture tool (on your installation CD) on a computer without a Quattrus board installed in it. If you have an Altitude board, you can install the aCapture tool (on your installation CD) on a computer without an Altitude board installed in it. This allows you to create a batch capture list on another computer, then load it on your Velocity system for capturing. When you open this tool in stand-alone mode, it always opens in Timecode Mode.

Type In and Out points to create a batch list, and then Save the batch list and copy it to the Velocity computer.

In Velocity's batch capture interface, press the **Load** button to reopen the Batch capture list.

Capturing a Batch List

Before capturing a batch list, select the items from the list that you wish to capture.

All clips that have a check mark in the left edge of the batch list will be captured, so if you don't want a clip captured, remove the check mark. To capture all items in the list, press the All button in the bottom left corner of the window.

Press the **Begin Batch Capture** button to start recording. The timecode numbers shown at the top of the Batch Capture window turn red when clips are being recorded.

If you want to abort the Batch Capture, press Escape on your keyboard. A message appears on the screen asking if you want to capture remaining clips. Click **Yes** to skip only the current clip and go on to the next one, or **No** to abandon capture completely.

Working with Panasonic® VariCam® Variable-Frame-Rate Material (VelocityHD only)

Panasonic's VariCam has the ability to mimic the operational characteristics of film cameras with its variable frame rates. Making the most of VariCam's unique acquisition capabilities during post production requires the ability to not only remove non-active frames, but also to support VariCam's "over-cranking" and "undercranking" for off-speed effects created in-camera. Ideally this processing should happen during ingest – rather than as a separate, post-ingest processing pass that adds further processing time before the material can be used.

Capturing From a VariCam deck

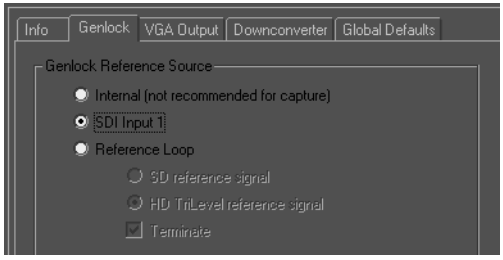
While Panasonic's VariCam supports frame rates from 4fps up to 60fps, the content is always recorded to tape – and transported over HD-SDI – at 59.94 or 60 frames per second. [Note that the VariCam, and decks that support playback of VariCam materials, actually support both 720p/60 and

720p/59.94, user-selectable]. To record these lower frame rates into the 720p/60 or 720p/59.94 format, the captured ("active") frames are "padded" with duplicate (redundant) frames. To normalize the recorded material back to a desirable frame rate (such as 720p/24) for editing, VelocityHD supports the removal of non-active frames while recording the HD-SDI input stream.

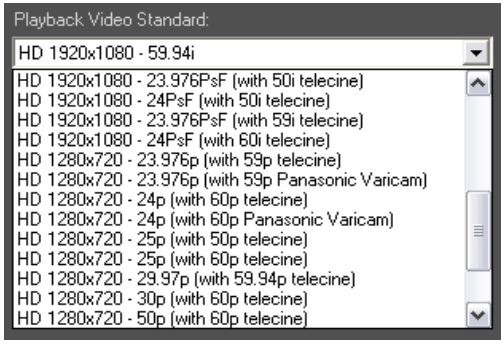
Note: Genlock must be set to SDI Input 1 for Varicam active-frames-only capture.

To capture from a VariCam deck:

1 Start by going into the Leitch Altitude Hardware Manager in Windows Control panel, and ensuring that the Genlock Reference Source is set to use the SDI Input's timing.

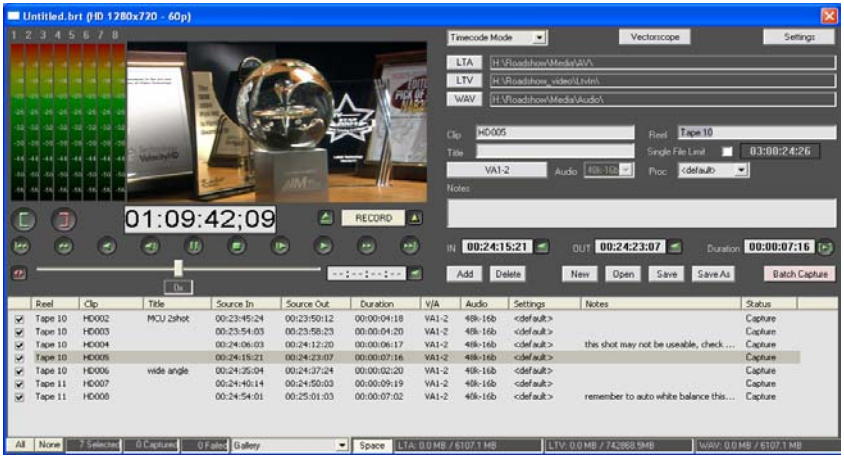


2 Be sure to note the exact frame rate setting of your Panasonic deck – 60fps or 59.94fps. Create a new VelocityHD project, and set the Playback Video Standard to "HD 1280x720 – 24p (with 60p Panasonic Varicam)" if your deck is set to 60fps or "HD 1280x720 – 23.976p (with 59p Panasonic Varicam)" (if your deck is set to 59.94fps).



3 Click the Capture button in the Gallery (or right-click in the Gallery and choose Capture) to open the Capture Window. Set the capture mode to either Timecode Mode (batch capture with RS-422 control), or Quick Mode (manual recording). Typically, you'll be using Timecode Mode.

4 Click the Settings button in the Capture Window. Make sure SDI is selected as the Input Source and then set the Video Standard to match the settings of your



deck – “HD 1280x720 – 60p” or “HD 1280x720 – 59.94p”. Set your desired compression data rate (or select uncompressed). To capture all frames (including the non-active frames used to pad the VariCam recording), you can set the Frame Rate to 60 (59.94) fps. In this example, though, for Varicam processing – to capture only the active frames for 24/23.976fps editing – set the Frame Rate to 24 (23.976) fps.

5 Create your batch capture list and capture from the tape as you normally would. VelocityHD will capture the “active” frames into a clip with your chosen playback rate (e.g. 720p/24) while ignoring the redundant frames. For material recorded with a camera frame rate of 720p/24, the discarding of the redundant frames returns the captured stream to just the active 24fps. For material recorded with a camera frame rate of less than 24fps (“undercranking”, e.g. 4fps), capturing only the active frames and playing them back at 24fps will result in an inherent smooth “fast motion”, while material recorded with a camera frame rate of greater than 24fps (“overcranking”, e.g. 40fps) will result in an inherent smooth “slow motion”. For material recorded with a dynamically changing frame rate, the result will be smooth, ramping speed changes.

Batch Recapture

If you used batch capture to create low resolution clips for editing, you may want to create high resolution clips for your final output. After that you can replace your low resolution clips with high resolution clips on the timeline. Velocity’s batch recapture function automates this process.

To be batch recaptured, each clip must contain:

- Timecode
- Reel name

If you created the original clips using Batch Capture, they will have the reel name and timecode you used when you first captured them.

If there are clips on the timeline that were captured using Quick Capture, they will not automatically have a reel name, and their default starting timecode will be 00:00:00:00. If you want to change the values of the clips on the timeline, click on the clip and select **Edit > Timeline Info** from the main menu. Enter a reel name and starting timecode for each clip.

If you have clips that do not have a reel name, you will be warned and shown a list of clips that will not be included in the Recapture list.

If you have clips on the timeline where you have split the video from the audio, they will not be added to the batch recapture list unless you have checked "Create DVA/LTA even w/o audio" in the batch recapture Settings. If you want these clips to be included on your batch recapture list, check this setting and re-create your batch recapture list.

If you used **Reverse** on a clip on the timeline, that clip will be added to the batch recapture list. After you replace this clip, you must apply Reverse again.

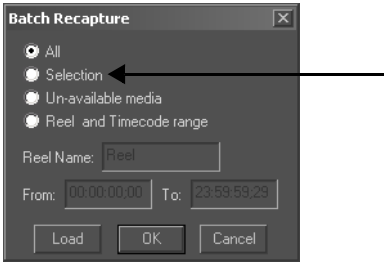
Note: When you capture in an active frames only mode of VariCam, these clips will not be capable of being recaptured. So, when the timeline is in 23.967 with 59p Varicam mode, if you choose Recapture, you will get an error telling you that's not possible.

Creating a Batch Recapture List

To create a batch recapture list:

1 If you wish to batch recapture selected clips only, first select these clips on the timeline by holding down the Shift key and left clicking with the mouse on individual clips.

2 With the timeline active, select **Output > Recapture** from the main menu. The Batch Recapture window opens.



'Selection' choice only appears if you have selected clips in the timeline.

3 Choose an option:

All - The entire timeline.

Selected -The clips you have selected on the timeline.

Unavailable media - Virtual clips on the timeline.

Reel and Timecode - A specific reel's clips. This option activates the Reel Name From and To fields. You can choose a timecode range or leave it at the default of 0 - 24 hours, which would capture all the clips that were on the specified reel.

You can also use the Load button to import a previously created batch capture list (BRT).

4 Press **OK**. This creates a new Batch Capture list, using the In and Out points of the clips on the timeline.

Batch Recapturing Your List

Before batch recapturing:

1 Check your batch recapture settings by clicking the **Settings** button.

Adjust the data rate so that you are capturing high resolution clips during batch recapture. If you make extensive changes, use the **Save** button to save your settings to a file.

If you would like to delete old video clips before you recapture the new clips (to make space on your drive), make sure you check the **Delete existing clips before recapture** box at the top of the settings window.

If you check this button, the **Replace Using Original Names** option becomes available. If you do not use this option, your clip names will be renamed automatically. If your old clip was called Frisbee.dva, your re-captured clip will be called something like Frisbee_000_4613361.dva. The number appended to your original clip name is a computer date and time stamp

that helps identify the new clips. We recommend that you do not re-name these clips. While you can re-name your DVA/LTA files, you should not re-name the associated DPS/LTV files. The DVA/LTA file points to the DPS/LTV file, and if you change the DPS/LTV file name the DVA/LTA file will not be able to find the video file.

If you have enabled **Replace Using Original Filenames** and have a long clip divided into non-continuous portions on the timeline, one continuous clip will be captured. If this option is not checked, new clips containing only the portions of the clip that were used plus handles (if selected) will be captured.

2 Check your batch recapture list. Most items are assigned automatically using the information from the timeline. To alter an item on the list, double click on it. Some fields open a drop-down menu, and some allow you to enter data such as digits or notes.

For each clip on the list, adjust the Audio quality using the drop down box and select the **Settings** file to use during capture.

When your batch list opens, all items have a check mark in the first column of the batch list. If you do not wish to capture any of these items, remove the check mark at the left end of its listing.

When you first start batch recapture, the settings column shows "default". To change the custom settings, click on the settings and select custom from the drop down box. The custom settings window will open, and you can adjust the quality or proc amp settings. To use the batch recapture settings that are shown when you click the batch recapture **Settings** button, select "default" in the Settings column.

3 Note the DVA/LTA and DPS/LTV directories at the bottom of the window. When you create a batch recapture list these directories will be assigned automatically based on your current timeline location and the internal computer date and time stamp. However, if you want to record your high resolution clips in different directories, you may change them using the DPS/LTV and DVA/LTA buttons.

4 Verify that the correct tape is in the VTR.

5 To start the recapturing process, click on the **Capture** button. The timecode numbers under the Preview window turn red while the clips are being recorded.

6 Once batch recapture has finished recording all the new clips, Velocity automatically replaces the old clips on the timeline with the new clips.

When you replace clips on the timeline, all the transitions and effects that you had on the clips on the timeline are still there. However, any areas that needed rendering must be rendered again using the new, higher resolution clips.

Chapter 8
Collecting Media

When you gather your images into a Velocity project, they can come from many places. You can capture media using your Quattrus or Altitude hardware, or you can use media from a network. You can create images in a paint program or render animations in a 3D program. You can create DPT or ICG 32-bit still, rolling or crawling titles for real-time playback on your timeline. You can capture audio from a CD and import it as a WAV file.

To import files into a project, Velocity uses bins and galleries.

A gallery is a tab in a bin where you place media as an intermediate stage between creating that media and trimming it, adding effects to it and combining it with the rest of the clips in your project.

Basic Clip Collection

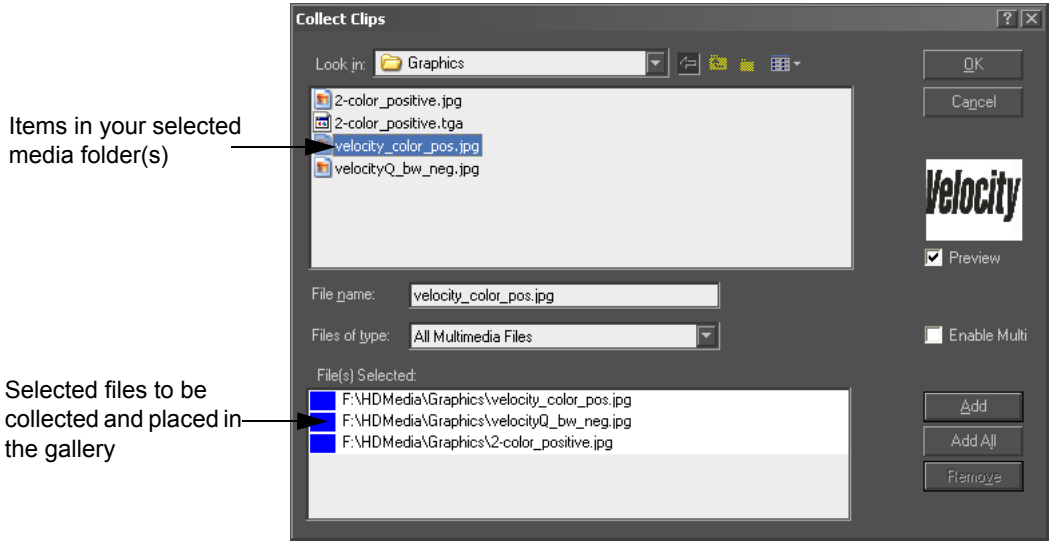
Supported clips are added to a gallery using the Collect Clips window. There are several ways to open this window.

Collect button

Collect from Video Drive button

- Click one of the two collect buttons in a bin's status bar at the bottom left corner of the bin. The **Collect** button opens the Collect Clips window dedicated to all of your local media, while the **Collect from Video Drive** button opens the window and shows the clips in your dedicated video media drive. You can also right-click in the gallery and select **Collect** or **Collect from Video Drive** from the menu.

- You can also use the main menu to select **File > Collect**, right click in the gallery and select **Collect** or **Collect from Video Drive**, or press hot-key F12 to open the Collect Clips window.



By default, all multimedia file types supported by Velocity in real time are displayed. If you want to collect a specific type of multimedia file, you can change the Files of Type section from All Multimedia Files to the specific type desired. Click the pull down arrow and highlight one of the file formats supported by Velocity.

The browsing function works the same way that Microsoft Windows does. Use the Look In field to choose a drive. Click a folder to open it. Click the Up Folder button to go to the next level up.

Highlight the specific file(s) you wish to import. Audio files are on a system drive and video files are on your dedicated SCSI media drive (usually P). If the video file has been moved and hence is missing from its audio counterpart, you will be offered a chance to find and replace it.

Preview - Displays stills or plays a thumbnail of video (also on output monitor), and plays audio if there is any.

Enable Multi - This allows the capturing of a video clip and its associated audio clips as a single file.

Add - Enters the files onto the "Files Selected" list. Select multiple files by holding down the CTRL key as you select, or sequential files by holding down the SHIFT key.

Add All - This button adds all the clips from the selected folder to the Files Selected list.

Remove - This button removes any selected clips from the Files Selected list. You may also double-click an item to remove it from the list.

When you have selected all the files you want to collect, select **OK**. This window closes and a progress bar counts as the selected files are added to the gallery.

You can also collect clips to the gallery by dragging them from the Windows Explorer or from another gallery.

Clip Formats Supported by Velocity

Velocity supports the following types of video, audio, image and animation formats for simple collection:

SD Video

LTA/DVA/LTV/DPS - The file format used by Velocity for video files. The LTV/DPS files are video images and the LTA/DVA files are audio files along with links to the associated LTV/DPS video files. When you use a LTA/DVA in Velocity, you are also using the associated LTV/DPS (video file). A LTV/DPS file can contain an Alpha channel.

Note: Version 9.1 of VelocityQ and VelocityHD support both DVA/DPS and LTA/LTV files natively.

P2 MXF / DV25 AVI - These formats are supported by Velocity and played back directly on the local Windows or networked drive where they reside. On systems with fast enough performance, real time preview playback can be achieved.

HD Video

LTV/LTA - The file format used by VelocityHD for video files. The LTV files are high definition video files while the LTA files are the audio files associated with the LTV video files.

Note: HD video files can only be in the LTV format. SD video files can be in both LTV and DPS formats.

Audio

WAV - Popular sound file format used by many desktop computers. Supports various sampling rates and resolutions as well as stereo or mono.

Image/Animation

BMP - This bitmap file format is native to Windows and commonly used by many Windows and OS/2 programs.

DIB - This file format was designed to be independent of specific hardware representations. Used as a common ground for various applications to transfer image information. This format can be read but not written by Velocity.

GIF - The Graphics Interchange Format developed by CompuServe for use on the Internet.

JPG - The Joint Photographic Experts Group (JPEG) developed this standard to provide a compression which minimizes the impact on visually important image information. This format provides one of the best high compression results available.

PCX - PCX was developed by Zsoft Corporation for one of the earliest PC paint programs, PC paintbrush. This is a common format for many desktop publishing programs. PCX can support 24 bit color.

PCT - Native to the Macintosh platform, PCT files can handle both vector graphics and bitmaps. This flexible format can support 24 bit color.

Photo CD - The Kodak Photo CD format is often used to carry high resolution images on compact disks. This format can be read but not written by Velocity.

TGA - Developed by TrueVision for their full color hardware, this format is widely used in professional image and color applications. This format can support 32 bit color files which include internal Alpha channel information.

TIF - Developed by Aldus primarily for scanned images, TIF files are supported by most popular programs. TIF supports both compressed and non-compressed formats. TIFF LZW compression is lossless. This format is popular on both PC and Mac platforms.

WPG - The WordPerfect Graphics file format was developed for use with the WordPerfect Word processor. This format can be read but not written by Velocity.

FLW - Fusion Flows can be stored in galleries and placed on timelines. When a Flow is placed on the timeline, it is automatically replaced by the DPS/DVA file that is indicated in its Saver, and is applied that duration. If the flow does not have a DPS/DVA file in its saver, it appears as a virtual clip.

DPT - Velocity 32-bit image files that can produce still, rolling or crawling titles. These files can be generated by Velocity's own Quick Titler, or Fusion's Text+ tool.

ICG - Inscriber 32-bit still, rolling and crawling title files.

PSD - Photoshop 24-bit and 32-bit image files.

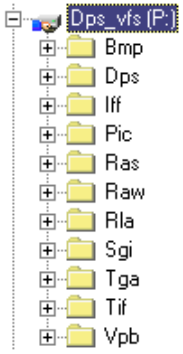
Virtual Tape File System

For optimum video playback, you should make use of the Virtual Tape File System (VTFS). This may most commonly be the P:\ drive, the dedicated video drive(s) attached to your Quattrus or Altitude board.

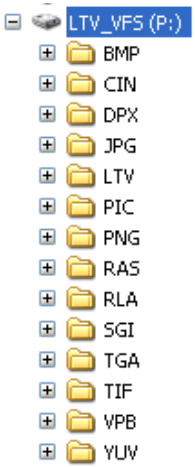
Your computer system contains system and mapped drives, and a dedicated SCSI media drive, usually P:\. The P drive contains only video.

Double click on that drive to see a list of eleven file types. No matter which file type you choose, you will look at the same data. The Virtual Tape File System provides eleven different formats to view the same data in.

Quattrus

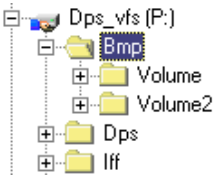


Altitude

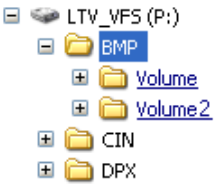


Double click on a file type to view the volumes. Volumes can be striped or single drives.

Quattrus



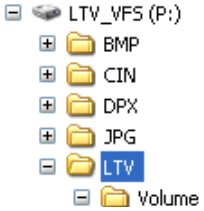
Altitude



Double click on a volume to view the folders in it. The same folders appear no matter what file type you chose.

Quattrus

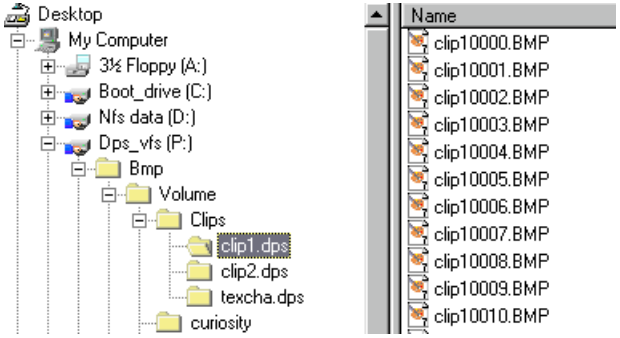
Altitude



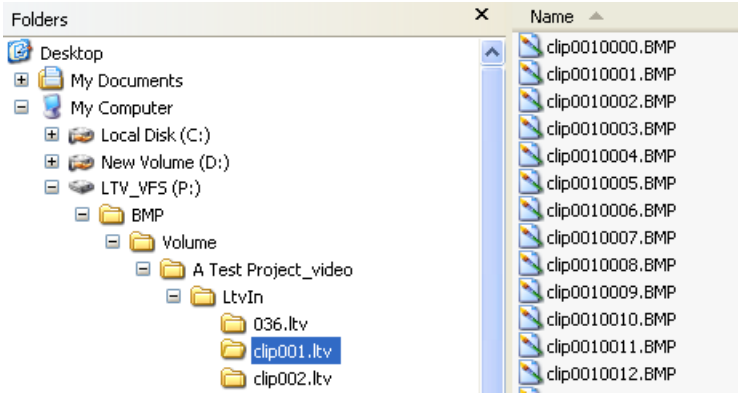
If you have chosen a still image format, you can see subset folders, each of which has a name that ends with .dps or .ltv.

If you look in a folder in a still image directory, there is a list of images, all bearing the same name prefix, all with an incremental number before the file type, which is the same as the file directory you have been looking in.

Quattrus

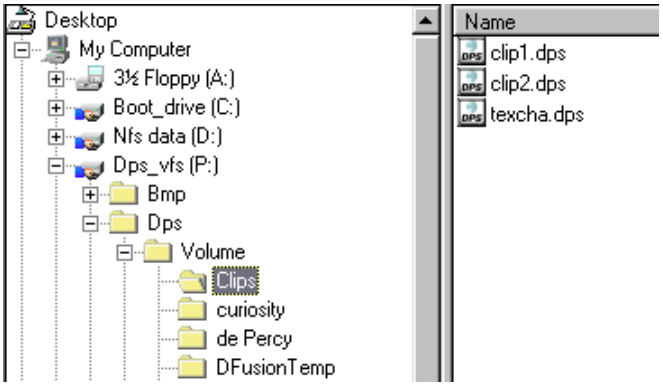


Altitude

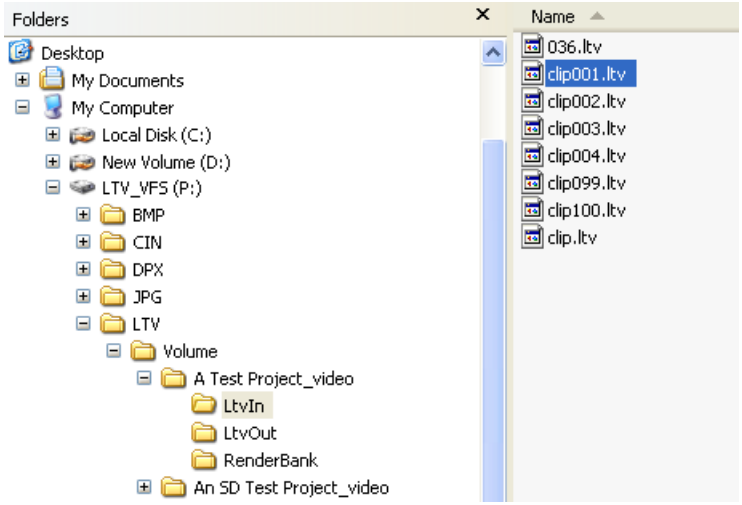


If you look in the DPS/LTV video format folder, you see video files, each one with the same name as a folder in the still image directory.

Quattrus



Altitude



When you open an image folder in the VTFS and view a still image, the VTFS dynamically creates a still image. Until you viewed it, it only existed as a numbered portion of a continuous stream of video.

For this reason, you cannot delete an image file in the VTFS. To delete a file from the VTFS, you must delete the DPS/LTV file from the Video directory.

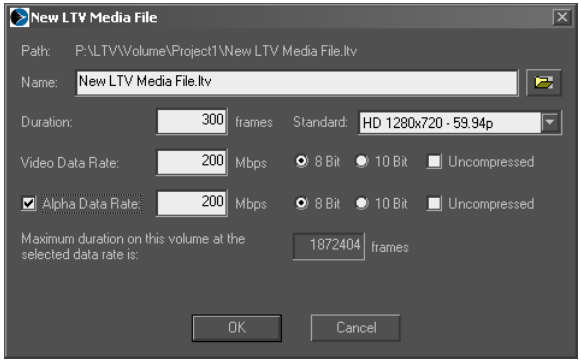
You can, however, save over a single image. Just open a still image from the VTFS in Photoshop, Paint Shop Pro or another image editing program, paint on it and then save it back. If you reload that frame in some other file format, it will retain the alteration, because it has been saved to the VTFS. If you look at the video, that frame will have your painting on it.

Note: When you capture or render video to a system or network drive, you are not using the VTFS.

Prestriping

You can render any supported file type to the VTFS from an animation program, as long as you pre-stripe a segment of your drive first. You have to have enough room for the contiguous video file.

To pre-stripe a portion of your media (VTFS) drive, right click on the desktop with the mouse, or on Windows Explorer. Select **New > DPS Media File** or **New > LTV Media File** from the menu that appears. The New LTV/DPS Media File window will open:



Enter a name for the file you want to create, enter a data rate and a duration, and the file is created. If you play it back in Velocity, it appears as a black clip.

Note: Depending on which hardware you are using, you may be limited for certain options while creating your new media file.

Working with Graphic Image Files

Graphic files are handled differently from video files in a number of ways.

Quattrus and Altitude allow you to use up to six images on top of video in real-time. You can extend image files to any length on the timeline without

altering the way they are interpreted or the way they use the hardware's resources.

The key difference between working with video and working with image files is video must be 720x486 (NTSC), 720x576 (PAL), or 1920x1080/1280x720 (HD) whereas image files can be any size. Image files are rescaled to fit the screen when they are imported.

If you create an image with a large circle in it in a paint program and then import that image file into Velocity and preview it to a video monitor, the circle appears slightly egg-shaped. That is because the pixels on your computer screen are square, while the pixels on your video monitor are slightly rectangular. For NTSC, pixels are higher than they are wide, and for PAL, pixels are wider than they are high.

To compensate for this difference in pixel shape, you should create your graphics at a 4:3 ratio, such as 720x540 pixels, and then resize your picture in a paint program to the raster size used by your video standard. This will give you an image that looks slightly squashed on your computer screen but that appears correctly on your video monitor.

When working with graphic files, Velocity natively uses 24-bit BMP files that are 720x480 (for NTSC), 720x576 (for PAL) or 1920x1080/1280x720 (HD). Anything that is not a 24-bit BMP file (not including DPTs, ICGs and 32-bit TGAs, which are handled natively) is converted into a BMP and stored on your system drive.

Temp File Creation

Temp BMP files are created whenever you preview or scrub a segment of the timeline that has a graphic file (not an ICG or a DPT though).

Once an image file has a temp BMP counterpart, Reset Clip becomes an available right click option on the clip. If you use Reset Clip, the reference to the temp BMP counterpart file is gone. A new temp file will be created for that image file the next time that image is part of a scrub/preview.

Any image file which has a temp BMP counterpart file created will allow for Reset Clip. The size of the image file does not have a factor in automatically recognizing changes to an image with the same name. Graphics files (with temp BMP counterparts) have to be manually reset by right clicking and resetting them.

You should not manually delete the temp BMP files. Velocity will not recreate them if they have been deleted manually.

If you are creating your own images for use on the timeline, your system drive space will be used most efficiently if you use BMP files that are

720x486/576 (NTSC/PAL), 1920x1080 (HD), 1280x720 (HD) or DPT files.

Note: Reset clip is also available for audio clips, so if you edit them in another program such as Sound Forge, they can be seamlessly replaced.

Collecting Video From a Computer Network

If your Velocity system is part of a network that contains other computers with or without Quattrus or Altitude hardware installed, you have two options for acquiring that media.

Copy Clips Across a Network

Using Windows Explorer, copy the video directly across the network into your dedicated media drives. Then collect these clips into the gallery. (For more information on copying clips to your SCSI media hard drives, see your Altitude or Quattrus User's Guide).

Collecting Clips from Across a Network

Collect clips into the gallery by browsing to find the desired clip(s) and adding clips to the Files Selected list just as you would collect clips from any other drive on the system. You may collect sound and video files.

These clips will not be actually moved onto your current system's media drives. They will be available for preview and playback, though the playback rate of these clips may not be as high-quality (in terms of frame rate and audio sync) as clips that are played directly from the hard drives of your dedicated SCSI drives. These clips can be edited just like any other clips in your project.

When you are ready to output a final project, you will want to localize the clips that you have used on the timeline (copy only the portions you actually used to your own computer).

Localize Clips From a Network

If your project contains clips you collected across a computer network, you should use the Localize function to move them to the machine you will be outputting from before final output. If you skip this step, you may find that your video playback skips frames when network traffic goes up. This goes for when you are outputting to tape and when you are creating a file using hardware accelerated options especially.

To localize clips, make sure the timeline is selected and select **File > Localize Media**. The Localize Media window opens.

Under Modes, select either original or compact.

Original - This option copies the entire clip from another machine.

Compact - This option copies just the trimmed portion of the clip. Note that Velocity views the clip in both the timeline and the gallery, so if the clip is untrimmed in the gallery, the whole clip is copied. If you choose Compact, you can add handles, which are extra frames before the in point or after the out point of the clip.

In the Handles section, check the Add Handle box to activate the Handle feature.

Head - The number of frames added before the marked In point of a clip.

Tail - This is the number of frames added after the marked Out point of a clip.

If you have multiple timelines and wish to localize media for all of them, ensure that **Localize media for all Timelines in this project** is checked. If space is a concern on your system or media drives, and you will only be outputting one timeline, then uncheck this option.

Use the browse buttons to select locations for your video files (usually your P: drive, where you must specify a volume and folder) and other media files, such as stills, audio, ICGs, etc. These should go in a system drive. If the location you choose does not have enough room for the files, a message pops up. Before you can transfer files, either delete some unnecessary files from the specified drive or volume or choose a different location for the files.

After you have made you settings, press the **Localize** button. As each file is copied to the specified drive, the progress bar at the bottom of the Localize screen displays the percentage completion of the transfer and the name of the file that is being copied. When the localization process is complete, a message appears on the screen informing you of its success.

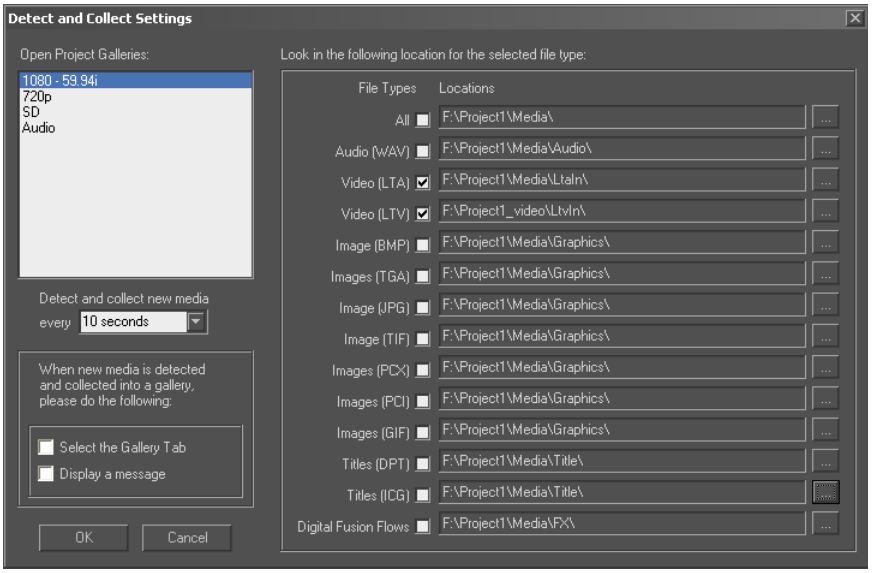
Detect and Collect

Velocity makes interchange between network editors in a collaborative environment easy with Detect and Collect, a tool that enable automatic detection and collection of new media files. This feature automatically detects new media files in user-specified directories, such as network

shares or a common media pool on a SAN, and collects them into the current projects' galleries.

To enable Detect and Collect, right-click in the gallery and select **Enable Detect and Collect** from the menu. Detect and Collect will now be enabled.

After you enable Detect and Collect, you may need to set or alter your settings in order to have the correct files be imported into your gallery. To access the Detect and Collect settings, right-click again in the gallery and select **Detect and Collect Settings** from the menu. The settings window will open.



The settings window will list the currently open galleries in your project. You can assign different settings for each individual gallery by simply selecting a gallery in the list and then going about assigning the settings for that gallery. To the right of that list, there will be a list of all the supported file types that you can select to be automatically detected. Select a file type to be detected by enabling the check box next to the file name. Then click on the browse button to choose which directory (or multiple directories) that represents the selected file type. Once you have chosen the appropriate directories, click OK and then those file types will be ready to be detected,

You can also choose to have all of your media files stored in one folder, in which case you would select the "All" check box to grey out all of the other file types. This means that whenever a new file is added to the specified folder for the "All" choice, it will then be added to your gallery.

You also have the option to choose how often you want Velocity to attempt to detect new media files. In the drop-down menu below the list of active galleries, you can choose the desired time interval of how often new media files will be detected.

There are two more options that you can choose to occur while new media files have been detected:

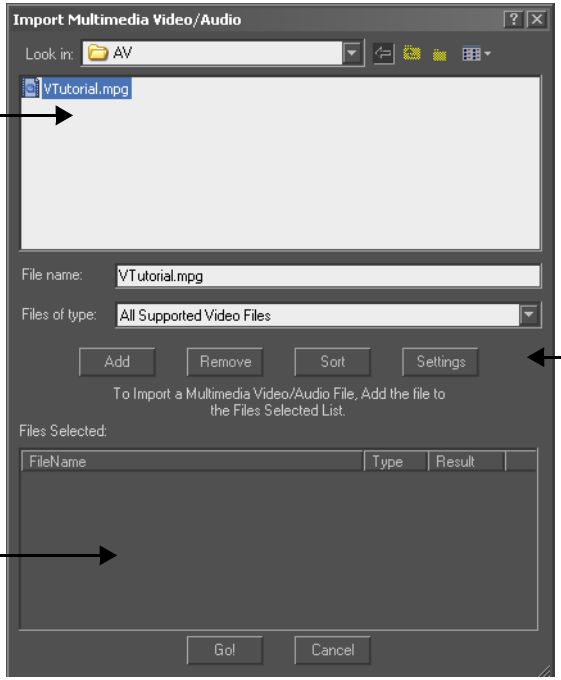
Select the Gallery Tab - When this is enabled and a new media file has been detected for a certain gallery, the tab of that gallery will be highlighted on orange, informing you that a file has been added to that gallery.

Display a message - When this is enabled and a new media file has been detected, the Warnings window will appear, telling you the name of the file that has been detected and the gallery it has been added to.

Import

The import options can be accessed from the main menu by choosing **File > Import > Multimedia Video/Audio** when a gallery bin is active, and then choosing Import Multimedia Video/Audio, Image Sequence, or Batch Image Sequence. The same options are available if you right click in the gallery and choose Import.

Browse to the file you wish to import, select the file here and click Add.



This screen looks exactly the same for multimedia and batch image sequence import.

The middle portion is slightly different for Import Image Sequence.

The files that are added are listed here. These are the files that will be imported.

Import Multimedia Video/Audio

There are many types of video and audio which Velocity does not directly support. You can import other types of video clips into a project, but before those clips can be used on a timeline, they must be converted into video/audio clips.

File types that can be imported	
mpeg	au
mpg	aif
m1v	aifc
mp2	aiff
mpa	mp3
mpe	midi
asf	asx
wm	wax
wma	m3u
wmv	wvx
avi	wmx
wav	rmi
snd	

Other file types can be imported using DFX+. See Chapter 22.

Before importing multimedia files from a CD-ROM, you may want to copy it to a local system drive (usually C or D drive). Depending on your system's speed, this may improve consistency of multimedia import.

To import audio/video multimedia:

1 Right click in the gallery and select **Import > Multimedia Video/Audio**. A window opens.

2 In the top section of the window, choose the files you would like to import. You can import several files at a time (Batch Import) or you can import one file. Buttons across the middle of the window help you choose files:

Add - Adds the selected clip or clips to the Files Selected list in the bottom half of the screen.

Remove- Select clips in the Files Selected portion of the screen and click this button to delete them from the list.

Sort - Reorders the files numerically.

3 Press the **Settings** button to choose parameters for your imported files. When you are done adjusting your settings, click OK to close the Settings window. See page 110.

4 Press the **Go!** button. A progress bar appears on the screen. As clips are converted, you can watch their progress. A video file is created for each item in the Files Selected list.

Files automatically have the root name (before the file extension, e.g., AVI) as the original file. If more than one original file has the same (for example, bob.avi and bob.wmv), the second file gets a number added to its name (bob2.dps).

The Result field of the File Selected section of the window keeps you updated about whether each file conversion is complete and successful.

Image Sequence

When you attempt to collect a series of sequentially-numbered image files in Velocity, each is added as a single still file into a gallery. However, this may not be the way you want to view these files. Velocity will use them more efficiently if they are converted to a DPS/LTV file.

Copy an Image Sequence to Velocity Media Drives

If you use an animation program which provides an image sequence output, or if you have used a video capture card which outputs a sequence of high resolution image files, you may need to convert the image sequence to a DPS/LTV file. After an image sequence has been copied to a DPS/LTV file, it can then be collected into the gallery and played back as a real time video file.

If you copy the image sequence to the Virtual Tape file system, it must be at a color depth of 24 bits (or 32 bits if you are also saving an Alpha channel) for certain file formats (please see your Quattrus or Altitude User's Guide for more information). Before you can copy an image sequence to your SCSI media drive, you must first create a new DPS/LTV Media File (page 106).

Import Image Sequence

If your image sequence does not meet the Virtual Tape file system requirements, Velocity can collect additional types of image sequences. The resulting image sequence will be collected into the VTFS and the gallery as a single clip which may then placed directly on the timeline. You may add video effects or sound or merge this clip with other clips.

You can import a 24-bit image sequence to your system drive, or to the Virtual Tape File System (VTFS). If the file is 32-bit video with alpha channel, you must copy it to the VTFS.

To import an image sequence:

1 From the main menu, choose **File > Import > Image Sequence**, or right click with the mouse in the gallery and choose **Import > Image Sequence**. The Import window opens.

2 In the top half of the screen, browse to the directory where the image sequence you wish to import resides. Choose the image sequence you wish to import. When you click an image file in the list, it appears in the Preview window.

Buttons across the middle of the window can help you select all the files required to successfully convert your image sequence to a DPS/LTV file.

Add - Adds the selected clip or clips to the Files Selected list in the bottom half of the screen.

Add All - Highlight the first frame in the directory and click this button to import all images in the directory.

Add Num'd - Adds a numeric sequence of clips. If the numeric sequence is broken, the list will end at the break.

Add Dir - Select a directory and do not open it, then press this button to add the entire contents of the directory to the Files Selected portion of the screen.

The separate frames will be placed in the resulting DPS/LTV file in the order they appear in this window, so if after selecting them you wish to reorder them numerically, click the Sort button.

3 If you have previously used Import Image Sequence, and created a settings Profile, you can load a Profile by pressing the Load button in the Profiles section of the screen. Otherwise, you can create your own. Click the Settings button to select various Image Sequence preferences. See page 110 for more information.

4 Select the **Import Sequence** tab. Enter a Clip name for your completed file. The DPS file extension will automatically be added. If you do not change the output (DPS) file name, an unique name will be assigned automatically.

5 Press the **OK** button to save your settings or Cancel to delete them. If you want to save the settings to use for future projects, you must select Save under Profiles, and you will be asked to give the profile a name.

6 Click on the **Import** button. A progress bar keeps you abreast of the computer's progress in creating the new file. When importing is complete, the new DPS file appears in the gallery. A single DPS/LTV file is created that contains all the items in the Files Selected list.

Batch Image Sequence Import

An import image sequence creates a single file for all the images in the File Selected list. To create multiple files, use Import Batch Image Sequence.

To create a batch image sequence:

1 Right click in the gallery and select **Import > Batch Image Sequence**. A window opens.

2 Press the **Settings** button to choose parameters for your imported files. When you are done adjusting your settings, press **OK** to close the Settings window.

3 In the top section of the window use the Windows browsing tools to choose the first frame of the file you would like to import. Click the **Add** button to place that frame in the Files Selected list. To remove a frame, click the **Remove** button. To reorder the frames numerically, click the **Sort** button.

Note that you do not want to place all the sequential files of the image sequence into the Files Selected list. When you click the **Go!** button, the images that follow the selected image in the image sequence are added to the Files Selected list and a DPS/LTV file is created.

4 Press the **Go!** button. A progress bar appears on the screen. As clips are converted, you can watch their progress.

A new file is created for each item in the list. The selected file is treated as the first item in the new DPS/LTV file, and the render continues until there is a break in the sequence. Then, it moves on to the next image sequence and creates a new DPS/LTV file for it.

Files automatically have the root name (before the file extension, e.g. flower.dps) as the original file. If more than one original file has the same name, the second file gets a number added to its name (flower2.dps).

Import Settings

Press the **Settings** button to open a tabbed window. The settings you choose will apply to all imported clips in the batch, so if you wish to use different settings for different files, you should set up a separate batch import for each different setting.

Batch Import Tab

This tab determines how to interpret non-standard image sizes.

Fit image size to video size - Depending on the size at which your images were created, you may need to adjust how they are fit to video size. If your image is larger, it may be cropped or squashed, depending on the option you

choose. If it is smaller, it may be stretched, or the extra area will be filled in with black. If you choose **Stretch**, the image will not maintain its aspect ratio. You can choose to scale the image to fill the normal screen's height and width, or to fill just the safe image or safe title area.

Resize method - Choose an interpolation method. **Bilinear** rescaling uses a simplistic filter to produce relatively clean and fast results. **Bicubic** rescaling uses a filter which produces a nominal result. **Nearest** crops or duplicates pixels as needed. This generally produces a somewhat crude but fast rendering.

Field Dominance - Depending on the system you created the images in, you may have to reorder your field dominance on import. Two methods are provided. Swap field Scanlines inverts fields 1 and 2, fields 3 and 4, etc. Shift Image down one Scanline plays the information for line 1 on line 2, etc.

Video Tab

Data rate - Choose the compression you would like applied to the video. If you will be rotoscoping the images and recording over them, you should turn on Fixed Field Size. This ensures that each frame will take up exactly the frame rate you have assigned, adding padding where required. If you choose Uncompressed, the other options grey out.

Importing Directory - The default location is determined by your project management settings. To change it, use the browse button.

If you wish to save the converted DPS/LTV video on your Velocity's system drives, in the main menu select **File > Preferences** and go to the **Playback/Output** tab. Place a check mark beside **Allow creating DPS files on system drives**.

Alpha Tab

If your original footage contains an alpha channel, you can import it by checking Enable on the **Alpha** tab. The alpha channel is stored at the same data rate as the video.

32-bit video with alpha channel requires one and a half times the drive space required for 24-bit video storage. An uncompressed video clip with alpha channel requires 40 MB of drive space per second of footage.

Audio Tab

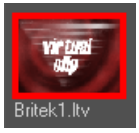
This tab is available for Import Multimedia Video/Audio only.

In this tab you may choose the Sample Rate, the Stereo/Mono preference, and Data Bit size of the audio file from the appropriate drop-down menus.

Importing Directory - The default location is determined by your project management settings. To change it, use the browse button.

DVA/LTA - if you check here, Velocity creates a DVA file with pointers to the DPS/LTV file. Otherwise, a WAV file is created. WAV files don't contain pointers to DPS/LTV files, as DVAs/LTVs do.

Virtual Clips



A virtual clip is a clip that is missing some vital portion (for example a DVA clip that is missing its DPS video portion), or a clip that has been created as a place-holder for media that has not been created yet. All image files, including 32 bit TGAs, ICGs, DPT files, DPS files, LTV files, LTA files and existing DVAs missing their DPS components can exist as virtual clips in the gallery or timeline. You can drag a virtual clip from the gallery to the timeline.

If you delete all media from your video drives before recapture, you can still open the project and it will be filled with virtual clips.

You can view virtual clips in your project at a glance, because in galleries they have a red border, and on timelines they are red bars.

Virtual clips can be dragged to the timeline and then edited either there or in the trim window, but cannot be loaded into the trim window directly from the gallery.

Creating a Virtual Clip

Right click in the gallery and select Virtual Clip from the menu. The Virtual File Creation window appears.

To create a virtual clip:

1 Type a name for the new clip and then use the Browse button to select a location for it. Choose the type of file (DVA, DPS, BMP or WAV) from the **Save as Type** drop-down menu. When you click the **Save** button, the new clip's name and path appear in the Name window on the Virtual File Creation window.

2 Select a duration for your new clip in seconds. When you place the clip on the timeline, this is the length it will have. You can edit the clip on the timeline, but this is the duration it will have when you use batch recapture to acquire its replacement clip, unless you edit it in the Batch list later.

3 If you wish to have audio as part of your clip, place a check mark in the Audio box. You can alter settings for clip audio, but you cannot change the numbers in the X and Y (width and height) boxes for the video.

4 Click the **Add to Gallery** button to save the clip to the gallery. The window stays open so you can create other virtual clips.

5 Click the **Exit** button to close the window without saving the currently selected parameters as a new Virtual clip.

Replace Virtual Clips

At any time, you can replace the virtual clips in a gallery or timeline. In the main menu, select **File > Replace Virtual Clips**.

A browser window opens for each virtual clip found in the currently active timeline or gallery. Browse to the location of each clip, and each clip is replaced on the timeline. If you have no virtual clips in the currently selected gallery or timeline, selecting Replace Virtual Clips does nothing.

It there is a file with the same name, extension and file location but different header information (i.e., a 44khx audio clip replacing a 48khz audio clip), the next time the project is loaded, that clip will become virtual and will have a "_0_ added to the name so the user knows that despite the clip having the same information, it is NOT the same clip.

Create 32-bit Image Files (TGA and PSD) in a Paint Program

You may also use 3rd party CGs or paint programs to create 32 bit and TGA, BMP and PSD files with an internal Alpha channel and collect them into the gallery to use as real time titles, logos, etc. If you have a paint program such as JASC Paint Shop Pro 6 or Adobe Photoshop, you can create these 32-bit (24 bit RGB file with an 8 bit mask channel). When imported into Velocity, place the 32-bit TGA file in a higher-numbered track to create an alpha keyed logo, title or graphic.

Create a new image at the size that you want. The image size in your Velocity timeline settings is a good place to start: 720x486 for NTSC, 720x576 for PAL, or 1920x1080/1280x720 for HD. Pixels in video are rectangular, whereas pixels in a computer screen are square. Hence, if you are creating a graphic for that which involves circles and you want it to have the same proportions as it will on video, set the aspect ratio of your image to 4:3.

Acquire images to work with via scanning or original image creation. To clean up the edges for a cleaner key, you can convert the images to less colors, then convert them back to 24-bits, not using Undo.

Select the background area. If you use a magic wand tool, you can hold down the shift key to add new areas to your selection. Some paint programs have an option for Select Similar. This selects only the portions of the image that are your background color.

Invert your selection and save it as an Alpha Channel. In Paint Shop Pro 6, go to **Selections > Save to Alpha Channel**. In Photoshop, choose **Select > Save Selection > Create Alpha Channel**.

If you created your image at a screen size other than that which you will ultimately use, resize it to the proper dimensions to match your video. For full-screen NTSC, use 720x486. For PAL, use be 720x576. For HD, use 1920x1080 or 1280x720.

Save your file as a TGA file. If your paint program asks if you want to save your image as a 32-bit or 24-bit TGA, select 32-bit.

This produces an image with a two-bit alpha channel - totally transparent and totally opaque. To make something that has varying levels of transparency, create a gray scale and save that to the alpha channel.

Delete Clips

To delete a clip, select the clip and press the Delete key on your keyboard or right click on the selected clip and choose Delete from the drop down menu. This clip will be deleted from the gallery, but not from the hard drives.

If you select **Delete from System** from the same drop-down menu (or Hotkey SHIFT + delete), the clip will be deleted from not only this gallery, but also from your media drive. In the case of a DPS or LTV file, the file is deleted from your dedicated SCSI media hard drive (if that is where you saved it). If you choose to delete a DVA/LTA file from your system, a warning message will appear. On this screen is an option allowing you to delete the associated video file as well.

To remove clips that are missing media (clips with black dots in their upper right corners) from your gallery. With the gallery as the active window, select **Edit > Remove Deleted Items** from the main menu. All thumbnails that are missing media are immediately removed from the active gallery.

Color Bars and Tone

You can create a graphic bars/pattern file and virtual wave file (tone) in the gallery. This lets you determine the length of the files and place the files on a timeline and trim them as though they were normal graphics or WAV files.

Color Bars Right click in the gallery and select **Create Color Bar/Pattern** from the menu. The Color Bars/Patterns window opens.

From the menu in the top left corner, choose which bar or pattern graphic you would like to use and click OK. A bmp file appears in the gallery. This bitmap has the same name as the pattern graphic you chose.

Drag that bmp file to the timeline, and edit it like any other bmp.

The image's default duration is determined by the default image length preference in the general preferences, but you can trim it or stretch it as you like, just as with any bmp file.

Note that the color bar patterns are all stored inside the Velocity folder (the same one that has DPSNLE.exe in it) in a folder called data\colorbars\PAL or NTSC, depending on which type of system you have. Should you need to place additional color bars or patterns on your system, save them (properly formatted) in this folder and they will appear on the list when you choose Create Color Bar/Pattern in the gallery.

Create Tone

Right click in the gallery and select **Create Tone**. The Tones window will open.

Choose a name. Drive Location is not important, as this is a virtual clip. Choose a duration, and a frequency, and click OK.

A Tone file appears in the gallery. It looks like any other wave file. Tone files are mono, but center panned, so you hear tone on both channels.

When you drag the tone file to the timeline, it can only be made shorter than the original duration specified when it was created.

Any audio edit you can make to a 'normal' wave file can be made into a tone wave file.

Chapter 9
Preview and Playback

Velocity previews and plays back your video in two places: on your computer screen in the Preview window, and on an external video monitor connected to your Velocity breakout box.

When you click on a video, WAV, transition or still or title file type in the gallery or timeline, it opens in the Source side of the trim window for viewing and editing.

When you play back your timeline, the Quattrus hardware allows you to play up to four simultaneous layers of video, or six titles if the hardware's DVEs are available. The Altitude hardware allows you to play two simultaneous layers of HD video and two dynamic graphics streams, or eight layers of SD video and eight titles. All three boards allow you to play up to eight layers of audio in real-time. If you render audio or video portions of your timeline, you can play back even more layers than that.

Your clip appears and plays in the timeline side of the trim window and on your external video monitor. You may want to leave the trim window in its contracted state, without the Trim functions showing.

Click here to expand into trim window

When you are not viewing individual clips, you can tidy up the interface by pressing the contract button.

To view video on an external monitor, connect that monitor to a program video output on your breakout box or breakout cable.

Hardware Configuration

Another external monitor, connected to a preview/key output (currently only available on Quattrus), allows you to see keys and secondary outputs.

To hear your audio, connect speakers to either balanced or unbalanced out on your breakout box or breakout cable.

Timeline and Playback Preview

Timeline playback and preview options provide fast visual feedback of the results of your editing. The Timeline Status bar at the bottom of the timeline bin provides useful information, as well as timeline playback controls.

Play All Clips (the entire timeline)

Timeline Play controls

- Previous clip/edit
- Back one frame
- Play/Stop
- Forward one frame
- Next clip/edit
- Play Loop

When you play back the entire timeline, all rendered transitions and effects are played as they have been set up. Unrendered sections of the timeline are displayed as black. If your project has been completed and you have rendered all sections of the playback range (or they didn't need to be rendered) this will provide you with a final output that can be recorded to tape.

Click on the timeline to activate the timeline playhead line.

Press the "Home" key on your keyboard to move the playhead to the start of the first clip on your timeline.

Click on the Play button in the status bar of the Timeline bin or press the space bar to playback the timeline from the playhead line onwards.

Another method of playing the entire timeline is to press the Play In to Out button with no In or Out marked on the timeline.

Timeline Auto Scroll

When you play the timeline, if the playhead moves off the right end of the screen (playing forward) or the left side of the screen (playing backward), the timeline auto scrolls. That is, the timeline refreshes its display to show you the clips that are under the playhead.

Note: If you begin making an edit during playback, auto scroll will be disabled.

Moving the Playhead on the Timeline

Moving the playhead around on the timeline allows you to mark in and Out points, to view your clips as a more finished project and to hear your audio using Analog scrub. There are several ways you can maneuver the playhead on the timeline from the trim window.

The timeline controls are as follows:

- The **Timeline Scrub Bar Control** allows you to scrub the playhead across the timeline.You can also place the mouse over the main Preview window, press and hold the mouse button and drag the mouse to the left to scrub backwards and right to scrub forwards on the timeline.
- The **Timeline Playhead Position** box displays the current timecode of the playhead on the timeline.
- The **Play / Stop button** plays the timeline from the current playhead position. Once in playback mode, it toggles to a Stop button to halt playback of the timeline.
- **Single Frame Back** and **Single Frame Forward** allow adjustment of the playhead position in single frame increments.
- **Previous** and **Next buttons** allow you to go to the previous or next edit on the timeline. The keyboard Hotkey for Next Edit is Page Down, and for Previous Edit is Page Up.
- When the **Play Loop** button is enabled, once the playhead reaches the end of the last segment on the timeline, playback will be looped and started again where the playhead was last placed. Playback will also be looped in a highlighted range. You may enable/disable play loop during playback.

Use the space bar to play clips in the left hand side of the trimmer.

To abort playback at any time, press the Esc key or the spacebar, or click with the mouse anywhere on the timeline.

When you scrub a clip on the timeline, the scrub will act as an exact mirror of playback. However, if you scrub over an unrendered region, you will not get a preview of the exact frame. To get a preview of an exact frame in an unrendered region, use hotkey D.

Hotkey Playback

Default Hotkeys

J = Play Reverse
K = Pause
L = Play

You can also play back from the Playhead using the J (reverse), K (stop) and L (play) keys on the keyboard.

Pressing J or L again (or holding it down) makes the playback progressively faster in that direction. These Hotkeys are user-definable. See Chapter 26 for information on how to re-assign them.

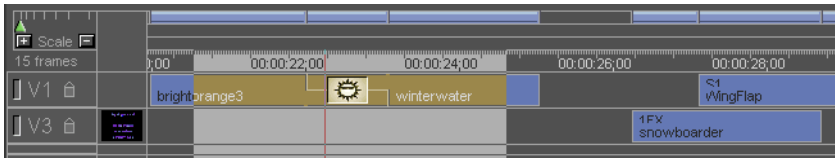
If you press the key for forward and stop (or backward and stop) at the same time, you can view the video at 6 frames per second.

Playing a Range on the Timeline

Making a highlight range produces a faster preview than timeline playback, since you will not have to wait for audio to render in areas that are not covered in the range.

Drag a range on the timeline by pressing down the right mouse button with the mouse over the timeline tracks and dragging it right or left.

If you want timeline ranges to play back automatically upon selection, in the main menu under **File > Preferences > General**, check **Auto playback highlighted range**. If you uncheck this and wish to play back a range, hold down the Shift key while selecting your range. Or, if Auto Playback Highlighted Range is checked, hold down the shift key while dragging the range. The range will not play back.



The light area is the timeline range

To abort playback, press the spacebar. To resume playback, press spacebar again.

If you create a highlighted range that stretched beyond the beginning and end of the segment you want to playback, the range will snap to the edges on the segment, removing the blank regions outside of the segment. If you want to toggle this function so it doesn't snap, hold BACKSPACE while right-click dragging.

All rendered sections of the playback range are played with their effects and transitions. Unrendered sections are played without effects or transitions (a "cuts only" version). If you have rendered all sections of the playback range

(or they are already rendered) this will provide you with a final output that can be recorded to tape.

If you wish to replay the highlighted range, select **Output > Play Highlighted Range** from the menu, or press default hotkey H.

All real-time or rendered transitions and effects are shown. Unrendered sections of the timeline are displayed as black.

When you highlight a range on the timeline, you can find out how long the range is by looking in the status bar at the bottom left corner of the timeline bin. "Highlighted" is listed, followed by the timeline range's In point, Out point and Duration in hours, minutes, seconds and frames.

Play In to Out

Mark an In point on the timeline. By whatever means you choose, move the playhead to your chosen In point and press Hotkey I.

Mark an Out point on the timeline. Move the playhead to your chosen Out point and press Hotkey O.

Press the Play In to Out button, or Hotkey P.

Play In to Out button

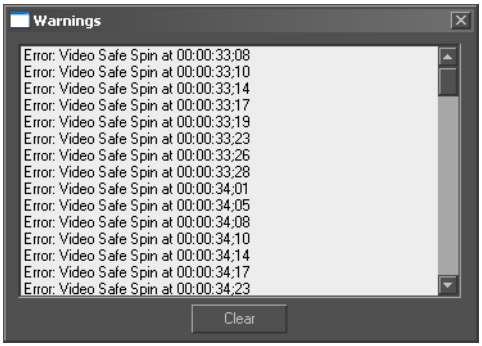
If there is no range selected with In and Out markers, the Play In to Out button starts at the beginning of the timeline and plays to the end. If just an In is selected, playback starts there and continues to the end. If just an Out is selected, playback starts at the beginning of the timeline and stops at the Out point.

When you mark an In and Out point on the timeline, you can find out how long the range is by looking in the status bar at the bottom of the screen. Duration: followed by a duration in hours, minutes, seconds and frames tells you the length of your play range.

Error Messages

If you wish to be notified when an error occurs in video playback, go to the main menu. Choose **File > Preferences** and choose the Playback/Output tab. Check "Open Warning window for any detected playback errors".

Whenever an exception occurs during playback, the Safe Spin button highlights to notify you. Click on the button to open a window listing the errors.



As the window fills with new errors, older errors are deleted.

Each instance of an error is reported, as well as the timeline timecode for that error.

Error messages usually alert you that there is a problem with multiple stream playback within your project. If you see them during output to tape, you may want to take these measures to improve your real-time performance:

- Localize media
- Optimize your audio and video drives
- Render multiple-stream portions of the timeline
- Move titles further apart

Normally you should not have to reduce the complexity of your timeline.

If a timeline timing error occurs, a warning window tells you the timecode location of the offending clip. Delete or replace the bad clip or transition.

Playback, Mute and Solo

Normally all timeline tracks play when you select a timeline range or drop the playhead and start playback. Normally all clips on the timeline, audio and video and stills, are blue.

Clips that will NOT play back because the track they are on has been muted or another track has been soloed turn a darker shade of gray than the timeline. Clips that will not play back because they lack media become virtual display as red on the timeline.

Mute or Solo works on video and audio tracks without respect to whether they have synced or linked clips.

For the purposes of Mute, tracks "a" and "b" (in expanded track mode) always share the same attribute. If you mute one, they both mute. For Solo, you can Solo one or both tracks (also in expanded track mode). However, if you are in single track mode and you solo a track, it will Solo the whole track, including any clips on it. If you solo tracks "a" and "b", transitions will still play back. You cannot Mute or solo the Transition track by itself.

Mute

Mute a track by clicking the Mute button on track's track header., or right-clicking on the track header and selecting **Mute Track**.

When a video or audio track is muted, any clips on that track will not play back during timeline playback. They will not be included in the render bar at the top of the screen. If there is nothing else to play in that segment, then the video will be black and/or the audio will be silent.

A clip on a muted track can still be loaded and trimmed in the trim window, and you can still apply effects to it.

Solo

Solo a track by clicking on the Solo button on the track's track header, or right-clicking on the track header and selecting **Solo Track**. If you are soloing a video track, all other video tracks will be greyed out but the audio tracks will all still be active and vice versa if you solo an audio track. If multiple tracks are chosen for soloing, those tracks play, their audio mixes, their effects layer, etc.

If you apply both mute and solo to a track, Solo dominates and the track plays back.

What to Expect with Playback of Various Clip Types on the Timeline

The video tracks on the timeline create layers. The highest numbered layer is on top. Normally, an alpha channel, chroma key, luma key, etc. allows you to see the layers underneath.

If you place a video clip on track V3 with no effects, that clip will play and you will not see the clips underneath it on V1 and V2. V2 and above (V3, V4, etc.) are Overlay tracks, which are normally for effects. Various types of clips can be expected to behave in various ways on the timeline.

If you place a 24-bit video clip on a higher track than another clip (V3 and higher) and place no effects on that clip, the resources used are equal to just the one clip. Other clips on the Timeline in that spot are ignored.

Compressed Video Clips

With Quattrus Hardware

If you have a DVE transition, and DVE effects on both clips, you can still put up to five titles over that portion of the timeline.

If you have a transition that is set up so as not to require rendering, you can place six titles over that transition if it is a wipe, or five titles if it is a DVE transition. These titles can overlap each other without causing the transition to need to be rendered.

Picture in picture and keying effects show at least two layers of video at once, and as such you can mix them with up to two other layers of video and three titles to fully use your hardware resources.

With Altitude Hardware (HD mode)

The Altitude hardware can support up to two streams of compressed HD video simultaneously in real time

Playback can be done using Altitude's online-quality compression format. HD storage requirements are large, but not every project needs to be fully compressed.

A single LTV file can have up to one DVE effect applied to it (if you have the DVE option installed). If you have a DVE transition, the two clips being transitioned can not have DVEs on them in order to be played back in real time.

You can play back up to two dynamic titles with an LTV clip in real time. Any additional titles will require rendering.

With Altitude Hardware (SD mode)

You are allowed to edit up to eight streams of compressed SD video in real time. A single LTV file in SD mode can have up to four DVE effects applied to it

You can play back up to eight graphics streams in real time. Any additional graphics or titles will require rendering.

Uncompressed Video Clips

Uncompressed clips are marked with an orange dot on the Timeline and in the Gallery. When working with uncompressed video, there are a few hardware restrictions to keep in mind.

With Quattrus Hardware

Where your video is coming from has a great impact on how many streams of video you can play in real-time, and the quality that video can have. If you play back from a pair of striped 15K SCSI drives attached to the controller on your Quattrus card, you should be able to play back four streams of uncompressed video without stuttering playback. If you have 10K SCSI drives, you can expect to be able to play back from them one to two streams of uncompressed video without glitching, or four streams of compressed video (depending on data rate and compression).

If you are playing back from a system drive or across a network with your Quattrus system, you may be able to play one or two streams of uncompressed video. If you are playing video across a network or from a central video server, you may be limited by the speed of the PCI bus, which means you can play up to two streams of uncompressed video or four streams of compressed video. You may also be limited by the speed of your network and traffic across that network. The hard limit is that of the PCI bus, but your network may be even slower than that.

If your Quattrus timeline exhibits stuttering when playing back three or more streams of video, you may need to render it, especially before outputting your final project. Mute one stream of video and hardware render, then unmute the muted stream. Or, in the main menu, choose **File > Preferences** and click on the Render Options tab. Place a check beside "Use three Streams".

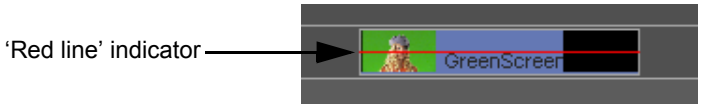
With Altitude Hardware

The Altitude hardware supports up to two streams of uncompressed HD video simultaneously in real time if your system is equipped with the SCSI-7000 module (see your Altitude hardware manual for more information). Altitude also supports up to eight streams of uncompressed SD video, which would also require the SCSI-7000 module. Altitude also supports playback of 8-bit and 10-bit uncompressed HD video. Please visit the Leitch web site (*www.leitch.coim*) for the latest hard drive requirements.

Playing Clips with Video Standards Different from the Timeline

There are certain cases where the hardware will be able to play back (in real time) clips with a different playback format than that of the current timeline playback setting. For example, in HD mode, if you have a 59.94i clip on a

29.97PsF timeline, the 59.94i clip will show a red line indicator going through it. This indicates that the clip may not look perfect upon playback,



and gives the user the choice to render the clip if needed. When rendering clips with different playback formats, the user can set the default field handling for these clips and use the 'Preferred Render Field' menu item.

Playing Non-Proprietary Leitch Video Files from the Timeline

There may be cases where you may want to enable real time playback or preview of non-real time clip formats globally to all applicable clips on a timeline. To do this to a specific clip that is non-real time, right-click on the clip and select **Realtime Playback > Enable**. This will enable real time playback for the clip as much as the system configuration allows, meaning that frames may be dropped during playback. You will be able to scrub the clip frame by frame as a preview method in real time. The **Adhere to Timeline Default** option is already checked my default, meaning that the only the clips that possess the same playback standard as the timeline is set will play back normally.

You can also enable real time playback/preview on a timeline basis to multiple clips by right-clicking in the timeline and selecting **Enable Realtime Playback**. This will enable real time playback/preview on any clips that show up non-real time on the timeline. You can then choose to enable or disable real time playback/preview on individual clips by following the steps in the paragraph above.

Audio Clips

Altitude and Quattrus can play back at least eight mono or four stereo tracks of audio in real-time. Depending on system speed, this number could increase dramatically.

To mute the audio of an individual clip select **Edit > Audio Clip > Mute Channels**.To mute the audio of an entire timeline track right click on the timeline track icon and enable the "Mute Track" check box. To mute the audio of the entire timeline during playback, uncheck **Enable Audio in Output > Timeline Settings** in the main menu.

For more information on audio playback capabilities, please refer to Chapter 13.

Virtual Clips

Virtual clips can be used as place-holders on the timeline. They can be opened from the timeline to the trim window, but not from the gallery to the trim window. Virtual clips can be created in the gallery (see Chapter 8 for details) and dragged to the timeline. Virtual clips appear red on timelines and have red borders in galleries.

Virtual clips are primarily useful on the timeline if you have deleted media in order to perform batch recapture and then wish to reopen the timeline to do some last-minute adjustments, or if you wish to have a placeholder for media that has not been created yet.

Normal clips in the timeline become virtual if, for example, you are doing editing of clips via a network and the computer they came from is removed from the network (someone turns it off). If an DVA/LTA file's corresponding DPS/LTV file(s) are missing when the timeline is opened, and you ignore the request to redirect the DVA/LTA to the current path of its associated DPS/LTV video file, the DVA/LTA file becomes a virtual file.

When you play back a section of timeline with a virtual clip in it, that virtual clip will be clearly marked with a bitmap. Any filters, transitions, etc. will be applied to the placeholder bitmap. You can't render a segment or range of a timeline that contains virtual clips. But if you replace that clip with a real clip later, those effects will be applied to the replacement clip.

32-Bit Video With Alpha Channel

On a Quattrus system, if you place one 32-bit file on the Timeline, you can only view two other streams of video simultaneously, or one other 32-bit video file. You can apply a regular speed change to a clip that has an alpha channel, but if you apply a DVE speed change, the clip requires rendering. You can apply DVE effects and/or proc amps to a clip with alpha channel, and you can place up to six still, rolling or crawling titles over a clip with an alpha channel.

On an Altitude system, if you are in HD mode and you place a 32-bit video clip on the timeline, it will use both streams of HD video playback in real time. If you are in SD mode, a 32-bit clip will still take two out of the eight available SD video streams.

Whether your system is Altitude or Quattrus based, clips with alpha channel on a Timeline have a 32 in parentheses. Clips with alpha channel in a Gallery, have a white dot along their top borders.

32-bit video files automatically have alpha channel turned on in the Timeline. To turn off alpha channel, right click on the clip, choose Apply FX, select DVE Keys/Borders/Masks and select None. It doesn't "give back"

the DVE channel, meaning that whether you use the alpha channel or not, if it is present the clip is treated like a 32-bit clip.

To view or turn off the alpha channel of clips in a gallery, right click in that gallery and choose **View > Alpha**. To view or turn off the alpha channel of picons on the timeline, in the main menu choose **File > Preferences** and click on the General tab. Press the Timeline Clip Display button and change your settings. To view or turn off the alpha channel on the Eyecon display, right click in the top of the eyecon column of the timeline. Choose Eyecon View Options, and make your settings in the window that opens.

Playback of Unrendered Segments

A blue bar above the video and audio tracks of the timeline window shows you which parts of your project are ready to play back or make into a movie without any further processing. When you are using Velocity, DVA/LTA clips, DPS/LTV clips, and real-time transitions do not need further processing and have a blue bar showing above the tracks.

Dark yellow-colored segments are real-time segments that use too many resources, usually due to the time it takes Velocity to switch between clips and/or images. If you move an image by a frame or two, the resource can usually be freed up (turned to a blue real-time segment).

If you use rendered transitions and rendered effects, the blue bar turns the same color as the background. If you layer more clips and effects than Velocity can process in real time, the render bar turns light blue. Light blue and gray sections need to be processed, or rendered, before they can be played back or made into a movie. Any un-rendered parts of your movie will be rendered as part of the processing when you make a movie to a digital video file. If you want to render an unrendered section, you may double click in the gray or light blue area of the render bar and a series of windows will guide you through the process. Processed sections have a dark blue segment in the render bar. If you move clips with a dark blue render bar, or you change the effects or transitions used, the clips will have to be rendered again.

If a section of your timeline requires hardware (real-time) or software rendering, it plays back as black. However, if you place the playhead over a frame that needs to be rendered, press the D hotkey to show a preview of that frame.

More information on rendering can be found in Chapter 21.

FLW File

If a flow file on your timeline has been rendered, it plays back like a normal DPS/LTV clip. If it is not rendered, it is treated like a virtual clip.

Timeline Output Settings

When you exit Velocity, all Preference settings are automatically saved for future use. You do not have to reset everything each time you start Velocity.

Before you begin any video editing project, you will want to set up your timeline settings so that when your project is output, it will appear the way you expect. For example, choosing the wrong field order at the beginning of a project can waste hours of rendering time if you have a lot of very complex effects.

Velocity gives you a great deal of control over how your project is saved. The default settings will save your movie using Altitude/Quattrus settings. The settings ar the same for both.

From the main menu select **Output > Timeline Settings**. The Timeline Settings window will open.

These settings determine how your final movie will be output if you use Print to Tape or just play back from the timeline to videotape. These settings also determine what you will see when you preview using DPS/DVA/LTV/LTA files to a video monitor or to the VGA monitor's preview window.

Note that some settings are available for only some compression selections - for other selections the settings will be grayed out.

If you are outputting via Altitude or Quattrus hardware, you should use the pre-sets contained in the Altitude or Quattrus settings file. These are found by clicking the ">>" button at the bottom of the window. The default OST-DPS files for NTSC and PAL can be found in the Velocity\Samples folder.

Timeline Settings: Video

To alter the video settings from the standard you have chosen, press the Settings button in the Video section of the window.

Frame Rate - Measured in frames per second. Go to the General tab in Preferences and refer to the Playback Video standard drop-down menu for a list of supported frame rates.

Video Width and Video Height - These boxes show the frame width and height of the video output image measured in pixels. Go to the General tab

in Preferences and refer to the Playback Video standard drop-down menu for a list of supported standard sizes.

Field Handling - Video frames usually consist of two fields, the odd field consisting of all the odd numbered horizontal lines and the even field consisting of all the even numbered horizontal lines. To achieve smooth output results, you must set the field handling to match your playback hardware. You may set it to "No Field", "Interlaced, Fld Order A" (for even field dominance where the even lines are read first), or "Interlaced Fld Order B" (for odd field dominance). Altitude and Quattrus hardware use Interlaced Field Order B for NTSC and Field Order A for PAL and HD. To check the field handling, output a short transition (such as a simple wipe) and visually check for smoothness. A jerky edge for transitions indicates that the output was created with a reverse field order or without fields all together. Switch to a different field handling option and try again.

Back in the Timeline Settings: Video screen, when you change these settings, you can save the result as a settings file. Click the >> button at the bottom left of the screen and choose Save. A window opens so you can choose a save location.

If you have previously saved a settings file, you can reload it by pressing this button and choosing Load. There are two settings files pre-created on your system for outputting to a PAL or NTSC Altitude or Quattrus board.

Timeline Settings: Audio

If you have the Quattrus hardware, the audio settings will show the Sample Size, Sampling Rate, and Channels - These may be adjusted according to the quality of the sound you want to output.

If you have the Altitude hardware, the settings will always show the audio at 16-bit, 48000 Hz. You will not be able to adjust the audio settings through the Timeline Settings window.

Externally Monitoring Audio Levels

When you monitor your output levels, you are monitoring the master volume. This corresponds to the two master sliders on the VU meter.

There is a lot of confusion regarding what constitutes "the right level" for audio when you are monitoring it externally or outputting it to tape or file. A lot of the confusion arises from the proliferation of different devices and scales for monitoring audio levels. Velocity uses dB.

0 dB is NOT a reference level! Decibels (dBs) logarithmically measure relative power. +3dB equals double power, and zero dB means no change in power, or equal power.

In the early days of audio communications, a standard level of 1mW into a 600 ohm line was adopted. This was referred to as "zero dBm" (0dB = 1mW/600ohm), so signals could be measured relative to this power level and the results could be expressed in dBm.

In voltage terms, 0dBm = 0.775V. This is still a common analog measurement reference today. Many audio circuits don't always drive 600 ohm lines (e.g. higher impedances require less power at the same voltage), so the more common reference standard is dBu, where 0dBu = 0.775V into any impedance.

One of the most common electro-mechanical meters is the Bell Lab's VU, which measures Volume Units. Here, the zero level (0VU) is equal to + 4 dBm. The difference between volume unit values is equivalent to dBs (e.g. 0VU is 4dB higher than - 4VU). 0dBu is equal to - 4VU (or - 4dBVU, or - 4dBvu).

In the UK one of the most common meter types is the BBC-style PPM. This has no dB values indicated, and instead has equally spaced markers labeled from one to seven, with four at dead center. Four on a PPM is equivalent to 0dBu (or 0dBm), and the rest of the scale is as follows:- from 1-2, and 6-7 the difference is 6dB, and from 2-3, 3-4, 4-5 & 5-6 the difference is 4dB. So, for example, PPM 6 = +8dBu, and PPM 1 = -14dBu. Program material is usually limited to peak at PPM 6 (+8dBu).

For digital systems there is no audio distortion right up to the point of saturation, after which hard peak clipping occurs. All digital systems behave in exactly the same way in this respect, and so it is common for meters on digital systems to use the clipping point itself as a reference, which is known as dBfs (meaning dB referred to Full Scale). Clearly a reference level which represents the onset of digital clipping can't be equivalent to analogue line or tape-based flux levels which are all set below the onset of distortion.

The EBU in Europe and NAB in America came up with slightly different recommendations for handling digital audio levels. The EBU recommends 0dBu = -18dBfs (= PPM 4), and the NAB has 0dBu = -20dBfs (or 0VU = -16dBfs). Peak levels are therefore expected to be about 8dB higher at around -10dBfs. The extra 10dB headroom is for fast transients that meters, operators and even compressor/limiters don't always catch.

Setting Audio Levels

Decibels (dBs) are simply a logarithmic measure of relative power. Zero dB means no change in power, or equal in power, and +3dB equals double power.

When setting audio levels you will not want to exceed the audio power levels that can be handled by your deck. A useful measurement of audio power is the dBu, where 0 dBu is defined as 0.775V.

Headroom and Reference Points

All analog mixers, and analog Sony Betacam decks set their 0 dB point at + 4 dBu. All analog Betacam tape systems have a peak program level of + 8dB (+ 4 dB), or 8 dB of headroom. When you use an analog tape system to record audio, it does not just stop at + 8 dB. What actually occurs is that you have a companding effect, which means you can record much higher transient peak levels without hearing audio distortion.

In contrast, digital audio systems are non-forgiving. Once clipping occurs (when the audio level exceeds the headroom), the data may be corrupted to the point of being totally unrecognizable. Therefore, additional headroom is needed in the digital world to handle the audio level spikes which may cause clipping. This is why digital systems set their 0 dB point at – 20 dBfs in NTSC and – 18 dBfs in PAL.

Analog audio companding is the fundamental reason that the 18-20 dB digital headroom available from the Altitude or Quattrus hardware can be used with typical analog decks such as the Sony UVW- 1800, which has only 8 dB of analog headroom (from – 4 dBvu to + 4 dBvu). When an audio signal approaches the maximum allowed analog value in this type of analog equipment, companding squeezes the upper ranges so that saturation occurs without break up of the audio data.

Example: Setting Record Levels on a Sony UVW-1800

Play a 1kHz test tone at –20 dBfs (NTSC), with the level shown at the dividing line between green and yellow-green on the Velocity VU meters. You may play this tone by enabling the Velocity Color Bars and Tone and playing back the timeline (The resulting audio output level will be 0.775 Vrms (or 0 dBu) on the Altitude or Quattrus board.).

On the analog deck, adjust the audio input level so that the test tone is at – 4 dB on it's VU meters (corresponding to 0dBu). This will give you 8 dB of analog headroom to squeeze in the Altitude or Quattrus hardware's output.

To keep from over-driving the analog recording deck, try to keep the audio playback level from Velocity to lower than roughly – 12 dBfs (or within roughly 8 dB of the – 20 dBFS point). Transient peaks that reach above – 12

dBfs should be handled by the companding characteristics of the deck as long as nothing goes as high as 0 dBfs (digital clipping).

Scrub

Scrub lets you view rendered and unrendered sections of video, seeing individual frames of unrendered sections in the Preview-trim window on the computer monitor. The quality and speed of your output depends on your VGA card and drivers.

Scrubbing helps you to make precise edits. To select the audio scrubbing rate, select **File > Preferences** from the main menu and select the General tab. The scrub resolution setting lets you select scrubbing play times from 1/30th to 1 second. The larger the number, the more audio you hear during scrubbing since you are playing longer sections. Also, the sound is clearer. With smaller numbers you hear less audio and the sound is less distinct. Your choice depends on the type of audio you are editing and your personal preferences.

If, in the main menu, you select **File > Preferences** and click on the Playback/Output tab, there is an option entitled "Skip preview non-realtime segments" during scrub. If you turn this on, during scrub playback, segments that need rendering display as black. If you turn this off, Velocity attempts to preview render individual frames, which can slow down scrub performance.

Scrub All Clips

With the mouse over the tracks in the timeline, press the left mouse button down and hold it down while dragging the mouse left and right. The active playhead, a red and white dashed line, moves back and forth under the mouse.

You can hear the audio and see the video as the playhead moves. You can also use the Scrub bar on the Timeline status bar to scrub the Timeline playhead.

Scrub a Single Clip's Audio

To scrub a single clip's audio, solo the track(s) the clip resides on, and then scrub with the playhead.

Scrubbing will be also be enabled when you are using the Razor tool, the Index tool, or when you are trimming the clip by dragging the edges.

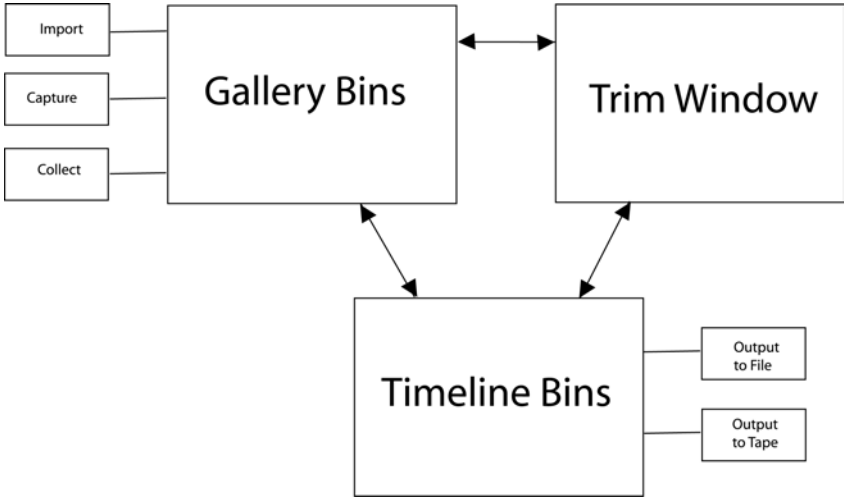
Analog Scrub Simulation

To activate Analog Scrub, hold down the Shift key and scrub the timeline from the trim window. Audio under the playhead sounds, rather than a series of blips, like a tape machine speeding up and slowing down. This allows you to hear the audio more clearly when playing it slowly, fast and even in reverse.

You can also perform analog scrubbing by using the analog scrub bar in the status bar.

Chapter 10

Moving Clips Between Bins and the Trim Window



Clips enter Velocity by being captured, collected or imported into a gallery. However, editing involves trimming clips and placing them in sequences. This is done primarily in two areas of the screen: the trim window and the timeline. Using the timeline and trim window together, you can edit clips, preview different video/audio arrangements, join different clips with transitions of your choice, add special effects, and add supplementary audio tracks.

There are numerous ways of moving clips between the different regions of the Velocity screen, and selecting the methods that work best for you can greatly increase the speed with which you produce your final projects.

Gallery to Timeline

Clips can be moved straight from the gallery to the timeline. If you prefer to trim clips on a timeline, this is probably the method for you. See Chapter 12 for more information on how to edit clips on a timeline.

Clip Placement Rules

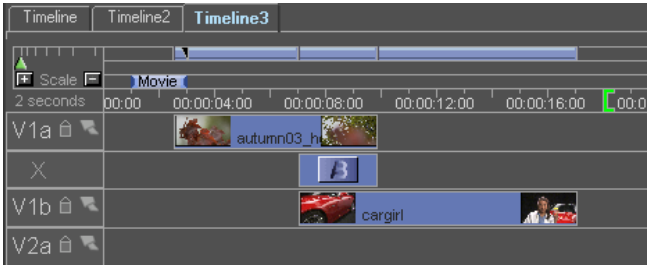
If you are in expanded track mode (where a transition track separates two video tracks), place your clips on tracks V1 and V2 so transitions can be formed between them. Place overlay clips on additional video tracks below and audio only (WAV) clips on audio tracks. If any part of the clip overlaps with any one other clip on the same track, the move will not be allowed unless you are trying to create a transition in Swap A/B Track mode. If you are not in Swap A/B Track mode and the placed clip overlaps two other clips on the same track, the Insert Clip Options window will open to allow you to decide how you want to increase the size of the gap between the two clips or decrease the length of the inserted clip

Tracks with higher numbers are superimposed on top of tracks with lower numbers. Foreground clips, containing the image/video to be superimposed, must be placed on a higher-numbered track than background clips. If the background video is placed on tracks V1 and V2, the foreground clip must be placed on track V3 or greater. If there are no background clips, then the background is black.

You can have multiple layers of clips with effects. For example, you might use multiple layers to have title tracks on track V6 and V7, which overlay video with perspective effects (resize) on tracks V3, V4 and V5, and finally the background video on V2. Keep in mind you would have to render that.

If you place a clip on a higher-numbered track and do not apply an effect to that clip, it will obscure the clips in lower-numbered tracks. Video clip placement on the timeline follows a few simple rules.

- Clips that overlap between tracks V1 and V2 use transitions to change from the image on one track to the image on the other.



- Tracks with higher numbers are viewed by the "camera" first during playback or when making a movie. Clips on V5 will be seen in front of clips on V1 through V4.
- Tracks V3 and greater are overlay tracks where transparency or other effects can be assigned using earlier tracks as backgrounds.
- The clips on all video tracks and transition tracks can have video effect filters attached to them.
- Velocity creates a temp BMP file when the user previews or scrubs a segment of the timeline that has a graphic file that is not a BMP meeting certain specific specifications. See Chapter 8 for more information on Graphic file handling.

Note that the timeline can also be viewed with the "top" image at the top of the screen by going to the main menu and choosing **File > Preferences**. Select the General tab and place a check mark beside Display video tracks stacked upward.

Auto Adding Clips to Timeline

In gallery Thumbnail view modes, you can only drag one clip at a time to a timeline.

If you wish to place multiple clips simultaneously on the timeline, select the clips in the gallery and choose Auto-Append from the right click menu or the edit menu, or press the Hotkey F. The clips are added to the timeline in the order they were in the gallery.

If the clip is a video clip, it is placed on V1 directly after the last clip on the video tracks. If the clip is an audio clip, it is placed on A1 directly after the last audio clip on the audio tracks. If the clip has both video and audio, it is placed after the last video clip on the timeline, with the audio placed on the first available (or in the case of stereo audio, the first two consecutive avail-

able) audio tracks. If no audio tracks are available, you cannot add the clip in this manner.

To add multiple clips with transitions instead of cuts-only, use the Add with Transition Hotkey, which defaults to 0 (zero). Clips are added with default length specified in Trimmer settings.

Copying Clips from a Timeline to a Gallery

To copy a clip or clips from a galley to a timeline, choose the gallery where you wish to place the clips. This may involve creating a new gallery (Right click in the gallery and select **Gallery > New**). Or it may involve just choosing a gallery. Next, select the clips you wish to copy. If you wish to copy the entire timeline to a gallery, from the main menu choose **Edit > Select All**. Right click in the timeline and choose Add to Gallery, or press default Hotkey F. The clips are added to the gallery in the order they appear on the timeline.

Moving Clips into the Trim Window

The clip is automatically opened in the left (trim) section of the trim window. If the trim window is in contracted mode (with only the Preview monitor displayed), the trim section of the window automatically opens.

Gallery to Trim Window

Virtual clips cannot be loaded into the trim window from the gallery. To trim a virtual clip, first drag it to the timeline. From there it can be moved to the trim window or trimmed directly on the timeline.

To open a clip in the trim window, double click on it in the gallery, or click on it in the gallery and drag it to the trim window.

Trim Window to Gallery

If your clip originally came from a gallery and you wish to return it to that gallery, press the Enter key. The new In point, Out point, etc. are applied to the clip in the gallery. If you reload this clip into the gallery later, it will launch retaining these settings. The next clip in the gallery automatically loads.

Timeline to Trim Window

To open a clip or transition in the trim window, double click on it in the timeline.

To open a simultaneous edit into the trim window, hover the mouse over the edit point on the timeline. Press the Shift key and hold it down. The mouse cursor changes to an "Out/In" flag. Double click on the edit point.

Moving Clips With/Without Audio/Video

You may choose to move clips from certain areas in Velocity and not want the audio or video to be included. The hotkeys for moving clips this way are:

ALT+A will leave audio only

ALT+V will leave video only

ALT+V+1 will leave video and left audio

ALT+V+2 will leave video and right audio

Using the Apply Button

Apply button

If the clip has been imported from the timeline to the trim window, there is only one button, labeled Apply. When you trim a clip from the timeline, you cannot change its location by Inserting or Overwriting it. You must return it to its original location, using the new In and Out points that have been assigned to that clip.

The next clip to the right of the clip (or, if there are multiple clips that begin simultaneously on the timeline, the clip on the next lower track) is automatically opened in the trim window unless you hold down the Alt key while performing the Apply function (or, unless you have turned off the Auto Advance feature in Trim Window Settings).

Using the Drag to Timeline Button

Drag to Timeline button

If the clip was moved from the gallery to the trim window, you can use the Drag to Timeline button. It is located at the top of the trim window.

The clip moves with the mouse cursor to the timeline. When you release the left mouse button, the clip is dropped into that position on the timeline (assuming it is a legal position, not occupied already by another clip). The clip's marked In and Out points are maintained.

Marking a Position on the Timeline

Before you can insert or overwrite your clip to the timeline, you must assign a position for the clip. If you do not mark a position on the timeline, inserts and overwrites are placed at the playhead. Add with transition is placed at the end of the timeline. Four-point insert and fit to fill provide an error message and are not allowed.

The controls at the bottom of the timeline allow you to move the playhead, assign In/Out points, etc. on the timeline.

Use the scrub bar, mouse controls and play controls to position the playhead on the timeline.

Mark an In and/or an Out with the mark In/Out keys, or use the Hotkeys (defaults are I for In and O for Out).

To check your In and Out marks, you can use the Q key to go to the In point and the W key to go to the Out point.

Note: You cannot place the Out before the In on the timeline.

Choose Your Track Patching

Directly to the right of the preview slider on the Source Monitor side (left) of the Preview Window, there are two small white boxes.

Note: The white track patching boxes will only show in the trim window if you load a clip into the trim window from the gallery. They will not show up if you load a clip from the timeline because that clip already has already been assigned a track.

One box indicates a video track (V followed by a number) and the other indicates the audio track. (If your clip has stereo audio, the track following the selected one will also have audio applied, though it is not listed.) These indicate the track that will be affected for all operations that only affect one track.

To change the track patching setting, click on the white box you wish to alter to open a drop down menu listing the tracks you can choose from. If the track you wish to patch to is not listed, you must add tracks to the timeline (see Chapter 5).

There are also Hotkeys for assigning track patching. To change the video track patching, press the CTRL key and hold it down while pressing a number, from 1 - 9, on the number pad (right side of the keyboard). If you are in expanded track mode (V1a, V1b), press CTRL + a number for the "a" tracks, and press ALT+CTRL+ a number for the "b" tracks. To change the audio track patching, press the ALT key while choosing the number corresponding to the audio track you wish to assign track patching to. The number in the appropriate track patching window updates. If there is no timeline track to correspond to the number you have typed, nothing happens. If you have more than nine tracks, you can't assign track patching to the highest tracks via keyboard shortcuts.

The audio track patching options also include None, which allows you to patch solely the video to the timeline.

Choose Your Insert/Overwrite Option

If you don't assign In and Out marks on the timeline the current playhead position is used for both Insert and Overwrite.

Insert from In Point 

Insert from Out Point 

Overwrite from In Point 

Overwrite from Out Point 

Transition 

4-point Edit 

Alternate style 4-point Edit 

When you use these buttons to place a clip on the timeline, the next clip is loaded from the gallery. The trim In and Out marks are saved in the gallery, as well. To make best use of the "auto load" feature from the gallery, put your clips in order in the gallery before beginning the trim and insertion process.

When your audio and video have the same In and Out points, the video and audio both align to the marked point on the timeline. It is more complicated when the audio and video have different in and/or out points. Basically, the Insert, Overwrite, Fit To Fill, 4-Point Insert and Transition options from the trim window all use the video In and/or Out points on the timeline, and the audio is inserted as well as it can be to maintain sync.

If an insert will destroy the sync setup of clips already on the timeline, this action will not be allowed and a message will appear. You may need to select a different track to patch the audio onto, so as not to destroy the other clips' sync relationships.

Three Point Edit

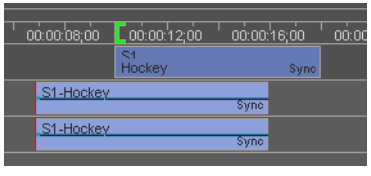
Assign three points -- In and/or Out on the timeline and In and/or Out point on a clip in the Trim Table. Use them to place the clip on the timeline, automatically trimming the fourth point. If there isn't the right amount of material to make the insertion or Overwrite fit perfectly, there are various methods of filling in the extra space.

The track in which the clips are inserted is determined by the track selected in the Target Track pull down box.

If only an In or Out point is marked on the timeline, the In and Out point marked on the clip will both be used. If neither an In or Out point is marked on the timeline, then the clip will be inserted at the position of the timeline playhead.

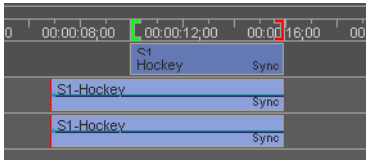
Insert from In Point - If an In and Out point are marked on the timeline, the clip in the Trimmer will only use the clip's marked Video In point.

If you have a clip where the audio starts before and ends before the video and you Insert from In with an In marked on the timeline, the clip's Video In matches with the marked timeline In. Audio is intact with the exact relationship that was determined in the trim window.



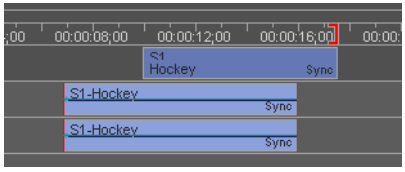
If you Insert from In with both an In and Out marked on the timeline, the clip's Video In point matches the timeline In point (and the audio relation-

ship is maintained at the In), but the section after the timeline Out point is cut away as if a slice down the timeline has occurred.

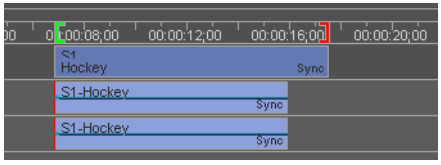


Insert from Out Point - If an In and Out point are marked on the timeline, the clip in the Trimmer will only use the clip's marked Video Out point.

If a clip is trimmed so the audio starts before and ends before the video and you Insert from Out with only an Out point marked on the timeline, the clip's video Out point matches the marked timeline Out. The audio remains intact, with the exact relationship to the video as in the trim window.



If you Insert from Out with both an In and Out marked on the timeline, the clip's Video Out point matches the timeline Out point (and the audio relationship is maintained at the Out), but the section before the timeline In point is cut away as if a slice down the timeline has occurred.



Ripple button (default hotkey is Shift P)

When using Insert, if Ripple All is on, clips or portions of clips to the right of the cursor on all tracks are moved farther to the right, to make room for the clip (making the overall program longer). If Ripple All is unchecked, only the track you are inserting into will ripple.

Overwrite from In - If both an In and an Out are marked on the timeline, the clip in the Trimmer will only use the clip's marked Video In point.

Overwrite from Out - If both an In and an Out are marked on the timeline, the clip in the Trimmer will only use the clip's marked Video Out point.

When using Overwrite, if only an In or Out point is marked on the timeline, the In and Out points marked on the clip will both be used. If neither an In

or Out point is marked on the timeline, then the clip will be overwritten at the position of the timeline playhead.

The track in which the clip is overwritten is determined by the track selected in the Target Track pull down box.

If you have audio and video trimmed to different in and out points and do an Overwrite, it works the same as if you had done an insert. The only difference between Insert and Overwrite has to do with clips that already exist on the timeline.

Transition

Adds the clip to the timeline with a default dissolve transition.

When you choose to add a clip to the timeline with a Transition, the setting you place in the Track Patching box is irrelevant. The clip will always be placed at the end of the timeline, and it is always placed on Track V1 or Track V2, the track opposite the previous clip, with a transition of the default length (set in the trim window's settings).

When the video and audio are trimmed differently from each other and you add the clip to the timeline for a transition, the video In is used to created a transition with the existing video clip on the timeline. The clip's audio is applied to the audio tracks so that its relationship is maintained with the video.

If you have checked "Auto Audio cross fade at transition" in **File > Preferences** on the General tab and both clips have synced audio with the same In/Out points, the audio creates a transition across the same duration as the video.

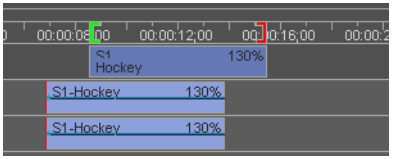
Four Point Edit

These two options use four points on the timeline - the In and Out of the Clip and an In and Out marked on the timeline.

Fit to Fill - Changes the clip speed to fit the marked gap between clips or timeline In and Out markers.

If a clip's video has different trimmed In and Out points from the sync audio, the Video In and Out points are matched to the timeline In and Out. A speed up or down is used to fit the clip into the provided space. The same speed up/down is applied to the audio and its relationship to the video is

maintained. If that will affect the sync setup of clips already on these tracks on the timeline, this action will not be allowed and a message will appear.



4-Point Edit - If your clip is longer than the space you have marked on your timeline, the following clips will be rippled down. If the space you marked is longer than the clip, a blank space will be left on that track following the added clip. The results will be consistent on the track you are placing the clip on no matter how you have your ripple settings. However, the effects on the other tracks on the timeline and what happens simultaneously to your inserted clip will be different depending on whether you have ripple applied to all tracks or just the current track. See Chapter 11 for more details.

If you hold down the SHIFT key while doing a 4-point edit, or if you change the default setting in the Trim Window Settings screen, you can execute a 4-point edit without ripple.

When using 4-point edit WITH ripple, if the clip is shorter than the gap, the clips following will ripple left, closing the gap.

When using 4-point edit WITHOUT ripple, if the clip is shorter than the gap, the clips following will not ripple left. Instead, the clip is inserted at the beginning of the gap and the rest of the gap is left empty.

When your clip is placed on the timeline, the next clip from the gallery is automatically loaded into the trim window.

When using 4-Point edit with audio that is trimmed differently than the video, the first section on the timeline between the In and Out is removed (just like using an Extract). The clip in the trim window is placed on the timeline using an Insert from In (so that the entire clip is added to the timeline). The timeline Out is ignored.

Chapter 11
Using the Trim Window

The trim window allows you to play and trim clips, transitions, and edits.

The trim window allows you to look closely at a single clip in the gallery or timeline, or the way two clips join together on the timeline, adjusting the In and Out points and moving a clip to the timeline in a variety of ways.

Load a Clip to the Trim Window

To open a clip in the trim window, double click on it in the gallery, or click on it in the gallery and drag it to the trim window.

To open a timeline object in the trim window, double click on it.

The clip is automatically opened in the left (source) section of the trim window. If the trim window is in contracted mode (with only the Preview monitor displayed), the Trim section of the window automatically opens.

Objects that can be opened and trimmed in the trim window include DPS, LTV, DVA, LTA, WAV, ICG and DPT files, transitions and still images.

Virtual clips cannot be loaded from a gallery to the trim window. To trim a virtual clip in the trim window, first place it on the timeline.

Play a Clip in the Trim Window

There are three ways you can view the entire clip in the left-hand side of the trim window.

Scrub the clip by dragging the aqua-colored playhead marker on the trim bar, or by using the scrub Hotkeys 1 (reverse) and 3 (forward).

Place the mouse on the gray dividing bar between the In preview screen and the Out preview screen and drag it right and left. You can see the aqua-colored playhead marker on the trim bar move as you do this, indicating where in the clip you are viewing.

Use one of the buttons below the trim window. **Play/Stop** plays the clip from start to finish, ignoring marked In and Out points. **Play Loop** repeatedly plays the clip, from beginning to end (ignoring any marked In or Out

Trimmer play controls


Start of clip


Back one frame


Reverse Play


Play/Stop


Play in to out


Forward one frame


End of clip


Loop


Preview

points). **Play In to Out** plays the clip from the marked In point to the marked Out point.

The clip plays on the main (large, right-most) Preview window and on the external monitor. At the top of the trim window, the playhead position timecode marker updates constantly to tell you where in the clip the playhead is positioned.

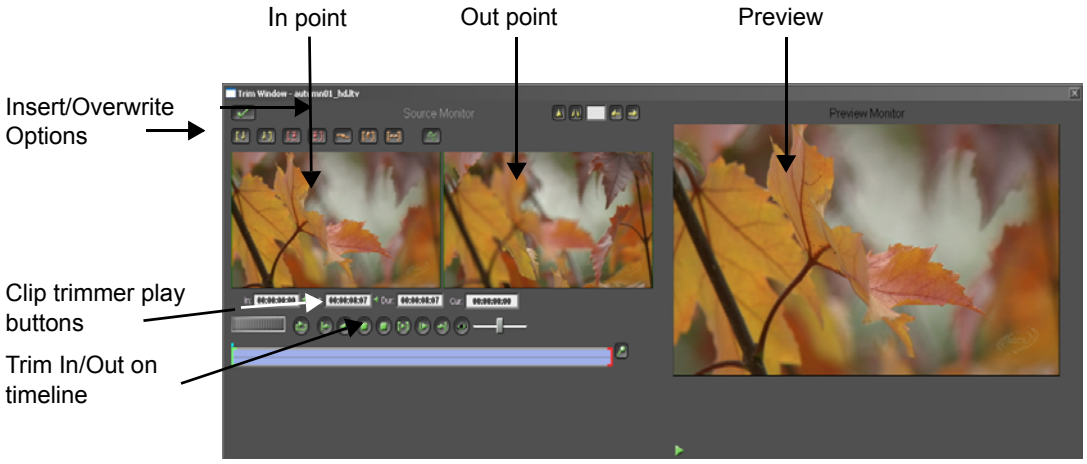
Below the In and Out Trim screens, the In time, trimmed duration and Out time are indicated. If your clips were captured with timecode (because they were batch captured, for example) the numbers will be indicated in the original timecode format. If the clips were captured without timecode (possibly because they were quick captured or began their lives as animations) their timecode begins at 00:00:00:00.

Trim a Clip

Below the timecode/duration indicators in the left side of the trim window, bars indicate the portions of the clip that can be trimmed. If the clip is a DVA/LTA with video and audio, there are three sliders on each end of the clip. The top slider trims the video. The second slider is the rough control for trimming the audio, and the third slider is the fine control. If you do not adjust the buttons just to the left of the sliders, these three sliders move in tandem.

Using Two VGA Windows

You may wish to use two VGA windows while you edit your clips in the trim window. By default, the trim window displays only one VGA window. However, you may change this setting by right-clicking in the trim window to open the trim window settings and in the Source Window section choose 2 VGA windows. If you are using two VGA windows, you will find that the left window represents video from the In point, while the window on the right represents video from the Out point. If you hover your mouse over those windows, you will see a little hand with a red arrow as a cursor, meaning that if you drag left or right you will be trimming in or out directly from those windows. Any trimming that you do will be shown by the In or Out markers moving as you trim.



Adjust the In Point of a Clip

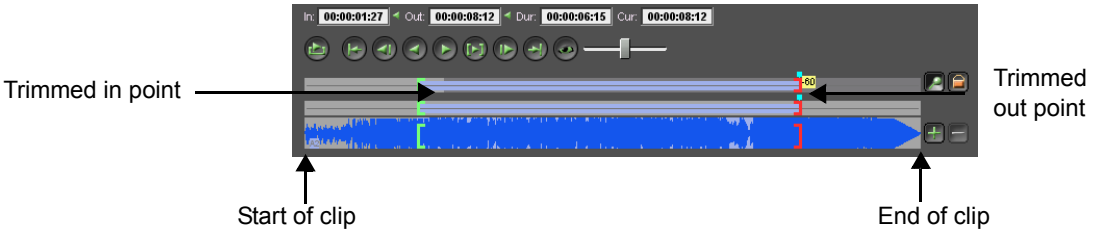
- Click the mouse in the In trim screen (left-most window) and drag left and right. This allows you to scrub the video clip. The arrows on the cursor turn green to tell you you're working on the In point of the clip.
- Drag the green in-point marker on the trim bar. This also scrubs the clip as you go. As you drag the In point marker, an indicator of how many frames have been added or subtracted appears next to it.
- Type a numeric in-point in the left-most Timecode box. This is activated by Hotkey SHIFT I, or you can click in the box with your mouse.

If you want to lock the In point at a specific location, click on the word "In" right next to the field where the timecode of the In position is located.

The word "In" will turn red and the field will then be greyed out, preventing any changes to be made.

Adjust the Out Point of a Clip

- Click the mouse in the Out trim screen (middle window) and drag left and right. The arrows on the cursor turn red to tell you you're working on the Out point of the clip.
- Drag the red Out-point marker on the trim bar. As you drag the Out point, an indicator of how many frames have been added or subtracted appears next to it.
- Type a numeric in-point in the right Timecode box. This is activated by Hotkey SHIFT O, or you can click in the box with your mouse.



If you want to lock the Out point at a specific location, click on the word "Out" right next to the field where the timecode of the Out position is located.

The word "Out" will turn red and the field will then be greyed out, preventing any changes to be made.

Adjust the Duration of a Clip

- Type a numeric in-point in the center Timecode box. This is activated by Hotkey SHIFT U, or you can click in the box with your mouse.

The current duration between the In and Out marks is shown in the Timecode box between the In and Out Timecode boxes. If you have a specific length you would like you clip to be, you can type it into this field.

Place the cursor in the middle of the trim bar (with the clip trimmed at least on one end) and drag the clip left and right to adjust its In and Out times simultaneously without changing the clip's duration.

To lock the duration of the clip (locking both the In and Out points), click on the abbreviated word "Dur" right next to the field where the clip duration is located. The word "Dur" will turn red and the field will then be greyed out, preventing any changes to be made.

To reset the clip's In and Out points to their original untrimmed positions, press hotkey CTRL T (user definable).

Timeline Feedback

If your clip originally came from the timeline into the trim window, feedback on the timeline allows you to see the amount of space the clip will fill.

When you drag the In or Out point of a clip on the trim window, there is a marquee around the entire clip as it was on the timeline. The trimmed in or out point is represented by filling in or extending past that marquee with the clip's light blue color, leaving the unused portion of the clip, if there is any, as the background grey color.

When the In point of the clip is being edited to make the clip shorter, the blue region fills less of the boundary region of the clip.

When the In point of the clip is being edited to make the clip longer, the blue region extends beyond the boundary region of the clip.

L and J Shaped Edits

L and J shaped edits refer to editing the audio so it is shorter or longer than the video for a clip.


Lock button

To adjust the sliders for the video and audio separately, first click on the Lock button at the left edge of the video trimmer. You can create edits where the audio leaves after the video or starts before the video without disrupting the sync relationship between the video and audio of the clip.

Lock button

If you unlock the video and audio and trim them separately, then lock them back together, you can trim them, maintaining the new relationship between the differing In and Out points of the audio and video of the clip.

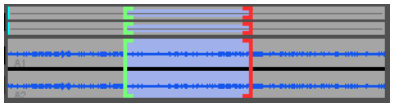
Note the coarse and fine audio adjustment sliders move together. The upper (coarse) adjustment allows you to see the relationship between the video and audio portions of a clip. The fine adjustment slider is used when you are zoomed in on the audio.

In Trim Window Settings, you can choose whether the Timecode display shows video or audio. When you alter the clip via the numeric input boxes, you always change the displayed element. If the video and audio are locked, whether they have the same In, Out and duration or not, both the audio and video are shifted by the same amount. If they are not locked, you only change the displayed element.

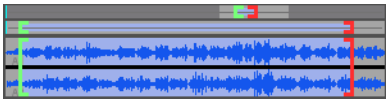
Trimming an Artificial Sync Group

When you create an artificial sync group, the audio and video do not have to be the same length. So, when the clip is loaded into the trim window, the available media for the longer portion of the sync group fills the entire trim width. The shorter portion has a representatively smaller trim bar on the trim window.

Natural sync group



Artificial sync group



Zoom in on the Audio

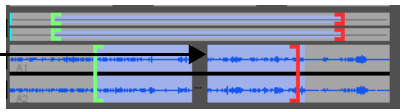
Zoom in

Zoom Out

The trim window's zoom buttons affect the fine adjustment for the audio only, so you can use the audio waveform to trim your clips.

When you zoom in on the audio, the entire audio clip doesn't fit neatly in the trim window any more. The display shows the In and Out markers in both the coarse and fine adjustments for the audio.

Separator between undisplayed portions of the clip



Video

Coarse adjustment audio

Fine adjustment audio

On the display, a dark line indicates media that is not shown so that the waveform around the In and Out markers can be seen.

If you trim the In or Out, the markers move towards a point on the trim window where you can see a portion of the waveform before the In and Out markers. As you trim, the background moves so you can always view the relevant portion of waveform.

If you zoom all the way back out (minus button), the entire duration of the audio clip is drawn again, so the gray separator is removed.

If the clip you open is video or image only (no audio) nothing displays in the audio portion of the trim window.

A stereo clip takes up two audio tracks on the timeline. In the trim window, you can see both tracks. A mono audio clip takes up half the space in the trim window and only occupies one audio track on the timeline.

Match Frame (Reuse a Clip that is Already on the Timeline)

Match Frame button

Match Frame allows you to scrub the timeline and load a video or audio clip into the trim window with the frame that is under the timeline Playhead as the chosen frame in the trim window.

Scrub the timeline. Either press the Match Frame button, or right click on the timeline and choose Match Frame.

- If the playhead is not over a video clip, the 'Match Frame' button on the toolbar is disabled.
- If the playhead is over a single clip, that clip is loaded into the trim window and the thin blue playhead placed on the same frame as the timeline playhead.
- If the playhead is over multiple video clips and no clip is selected, the Match Frame feature is not available.
- If one clip is selected and you press the Match Frame button, that clip loads into the trim window, with the playhead at the appropriate frame.
- If more than one of clip is selected, the 'master' selection (the clip with the red marquee) is loaded in the trimmer with the playhead moved to the appropriate frame.

If the clip is not in one of the project galleries, it is collected into the currently active gallery. The thumbnail has a picture of the matched frame. If the clip was already in the gallery, the thumbnail is updated to the matched frame.

If the clip has been trimmed on the timeline, the new In and Out points appear in their appropriate positions on the entire duration of the clip.

The clip loads as if it is from a gallery, not a timeline, meaning there is no Apply button, but instead the Insert and Overwrite options. When you leave the clip by placing it on the timeline or going to the next clip, changes to that clip are loaded to that clip in the gallery, not the timeline.

Simultaneous Edit

You can do simultaneous edits between video, stills, or a mixture of the two.

A simultaneous edit is loaded into the trim window when you Apply an edit to the In point of a clip that is butted against another clip following it. You can also load a simultaneous edit by double clicking on the edit between two clips.

You can also load a simultaneous edit into the trim window by hovering the mouse over the edit point on the timeline. Simply double click on the edit point in between the two clips to open the trim window and perform a simultaneous edit.

When two clips are loaded into the trim window for simultaneous editing, both clips are highlighted on the timeline.

When the trim window is in simultaneous edit mode, the scrub bar shows a red trimmed Out point for the first clip, then a darker area split by a grey marker indicating the end of the available media for that clip and the beginning of the new media for the following clip, then a green marker indicating the trimmed in point for the second clip.

If neither clip has been trimmed, the Out marker of the first clip and the In marker for clip B are centered on the trim bar. If they have been trimmed (so there is extra media available to be added to the join between the clips), the Out and In markers appear offset from the center, which is marked by a vertical white line.

Trim the Joint Between the Clips


Apply button

Hover the cursor over the scrub bar on the trim window, or place the cursor in the space between the left and right trim screens. The cursor becomes a hand. Drag left and right to adjust the position of the edit between the two clips. Click the Apply button.

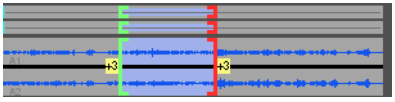
This works best when the two clips are not overly long. There is no change in the amount of space taken up by the two clips when you edit their join in this manner.

If you drag the Out point of the first clip or the In point of the second, the net duration of the clips is altered. The first clip of the pair retains its timeline In point, but all other points with relation to the timeline can be altered. You can also enter numbers in the Timecode boxes to adjust the In, Out or Duration, with the same effect.

Note that if a clip has an L or J cut applied to it and you apply a simultaneous edit to it, the audio is adjusted so that its In and Out match that of the video.

Slip Trim

Slip trimming a clip means adjusting the In and Out points of the clip without affecting its position on the timeline or its duration.



Double click a clip that has been trimmed and placed on the timeline to load it into the trim window. When you place the cursor over the trim bar, it becomes a hand tool. Drag the mouse left and right to adjust the In and Out of the clip.

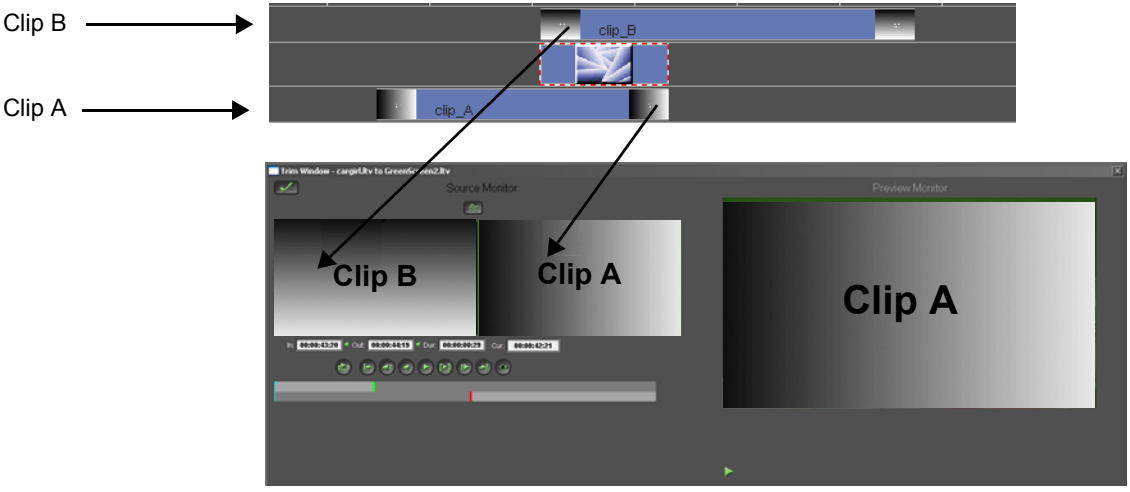
The clip retains its position and duration on the timeline (as above, where the clip is butted up against a clip on each side). The In and Out points of the clip relative to all the media in the clip are the only thing that change.

Note: if you use the Timecode boxes in the trim window while in this mode, you may alter the clip's duration.

Trim a Transition

Double click on a transition to open it in the trim window. A frame from each end of the transition appears in the trim window. The images appearing are the In point of the in-coming clip and the Out point of the out-going clip.

The green marker to the left end of the scrub bar marks the In point. The red marker to the right end of the scrub bar marks the Out point.



Space between the red marker and the right edge of the Trim bar, or space between the green marker and the left edge of the Trim bar, indicates that there is available media should you wish to make the transition longer.

Drag these markers to adjust the In and Out points of the transition. Or put your cursor in the left view screen and drag it to adjust the In point, and put your cursor in the right view screen and drag it to alter the Out point.

Or, press the I or O key to select either the In or Out point of the transition. Press the left or right arrow key to adjust the selected marker.

The aqua scrub bar allows you to view the edited transition from beginning to end. On your main output monitor you can view the transition (providing that it is a Real-Time transition) with the In and Out points as marked.

Type a duration for your transition in the duration Timecode box (the one in the middle) if you want to assign an exact duration. You may lock the duration of the transition.

Click the Apply button to place your changes as marked onto the timeline. If you have marked an In point for the incoming clip that falls later than the Out point for the out-going clip, the transition will be lost.

Index Markers

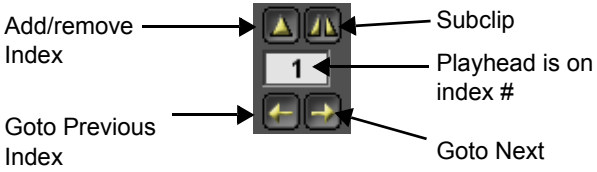
You can use indexes to mark points where events should take place, and to align clips and effects once a clip has been placed on a timeline.

Indexes can be placed on clips in the Capture window, the trim window or the timeline. You can place index markers on any clip that can be imported into Velocity (still, title, video or audio). If a clip has indexes on it and that clip is saved in a gallery, index marks are saved with it. If you allow indexes to number themselves automatically, all clips' indexes will be numbered starting from 1.

If you copy and paste a clip with index markers on it, those index markers are copied and pasted with the clip.

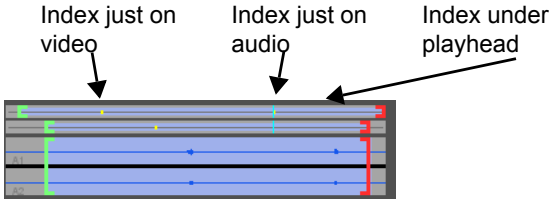
Add or Remove Index Markers

You can place or remove markers on a clip loaded in the trim window. Simply scrub or play to the desired location for the marker and press the Add/Remove Index button.



When you subsequently return the clip to the gallery or apply it to the timeline, the index markers will remain with the clip.

Right click in the trim window to open the trim window settings window. You can choose to add the index marker to Video Only or Audio Only. In the cases where a marker is added to Audio it only appears on the highest audio channel.



Index Marker Hotkeys for the Trim Window

Period (.)add/remove index

CTRL + Period (.)remove all indices from clip

/Subclip from indices

Subclip

You can use index marks in the trim window to create subclips in the gallery. Subclips are portions of a clip that has been divided at its index marks. When you create subclips, you can have Velocity physically copy the subclip's material to a new clip in the VTFS, allowing you to remove longer clips from the drive and just keep the media you intend to use. The Subclip button splits your clips at the index marks and the In/Out marks.

If your clip was originally in the gallery and you press Subclip, the clip is separated into all the individual segments and returned to the gallery in several sections. This creates as many new copies of the clip as there were segments, while also retaining the original clip with its index markings as a separate clip in the gallery. This clip's first frame is used as its thumbnail in the gallery. These clips in the gallery share a name with the original clip, but the name is preceded by a number in parentheses.

If your clip was originally in the timeline, when you press the Subclip button, the clip on the timeline is chopped into the segments marked by the index markers. If there are effects and filters applied to the original clip on the timeline, these effects will be applied to each of the subclips. Because keyframes are based on a percentage of the clip, timing of the effects may be altered. If there are keyframes on the effects on a subclipped clip, you should check their timings.

In the Trim Window Settings, there is an option to Create New Media When Subclipping. If you choose this option, the new clip is PlayCorded, so you can delete the original clip, should you want to. If you choose this option, the new clip will retain its reel name and timecode information.

Trim Window Settings

Open the Preview and Trim Window Settings by right clicking anywhere on the window.

Auto Apply changes below load next Gallery clip - If you load a clip from the timeline and shorten its out point, the other clips ripple towards the start of the timeline on all tracks if you have this checked. If this is not checked, only the track listed in Current Track Number will ripple towards the start of the timeline.

Auto Advance - Check this box if you wish the next clip to be loaded into the trim window when the current clip is moved to the timeline.

Create new media when Subclipping - When this is checked and you press the Subclip button, a new DVA/LTA and DPS/LTV file will be created for each segment of the trimmed clip. This clip will be loaded into the

gallery or timeline. You can then delete the old DPS/LTV and DVA/LTA files from the system and media drives.

Preserve video clip start location on Timeline edit - When this is checked and you load a clip from the timeline to the trim window, then trim that clip and return it to the timeline, the clip will keep its original start time on the timeline, regardless of whether the In point was trimmed. Otherwise, the clip may be offset from its original start point on the timeline.

Show clip's 'Timeline use' segments - When this is checked, the segments of clips that are in current use in the timeline show as yellow in the trim window.

Always use Timeline Playhead as edit point - If this option is checked and you then load a clip from the gallery into the trim window and then load the clip to the timeline, the clip's Out point will fall wherever the timeline playhead is located.

Always use Source Playhead as IN Point - When this is checked and you then load a clip from the gallery into the trim window and then load the clip to the timeline, the clip's In point will fall wherever the timeline playhead is located.

Tool Tips - These are the little flags that appear when you hold your mouse over a button for a couple of seconds. They tell you what the tool is for and what its default Hotkey is (if it has one). If you are well-versed in using your system, you may find them annoying. Unchecking this button turns them off.

4-Point Insert Without Ripple - When this is enabled and you do a four-point edit, if the clip you are inserting is shorter than the gap you are putting it in, the following clips are not rippled.

Show Safe Area - When this option is checked, the trim window will show a red border just within the edges of the video playback from the source window(s) and preview monitor. The safe area will represent 10% removed from the image.

Show Safe Title Area - When this option is checked, the trim window will show a red border just within the edges of the video playback from the source window(s) and preview monitor. The safe title area will represent 20% removed from the image.

Auto Load Clip - When this option is selected and you double click a clip in the gallery to add it to the trim window and you insert or overwrite it, the next clip in the gallery is automatically loaded into the trim window. When this option is not selected, the next clip is not loaded.

Display Timeline Status Bar Tools in Preview Window - When this option is checked, the Timeline Status Bar Tools will be available right under the preview window.

Use DVE speed change to Fit to Fill - When this option is checked and you load a clip from the trim window to the timeline where In and Out points are located, the clip will fit exactly in between the In and Out points, therefore increasing or reducing the clip speed. This process will use one DVE, resulting in smoother speed change.

Default Preview Buffer - Refers to the amount of pre/post roll that will be added to the playback range of an edit when you hit the Preview button.

Display waveform of Audio Channel - When this option is checked, the audio channel waveform will be displayed in the trim window.

Source Window - you have the choice of having one or two VGA windows to work with in the trim window.

Indices - Video Only/Audio Only - Determines where the indexes are applied on a DVA when it is in unlocked trim mode.

Timecode Display - Show video/Show Audio - When you are in locked trim mode, both the video and audio timecodes are the same, so this makes no difference. In unlocked mode, the video and audio In, Out and Duration are different from each other. Choose which one you wish to see.

Default Hotkeys - A list of preview/trim window keyboard shortcuts is displayed on the Settings window for quick reference. This interface is described extensively in Chapter 25.

Chapter 12
Timeline Editing

The timeline provides an overview of how the clips fit horizontally (i.e., time) and vertically (transitions and layering of titles and effects).

A Velocity timeline consists of three types of tracks: video tracks (V), the transition tracks (X), and audio tracks (A).

When you create a new project in Velocity, the video tracks will be in expanded track mode, which means that dual video tracks (i.e. V1a, V1b) will be separated by a transition track (X). When clips placed on the dual video tracks overlap, they automatically have a transition placed between them on the transition track (X). The V1, V2 and X tracks can either appear expanded or compressed into a single transition track, depending on your preferences.

All video clips and transitions on the timeline can have video effects filters applied to them.

Audio tracks A1 and greater carry audio WAV files and DVA/LTA audio files associated with DPS/LTV clips.

Clips that consist of video and audio are placed in the timeline with sync so they will always play together. When you place an audio and video clip on the timeline, the layering of video is important, so normally you drag the video portion of the clip to the position you want. Audio mixes rather than layers, so its placement is not as critical (with respect to the track it is applied to). The audio clip is placed on whatever track is the lowest numbered available track (or two consecutive tracks, in the case of stereo audio). If no track is available, adding the clip will fail. You can move other clips to make room, trim your clip, or add more audio tracks to your timeline.

Interactive Editing

Velocity features an interactive editing paradigm which allows the user to add, delete, move and trim clips while the timeline is playing back to provide immediate feedback while editing. Real-time effects can also be applied while the timeline plays back.

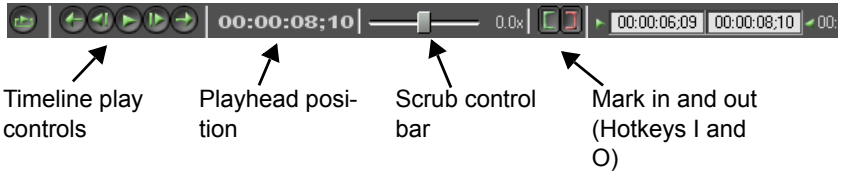
Positioning Editing Tools on the Timeline

Many editing functions rely on the position of the playhead, In or Out marker on the timeline to determine where actions are to take place.

Playhead Position

If you left mouse click anywhere between the timeline ruler (across the top of the timeline) and the Timeline Status Bar, a vertical dotted line appears on the timeline. This is the playhead. If you drag the mouse on the timeline with the left mouse button held down, you can scrub the timeline.

You can also scrub the timeline using the Scrub Control bar, in the timeline Status bar.



The playhead also moves when you use the timeline play controls, also found in the Status bar.

Any time you play the timeline using Hotkeys, the playhead moves.

If you hold down the ALT key on the keyboard and press the right mouse button, the playhead jumps to the nearest edit point to where you clicked.

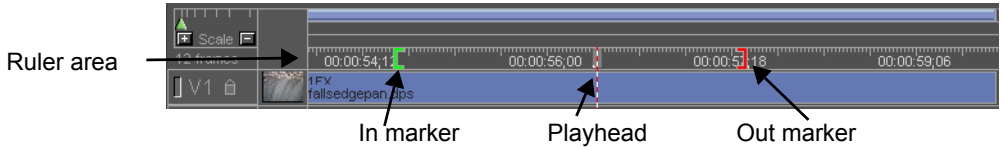
And, press ALT G to open a Go To window. This window automatically displays the playhead's current timeline location. Enter the location you wish to move the playhead to and press OK. The window closes and the timeline and playhead scroll to that location.

If you type + (plus) or - (minus) and a number in the Go To window, and then Enter to close the window, the playhead jumps forward or backward that number of frames.

In and Out Markers

In and Out points on a timeline can be useful for closing gaps, creating output files, copying ranges, etc.

When you press the Mark In and Mark Out keys, or use the Hotkeys (defaults are I for In and O for Out), the marker is placed at the playhead's position.



Set the In and Out on the timeline by entering numbers in the two fields to the right of the In and Out markers on the Status bar at the bottom of the timeline bin. Once these fields have numbers in them, you can enter a number with a + or - (from the number pad) to move the In or Out marker.

To check your In and Out marks, you can use the Q key to go to the In point and the W key to go to the Out point.

Once you have an In or Out marker set, you can drag it by clicking on the marker at the top of the timeline (in the ruler section). The In and Out markers obey Move rules for snapping to the playhead, clip edges and indices.

Note: You cannot place the Out before the In on the timeline.

Mark In/Out on Timeline

There is a Hotkey to allow you to place an In and Out simultaneously on the timeline. In the User-Defined Hotkey interface, this feature is called "Mark In/Mark Out". There is no default Hotkey set for this feature.

If the cursor is over a gap in the timeline and you invoke "Mark In/Mark Out" that gap is bounded on the start and end by In and Out marks.

If the cursor is over the movie bar, the In and Out markers are placed at the start and end of the movie bar.

If the cursor is over a clip, the I/O markers are placed around that clip.

If there are selected clips on the timeline, the I/O markers are placed at the start of the first clip and the end of the last one.

See Chapter 26 for more information on the User-Defined Hotkey interface.

Indexes and Subclips

An index is a small yellow triangle that appears either on a clip or a timeline. Once an index is placed on a clip on a timeline or directly on a timeline, other clips or indexes can snap to that index for alignment. (Snap prefer-

ences for indexes are found in the main menu by choosing **File > Preferences**, clicking the General tab and pressing the Snap Tools button.)

Indexes can be placed on clips in the Capture window, the trim window or the timeline. You can place index markers on any clip that can be imported into Velocity (still, title, video or audio). If a clip has indexes on it and that clip is saved in a gallery, index marks are saved with it.

If you copy and paste a clip with index markers on it, those index markers are copied and pasted with the clip.

When in the timeline, you can create indexes on the timeline itself, or you can create indexes on individual clips. Timeline indexes allow you to divide the timeline into segments for playback purposes (very useful when working with.live streaming).

Create an Index Using the Index Button

Select the video or audio clip that you want to mark with an index. If no clip is selected, the index will be placed onto the timeline itself.

Create timeline/ clip index button

Either click the index button on the tool bar (the small yellow triangle) or go to the menu and select **Edit > Create Index**.

Move the timeline playhead to the desired position with your mouse. Once you are in the general area, use your left/right arrow keys to make frame accurate adjustments. Press the left mouse button to place the index.

If multiple clips are selected, the index is added to the “master” of the group, the clip with the red marquee.

Once the index tool is selected, if you decide you do not wish to create an index, drag the mouse cursor out of the timeline window to return the cursor to its normal pointer.

Create an Index Marker Using Hotkeys

With the timeline (but not a clip) selected, press the Hotkey , (comma). Whether the timeline is in Playback mode or paused, the index is placed at the current playhead position.

If you don’t like the position of the index, click on it and drag it.

Index Marker Hotkeys for the Timeline

Comma (,)add/remove timeline index

CTRL + Comma (,)removes all indices from timeline

SHIFT + Period (.)go to next index

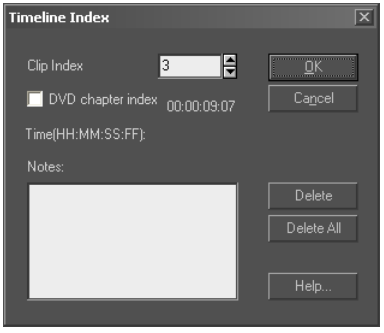
SHIFT + Comma (,)go to previous index

Period (.)adds/removes indices to/from ALL clips at playhead location

CTRL + Period (.)removes all indices from the clips on the entire timeline

M - Play to next index/stop

If you used the Index button to create your index marker, the Timeline Index box automatically opens. Otherwise, or if at anytime you wish to edit the index's information, double click on the index and the Timeline Index window opens.



From this box you can also click the **Delete** button to permanently remove the index, or **Delete All** to delete every index on the timeline. This will delete all the indexes on the timeline, but will leave individual indexes on clips in place.

Use the **Clip Index** section to assign the index a different number. You can only use numbers that are not being used on the same clip

DVD Chapter Index - Check this box if you want this index to represent a chapter stop for a DVD.

You can also enter notes to save with the index. If you hover over an index using the mouse, the notes you have entered will be displayed.

If you plan to output your timeline as an MPEG2 file for DVD authoring, you may use index markers to generate Chapter Info files. Use the "DVD Chapter" box to use an index in a Chapter Info file.

The only way to retrieve index markers after deleting them is to use Undo (**Edit > Undo** from the main menu, or Hotkey Ctrl Z).

Select Clips For Editing

Before you edit a clip, you must select it. To select a clip on the timeline, click on the clip using the left mouse button. A red and white marquee line appears around the clip. To deselect the clip, click an empty space on the timeline or on another clip.

You may also hold down the Shift key on the keyboard, and hold down the left mouse button while dragging the mouse cursor around the clip.

Moving to the Next Clip

Use the Tab key to move to the next clip on the timeline or the Shift Tab key to move to the previous clip. To move to the next edit, use the Page Up and Page Down keys, or use the Next Edit and Previous Edit buttons on the timeline Status bar.

As you move clips, use the information bar at the bottom of the Velocity window to help position them. The timecode locations of the clip's starting time, ending time, and the time of any transitions made by the clip are indicated in HOURS : MINUTES : SECONDS : FRAMES.

Some editing procedures, such as trimming, use video and audio scrubbing to help give feedback. You can see feedback on rendered sections of your timeline on the output video monitor connected to your breakout box. You can see feedback on the un-rendered sections in the Preview window on your computer screen.

Lock/Unlock a Track

Lock icon on timeline track

Locking a track makes it unchangeable. Once a track is locked it may not be edited, modified, or re-arranged in any way. The only exception is that if a locked track is empty it can still be deleted. Locking a track is useful if you want to protect a track from any accidental changes, or if you want to use an operation (e.g., the Group move tool) that will affect all tracks, but you want to protect some of the tracks from this operation.

To lock or unlock a track, click on the button labeled with a padlock in the track header. A lock icon turns orange.

If a clip in a sync or link group is on a locked track, or if you select another clip from the group that is on a non-locked track, you cannot move that clip.

Select a Range to Cut/Copy/Paste


Cut


Copy

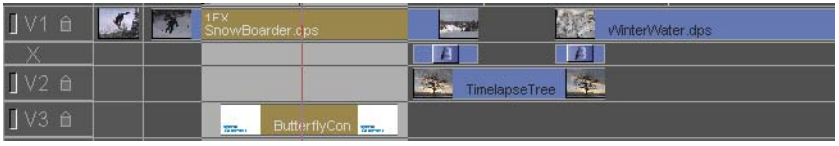

Paste

You may cut or copy sections of your timeline and paste them to other areas of the same timeline. Or you can move clips and sequences of clips between versions of a project and between projects.

When you are cutting, copying or deleting sections of the timeline, only entire clips are copied, not sections of clips, so your range must include entire clips. You do not have to be exact when you are selecting the range to be cut, copied or pasted, as partially selected clips are ignored, as are clips on locked tracks.

Select the area of the timeline that you want to alter by moving the cursor to the beginning of the range and right-clicking and dragging the cursor. The range becomes highlighted. (Note that the range plays back automatically unless you hold down the Shift key when you are selecting the range. Press ESC or spacebar to stop the playback.)

If you selected the range shown below only the clip on track V3 would be copied:



If you selected the range shown below the first clip on V1 and the clip on V3 would be copied, but not the transition or the clip on V2.

If you selected the range shown below the first clip on V1, the clip on V3, the first transition, and the clip on V2 would be copied.

Cutting a range of clips removes it from the timeline and places it on an internal clipboard. The cut area will be left blank. To cut the range you have selected, click the cut button on the tool bar or use the menu to select **Edit > Cut**.

Copying a range places a copy of it onto the clipboard, but also leaves the original range of clips in their position on the timeline. To copy the range you have selected, either click the Copy button on the Toolbar or select **Edit > Copy** from the menu.

To paste the range you have copied to the clipboard, either click the paste button on the toolbar or select **Edit > Paste** from the menu.

When you use the Paste function with a group of clips, a gap is created on the timeline at the playhead position, and the existing clips are shifted to the right to make room for the new clips.

When copying and pasting a group of clips from one timeline to another, you may need to add additional tracks. If this is the case, a window will ask you if you wish to add enough tracks to complete the copy. If you select No, the clips will not be copied to the timeline. If you say yes, enough tracks are added to the timeline so all clips can be displayed.

Select All

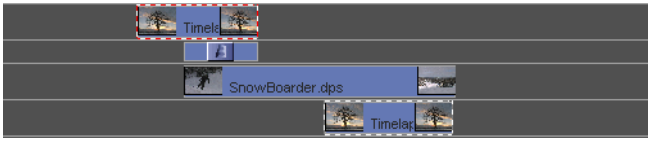
To select all clips on the timeline, press the Hotkey Ctrl A or go to the main menu and select **Edit > Select all**. Now you can copy and paste all the clips in the timeline.

If you have clips on a locked track, those clips will not be selected.

Clip Multi-Select

If you need to move around, cut, copy or apply attributes to a several clips at the same time, make a multiple selection.

To select a group of clips on the timeline:



1 Click on a single clip to highlight it.

2 Add another clip to this selection by holding down the CTRL key and left clicking on clips one at a time.

OR:

3 Add all clips in a desired area by clicking on the first clip in the range and hold down the SHIFT key. Now, select the last clip in the range. All the clips in between (on all tracks) become selected.

OR:

4 Hold down the Shift key on the keyboard, and hold down the left mouse button while dragging the mouse cursor around the clips you wish to select (Lasso select).

Once you have selected a series of clips, you can move them on the timeline horizontally and vertically.

Limitations:

- A series of clips cannot be placed on top of another clip.
- When you cut or copy and paste a clip or group of clips, the pasted clips do not retain the links the originals had.
- A group of clips that involves clips on both tracks V1 and V2 with transitions between them can be moved horizontally and vertically.

Once you have selected a group of clips, you can cut, copy, paste and delete them as a group either by using Edit menu options, right-click options on the clips, or by using Hotkeys. You can also copy and paste FX attributes to a group of selected clips. Right click on the group of clips and choose Copy (video or audio) Attributes or Paste (video or audio) Attributes. Remove all audio and video attributes by selecting all the clips in a group and selecting No Effects.

When copying and pasting a group of clips from one timeline to another, you may need to add additional tracks. If this is the case, a window will ask you if you wish to add enough tracks to complete the copy. If you select No, the clips will not be copied to the timeline. If you say yes, enough clips are added to the timeline so all clips can be displayed.

Save a Timeline Range as a Clip Sequence

You can "copy-and-paste" a portion of one timeline to another by multi-selecting the clips, copying them, opening another timeline, and then pasting them.

You may also want to create short timelines that you can routinely import into other timelines. These short timelines can have various uses in Velocity. You may want to make a color_bars_and_slate timeline, then use it for all projects. Or you may want to create a project in several sections and save each section as a separate timeline, then import them all into the same time-

line for manageability purposes, or to collate the work of several editors into a single timeline.

Drag a range on the part of the timeline you want to export. You may need to hold down the Shift key while you are dragging the range or press Esc to abort the automatic playback.

Select the Copy button from the toolbar, or from the main menu choose **Edit > Copy**.

Select another timeline. Select the Paste button from the toolbar, or select Edit > Paste from the main menu.

The clips are inserted into the timeline at the playhead line. The inserted clips push all the existing clips to the right of the insertion point to make room.

Unselecting Clips

When a series of clips is just selected, the link is not permanent. When you click in a blank area of the timeline or choose another clip, the group nature of the clips is dissolved.

Clip Linking

A more permanent way to join clips is by selecting them all as a group, then assigning a link to them. Whenever a linked clip is moved, any other clips linked to that clip also move.

You can have up to 9999 linked groups, and an unlimited number of clips in a linked group. All clips that are linked together in a timeline display L followed by the group number they are a member of. A clip can be a member of any number of groups.

Linking and Unlinking Clips in a Group

Select a clip or a group of clips. Right click on one of the selected clips. Select Attach/Detach Group Links. This opens a drop-down menu where you can choose which group you would like to assign the selected clip(s) to. You can assign clips to an established group, or you can create a new group.


Link


Unlink

Now, to select that group of clips, right click on a clip that is part of the group.

To remove clips from the group, click on one clip or hold down the CTRL key and click on several clips that are part of the same group. Right click on a selected clip. From the menu, select Attach/Detach Group Links. Select

the group you wish to remove the clip from (it will have a check mark next to it, and match the indicator in the top left corner of the clip, for example, L1). When you select the group, the clip is automatically removed.

To add a Clip to a group, right click on that clip. Select Attach/Detach Group Links. Choose the group you wish to add the clip to. A clip can be a member of many groups. If a clip is a member of many groups and it is moved normally (i.e., without the Shift U key held) all the groups that clip is part of are moved. If you delete that clip, all groups that clip is part of are deleted.

If you replace a clip that is part of a linked group, that timeline segment will no longer be part of the linked group.

To Disband a group of linked clips, first highlight all the clips in that group (click on the first clip, hold down the shift key and clicking on the last clip). Now, click on the Unlink button. Or, from the main menu, choose **Edit > Clip > Unlink**.

To remove a single clip or group of clips from a group, first select those clips, then right click "Attach/Detach Group links". Only the selected members of the group are removed.

Moving Clips Around on the Timeline

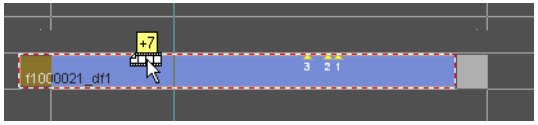
When you move a clip on the timeline, it obeys the Snap settings. These are found in the main menu under **File > Preferences**. Choose the General tab, and click the Snap Tools button.

Snap causes a moved clip that is near another clip, an index marker or the Playhead position to align itself to that point, allowing you to avoid gaps in the timeline, etc. To turn off Snap on an individual clip basis, hold down the Backspace key while moving the clip.

Drag a Single Clip

You can drag a clip to any legal space on the timeline. That is, you can place a video clip, title, or still image on a video track (labeled V#) and you can drag an audio clip to any audio track (labeled A#).

As you move a clip, above the cursor a pop-up lets you know how many frames left (+) or right (-) you have moved the clip. A ghost of the previous position of the clip also provides reference information.



When you move a video clip with synced audio, the video goes to the track you assign. The audio automatically goes to the first available track, in the case of mono audio, or the first two adjacent available tracks in the case of a stereo clip. If there is not room for any portion of the group of clips, the move is disallowed.

If you select two or more clips at the same time (by holding the shift key down on the keyboard as you select them), when you move those clips, they maintain their relationship to each other as it changes with respect to the timeline. This means if you have a transition between two selected clips, those clips can only be placed on the same tracks they are already one.

If any part of a video clip overlaps with any **one** other clip, the move is not allowed. If the clip overlaps **two** other clips on the same track (one on each side of the gap), the Insert Clip Options window will open to allow you to decide how you want to increase the size of the gap between the two clips or decrease the length of the inserted clip. Two hair lines at the left and right edges of the clip are displayed for alignment during movement. Use the left and right arrow keys on your keyboard to position the clip with frame accuracy.

In **File > Preferences** in the main menu, choose the General tab. There is a check-box to enable or disable horizontal clip movement. Disabling it allows you to move the clip from one track to another without altering its In and Out points with respect to the timeline. On a clip by clip basis, hold down the ALT key while dragging the clip up or down tracks to override your setting.

Move a Clip using the Keyboard

Press CTRL M on the keyboard to open a Move Clip To window. The number in the window is the timeline start time of the selected clip. You then have a choice to move the selected clip's In Point or Out Point to the chosen clip start time.

You can enter a new timeline start time and press OK to move the clip. If that position on the timeline is already occupied, the move will not be allowed. You can also enter + (plus) or - (minus) and a number and press Enter to move the clip back or forward by the specified number of frames.

To move a clip frame by frame on the timeline, with that clip (or group of clips) selected, press the left and right arrow keys on your keyboard.

Vertical Movement Hotkeys

You can also assign a Hotkey to move the selected clip to the next open track (up or down). These Hotkeys do not have default assignments. They are listed under Move Clip Up and Move Clip Down.

Inserting a Clip Between Two Clips on the Same Track

Insert clip cursor

A clip can be inserted on the same track between two other clips if there is sufficient empty space for the entire clip you wish to insert. Simply drag the clip to the gap on the timeline.

If the gap between the two adjacent clips is smaller than the length of the clip you wish to insert (or even if there is no gap between the two adjacent clips) you may still insert the clip between them. Overlap the clip you wish to insert over part of the leading and trailing clips to open the Insert Clip Options window.

You may choose to increase the gap between the clips, to trim the earlier clip or the following clip, or to decrease the length of the clip you want to insert. A description of each option is given in the box in the lower right hand corner of the window. Any option not available for a particular insert clip operation is grayed out.

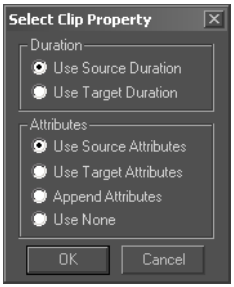
You may also move or trim one of the clips to make room for the inserted clip or use the group move tool to shift all the clips. Or you can insert clips using the insert functions of the trim window.

Replace a Clip

To replace a video or audio clip, select the clip to be replaced and select **Edit > Clip > Replace Clip** from the menu or right-click on the clip and select Replace. A browser opens. Choose the clip you want to use to replace the currently selected clip and press **Replace**. The new clip retains the duration of the original clip as well as any other attributes, such as applied FX, any audio node changes (including fill left/right, panning, etc.).

Another method of replacing a clip on the timeline is to **Drag, Drop, Replace**. This feature lets you drag a clip from the gallery or timeline and drop it onto an existing clip on the timeline in order to replace it. When the cursor dragging the clip is over the play button on the existing clip, it turns to an arrow. Release the cursor and the new clip replaces the old one. The replaced clip's attributes such as applied FX and audio changes will be replaced with the attributes of the new source clip. Depending on the rela-

tive lengths of the two clips involved, many different replace options may be available:



Note: If you do this with a clip that is part of a linked group, that timeline segment will no longer be a part of the linked group.

If both clips have the same length, then the new clip replaces the old clip on the timeline.

If the new clip is shorter than the old clip, which ends in a transition, the transition may be lost.

If the new clip is shorter than the old clip, and one or both of the clips have been trimmed, you must choose whether to use the duration of the source (new) clip or the target (old) clip.

If the new clip is longer than the old clip, you can always use the duration of the clip that already resides in that position on the timeline. If there is enough room to place the new (longer) clip on the timeline without impacting other following clips on the timeline, then the option will appear to use the new (source) clip's duration.

If one or both of the clips has attributes attached to it (filters, speed change, etc.), you may choose to keep the attributes on the clip that is currently in that location (the Target clip), or the attributes of the clip that is moving into that spot (the Source clip) or add both sets of attributes together, or ignore the attributes of both clips.

Note: If you choose to replace a clip with a speed change applied to it, the speed change properties will be applied to the new clip.

Cut/Copy/Paste Clip

Clips can be copied from place to place in a timeline, or they can be copied from one timeline to another open timeline. When a clip is copied and pasted, index markers placed on that clip are copied and pasted with it.


Cut


Copy


Paste

Before you can paste a clip, a copy must be saved in the buffer by using the Cut or Copy functions. To paste a clip, either click the paste button on the toolbar or select **Edit > Clip > Paste** from the menu.

Move the cursor to the desired space on the timeline. A clip outline will appear to help you position the pasted clip. When you left click, the clip is pasted in the current location. If the location selected has a blank area which is smaller than the clip being pasted, an options menu will pop up.

This options window is similar to the one that is opened when you insert a clip into a gap. It allows you to increase the gap between the clips, to trim the earlier clip or the following clip, or to decrease the length of the clip you want to insert. A description of each option is given in the box in the lower right hand corner of the window. Any option not available for a particular paste operation will be grayed out.

You may also move or trim one of the clips to make room for the pasted clip or use the group move tool to shift all the clips before you paste the clip.

If, after pressing Paste, you change your mind about the operation, press ESC to get rid of the ghosted clip.

Opening/Closing a Gap On The Timeline


Group move tool

The Group Move tool moves all clips on or after (to the right of) the blue move line at the same time. This allows the creation or removal of gaps on all tracks of the timeline at one time without disturbing their relative positions. This preserves all existing transitions.

To use the Group Move tool, click the Group Move button found in the toolbar. Bring the cursor down to the timeline. A blue line appears.

To increase a gap:

1 Place the blue line where you would like the new gap to begin.

2 Hold down the left mouse button.

3 Drag the blue line to the right on the timeline.

To decrease a gap:

1 Place the blue line at the end of the gap.

2 Hold down the left mouse button.

3 Drag the blue line to the left on the timeline.

If you place the blue line on a clip, that clip is moved. As you drag the line, a pop-up box shows you how long the move is as well as a preview of where any clips affected by the move will be placed.

The Group Move tool allows you to insert clips at any point on the timeline by moving desired clips out of the way. Use the Group Move tool in conjunction with the Lock track tool to reposition some clips without moving others.

When you use the gap tool, there are a couple of preference settings to keep in mind (found in the main menu under **File > Preferences**, choose the General tab).

Move index with group move tool - When this is checked, relevant index markers are moved with the clips under them. When it's not checked, the indexes hold their positions with relation to the timeline.

Move In/Out markers with group move tool - If this is checked and you use the Group Move tool, the In, the Out or both (depending on their position with respect to the tool) are moved. If it's not checked, they retain their positions with respect to the timeline.

The group move tool uses the Snap settings (to snap to an index or clip edge). It tool ignores clips that are selected on the timeline.

Move to Playhead

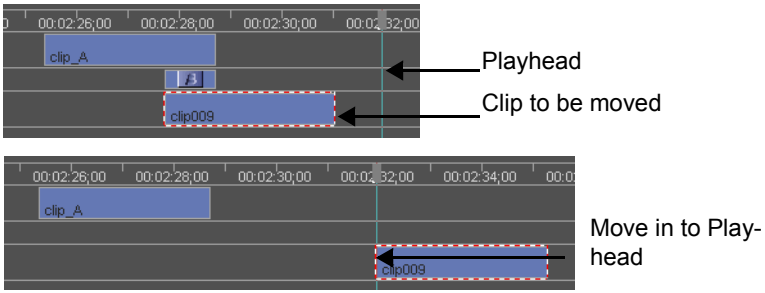
If you have selected a clip or a group of clips, you can move them to the playhead, if you have set the Hotkey for them to do so.

Hotkeys for Move In to Playhead and Move Out to Playhead can be set in the User Definable Hotkey interface. See Chapter 26 for information on how to assign Hotkeys.

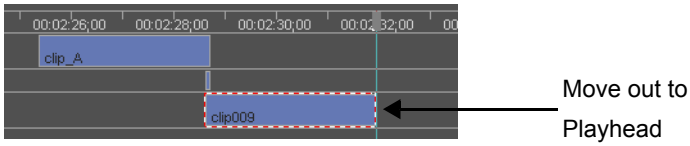
Once you have assigned the Hotkeys, you can use the tools.

Move In or Out to Playhead physically moves the clip, keeping the duration of the clip constant. As long as there is no other clip in the way, the move can take place.

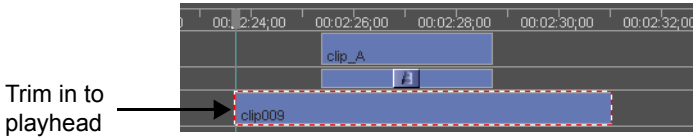
Notice that the transition has been lost, and there is now a gap on the timeline.



In this case, the transition is considerably shorter than it had been before.



In this example, the playhead has been moved from the original position, since a clip's In point cannot fall after its Out point.



If there is a conflict on any track, the move will not be allowed.

Moving a Linked Group of Clips

You don't need to select an entire group of clips to move that group. Click with the left mouse button on one of the clips in the linked group. Drag that clip to a new position. The rest of the linked group maintains their position relative to that clip, moving with it.

Holding down the Alt key prevents horizontal movement. Since vertical movement is not allowed on a group that contains transitions, any groups containing transitions will not move at all with the Alt key held down.

If one clip in a Linked group is on a locked track, you won't be able to move the entire group.

Moving a Portion of a Linked Group of Clips

You can also independently move a single clip or subset of the linked group. To select more than one clip from the group, click on clips with the mouse while holding down the CTRL key. Then, whether you are moving a single clip (clicked on with the mouse) or a partial group, hold down the apostrophe (') key and drag the clip.

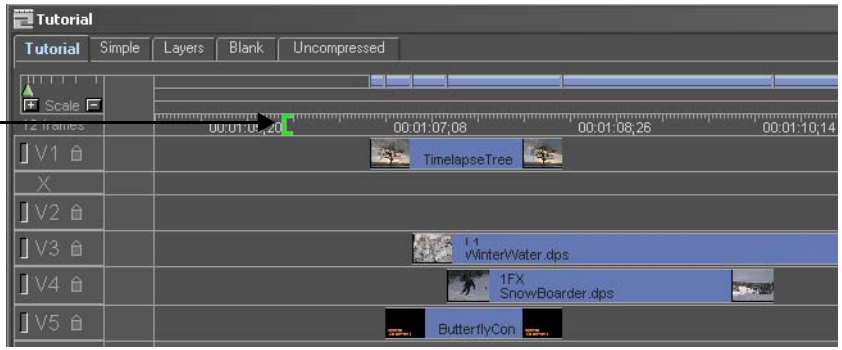
Only the selected clips move.

Move Align (In or Out)

Move align allows you to align the In or Out points of a series of selected clips to a specific point on the timeline. It moves the clip, without altering any trimming that has been applied to it.

Selected clips have to be vertical -- one clip only per track. You cannot select a clip on a locked track.

Before a move align, you must assign an in or an out point on the timeline.



If a clip is part of a linked group, it maintains its spatial relationship with the other clips it is linked to. If you choose multiple clips from the same link group, only the master clip (the one with the red marquee border) is aligned.

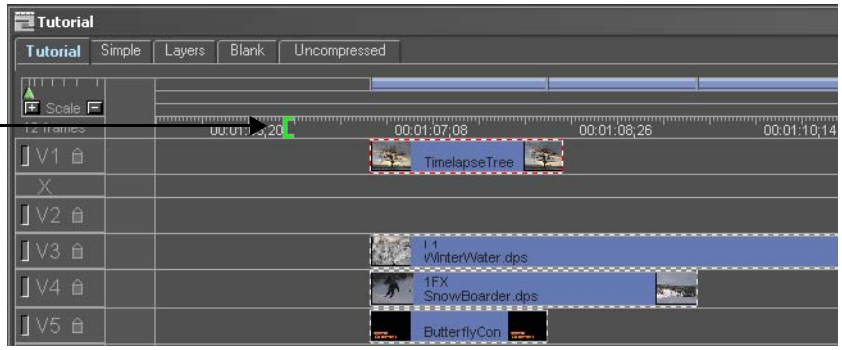
Synced portions of a clip, as in a DVA/LTA, are all selected at once. The video is aligned, and the audio is positioned to maintain sync.

To quickly ensure the beginning of a scene or series of related effects, you can Move Align all selected clips to share a common In or Out time on the timeline.

To perform move align:

1 Select the clip or clips on the timeline that you would like to align.

After a move align to the in point, the clips have all changed position. they maintain their trimmed duration while moving their in points to the marked position on the timeline.



2 Use the “[“ or “]” buttons to mark an In or Out point on the timeline. If there is both an In and an Out marked, both options are available. Otherwise, you will be able to do one or the other.

3 Press the Move Align Hotkey, by default Q, right click a blank space on the timeline and select **Align > Move to In marker** or **Move to Out marker** from the

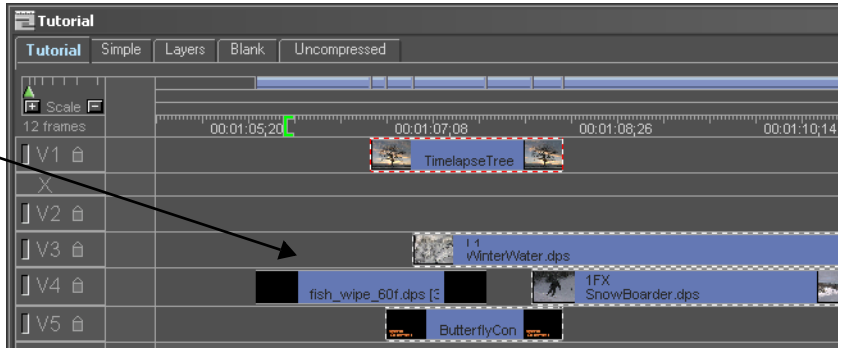
menu, or make sure the timeline is selected and select **Edit > Align > Move to In marker** or **Move to Out marker.**

Entire clips move to align their current In or Out times with the timeline IN or Out time, what ever has been specified.

Move Align is not available if you have two clips selected from the same track.

If clips are selected and an In or Out point is marked such that at least one clip will overlap another clip on the timeline, a message will appear. The Align cannot be completed due to the conflict of clips potentially overlapping on the timeline. Go to the timeline, make any adjustments needed and follow with the alignment.

This unselected clip can be moved, or the timeline marker can be moved, or you can unselect the clip on V3.



You can move the timeline marker, move the offending clip and reselect your others and proceed, or unselect the clip that would overlap another clip.

You cannot select multiple clips in a linked group, as that would alter the relationship between them. However, if you align a clip that has other clips linked to it that are not currently selected, those clips are dragged along with the selected clip. This assumes there is no conflict created on the timeline when the clips are moved. If any of the clips in a linked group would overlap another clip on the same track, the alignment is not allowed.

Align to Timecode

There are also two alignment options that allow you to align clips' timecode. The first clip that is selected is the master clip. Other selected clips are aligned to this clip.

Align Timecode using Slip - Clips are not moved, they retain their position on the timeline, although the In and Out points are adjusted so that the timecode aligns vertically for all clips. If all clips do not have a common timecode, this option is not available.

Align Timecode using Move - Clips are moved, retaining any trimmed In or Out points, so that the common timecodes are aligned to the master clip.

Align to Timecode ignores In, Out and playhead markers on the timeline.

Speed Change

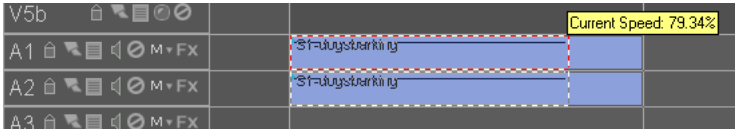
You have the option to change the clip speed of both video and audio clips.

To change clip speed:

Speed Change Button

1 You can select **Effects > Clip Speed** from the menu, right click on the clip and choose **Clip Speed,** or press default hotkey S. If you perform any of these actions, the Speed dialog box will appear. See Chapter 17 for details on the Speed Change dialog box. If you have multiple clips selected, when you change the clip speed on one of them, that applies the change to all the clips.

2 Make sure that the clip(s) is selected, and then click the Speed Change button in the toolbar. Using the mouse, hover over the clip's In or Out point and scrub in the appropriate direction. As you are scrubbing, the speed percentage will be displayed.



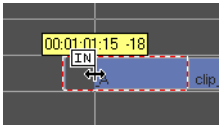
Trip clip to change speed using Speed Change button

Trim a Clip on the Timeline

Clips that are already on the timeline do not need to be placed in the trim window in order to trim them.

Trim a Single Clip

Position the cursor at the edge of the clip. The cursor changes to an In flag at the left edge of the clip or an Out flag at the right edge of the clip. Hold down the left mouse button to drag the edge of the clip to a new position.



You cannot add frames that aren't there, so if you want to extend the In point of a clip but all the media in that clip already appears on the timeline, you cannot extend the edges of that clip any farther. If you must extend a clip beyond its In or Out points without changing its position, use the Speed Change tool.

Alternately you can select the clip you want to trim and use press "Shift [" or "Shift]" on the keyboard ({ and }). The cursor changes to an In flag or an Out flag. Use the arrow keys on the keyboard to change the In time or Out time. You can also press "CTRL I" or "CTRL O" on the keyboard to open a window that allows you to numerically enter in the timecode.

When trimming, clip edges obey the snap rules (set in the main menu under **File > Preferences**. Select the General tab and click on the Snap Tools button). When a clip is within the set distance of an index, the playhead, or another clip edge, it automatically jumps to that position during trimming. You can disable this feature on an individual clip basis by holding down the Backspace key.

Clip information (timecodes in and out on the timeline) and transition duration information appears in the status bar at the bottom left of the screen when moving or trimming an associated clip with either the mouse or the arrow keys.

Trim Synced Video and Audio

The three bars on the timeline -- the video and the two audio bars (assuming the audio is stereo), are synchronized, and when you open them in the trim window they will always maintain that synchronization. You can tell sync clips because they are marked with an S followed by a sync group number in their top left corners. All members of a sync group have the same number.

Sync allows clips to be trimmed and moved in unison. Clips such as DVAs (with an associated video DPS file) are automatically synced when brought to the timeline. So are stereo pairs of audio clips.

To trim just the audio or video of a clip, hold down the W key while dragging the mouse. The portion of the clip (either the audio or the video) that the mouse is over is the only portion that will be trimmed. This does not disrupt the sync of the audio.

In the main menu, select **File > Preferences** and choose the General tab. You can activate **Ignore Sync Group While Trimming**. This allows you to trim the audio and video portions of a DVA/LTA on the timeline so one portion is longer than the other without disrupting sync. You can toggle this feature by holding down the W key (default Hotkey).

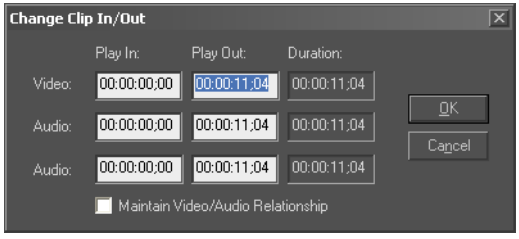
When you trim sync clips, normally both portions of the clip -- the audio and the video -- are trimmed at the same time. When working on the time-

line, you can trim the audio or the video only by holding down the W key on the keyboard while dragging the In or Out point of either the audio or the video. All audio tracks are trimmed simultaneously.

While trimming a clip a small pop up window by the cursor shows the time-code of the current frame that is being trimmed and how many frames have been added or subtracted.

Trim a Clip Numerically

With a clip selected, go to the main menu and select **Edit > Clip > Set In/ Out**. A window opens:



Enter the trim numbers that you wish to apply to the audio and video of the clip. As you alter two portions of the clip, the third portion is automatically calculated (e.g., if you change the In and Out, Velocity determines the duration).

If you check Maintain Video/Audio Relationship, a change you make for the Play In of one portion of the clip is also applied to the other portions of the DVA/LTA clip. If you do not check here, you can trim the video and audio of a DVA/LTA separately.

If a clip is lacking a component (for example, it has mono rather than stereo audio), that row of the window is left blank.

Working with Audio and Video in Sync

To keep track of the relationship between DVA/LTA video and audio clips on the timeline, clips have sync indicators.

Sync can be easily applied or removed at any time. Video can be synced with up to eight mono tracks of audio. The audio clips must all share a common in time and out time, but the audio and video must only share an area of overlap between them. This overlap allows for sync to be retained as you trim audio and video In and Out points separately.

Apply Sync

Apply Sync button

Multi select a video clip without audio (a DPS/LTV file) along with one or more unassociated audio clips (WAV or DVA/LTA files that have been split from their video). Shift W is the Hotkey to apply sync to a pair of clips, or press the Sync VA button in the toolbar.

Once the sync has been applied, clips will move and trim in unison. Editing and Effect tools such as razor, delete, cut, copy, paste, lock, and speed change will also effect all clips that are part of the sync group.

Remove Sync

Remove Sync button

Press the Unsync button, Hotkey Shift S or right click on the clip and choose **Unsync Clips**.

When you unsync a video clip with stereo audio, the video and audio are unsynced, but the audio clips remain synced. If you wish to unsync the stereo audio, select the pair of clips and click "unsync" again.

There is an optional Hotkey you can assign to Unsync and Delete Audio or Unsync and Delete video. To assign these Hotkeys (which do not have defaults assigned), in the main menu choose **File > Preferences** and select the General tab. Press the User-Definable Hotkeys button.

If you remove sync from a DVA/LTA and then move one of the portions of the DVA/LTA, you can see how many frames from sync the clip has been moved. This appears in a pop-up next to the amount of frames the clip portion has been moved.

You can turn this feature off by opening **File > Preferences** in the main menu. Choose the General tab. Remove the checkmark next to **Show Sync Values during Move**.

Other audio -- music, sound effects or foley, wild sound (hum), voice overs, etc., may be mono or stereo. Stereo clips are always synchronized on two mono audio tracks.

Audio and video that are synced together, or a stereo audio clip such as a WAV captured from a CD, display the same Sync marking in the top left corner of the clip. The first A/V sync clip that is placed on the timeline is marked S1, the second one is marked S2, etc.

Extend Left and Extend Right

Extend Left

Extend Right

The Extend Left and Extend Right buttons on the timeline tool bar return the In and Out points of the clip, respectively, to their original, untrimmed durations. The clip retains the position it held on the timeline before the function was used.

If you use Extend Left on a clip that has 30 frames of extra footage before its trimmed In point, that clip will now start 30 frames earlier relative to the entire timeline. If this clip is close to another clip on the same track, then the beginning of the clip will be extended until it butts against the previous clip. Extend Right adds to the Out point in the same way.

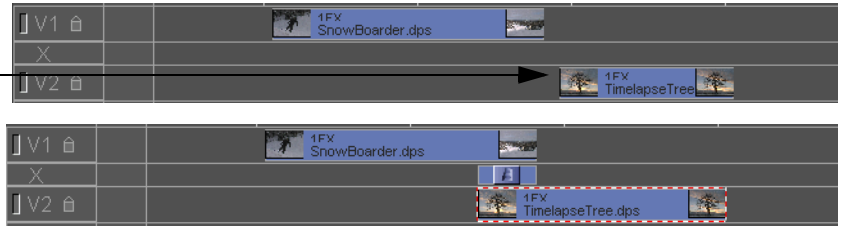
Extending a clip left or right can cause it to overlap with clips on other tracks. If the clip is on track V1 or V2, this can create a new transition.

If you have two or more clips selected, this function applies to all selected clips. If all the selected clips have extra data, then the clips will all be extended. If one of the clips does not have extra data, no clips will be extended.

Before

Extend this clip left

After



Move Edit

If you hold down the SHIFT key while trimming the Out time on a clip, all the clips following will also move. They will keep their position with respect to the new Out time of the clip, but adjust their position so they are proportionately the same distance from the trimmed clip's Out time.

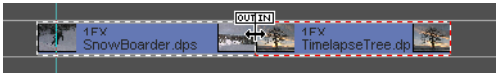
You can use Move Edit with either the mouse or the arrow keys.

Simultaneous Edit (trim two adjoining clips)

If you have two video or still clips butted against each other on the same video track, you can adjust the position of the cut between them using Simultaneous Edit.

Hold down the BACKSPACE key while trimming the In or Out time of a clip with either the mouse or the keyboard's arrow keys. This lets you simul-

taneously trim the Out time of the first clip and the In time of the second by an equal amount.



If you have a 2nd video monitor hooked up to Preview/Key output of your breakout box, you will see the trim point of the first clip on your main output and of the 2nd clip on the second monitor.

Razor

Razor button

Using this tool, you can cut a timeline clip into multiple segments.

Select a clip. The Razor tool doesn't work without a clip selected.

Select the razor tool from the tool bar. The cursor changes to a razor icon which you can use to cut the clip.

For a more accurate cut, drag the razor to the desired position with your mouse. Once you are in the general area, press the ENTER button on your keyboard and use the left and right arrow keys on your keyboard to make frame accurate adjustments. A pop up window shows the timecode at your cursor location and the video monitor displays the image to help you to identify where you are cutting. The frame shown using the main video output will be the first frame of the clip to the right of the cut. If you have hooked up a second video monitor to Video Output 2 on your breakout box you will see the last frame to the left of the cut on this monitor.

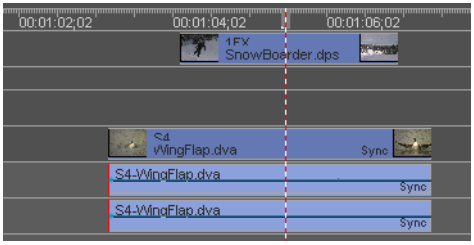
Once a clip is cut, the original clip's Out Time will end at the point where it was cut. The second clip's In Time will butt up next to where the previous clip stops, and continue on to the original Out Time. So, for playback purposes this isn't noticeable, until you alter the two clips further.

The razor tool only works on one clip at a time. If multiple clips are selected, the first one you selected is the one that is razored.

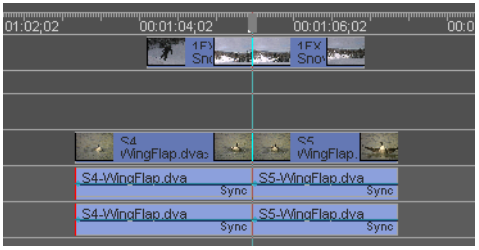
Slice

This keyboard shortcut cuts through all the clips, or all the selected clips, under the playhead.

before slice



after slice

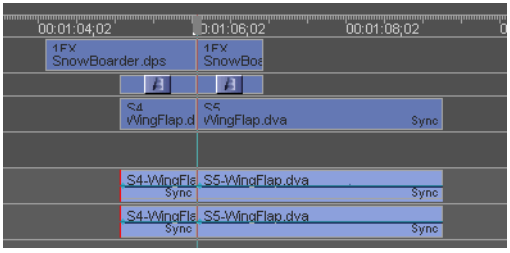


Place the playhead on the timeline at the position you would like to slice at.

Multi-select (hold down the shift key and select clips vertically) clips that you would like to cut. Or, if you wish to slice all clips under the playhead, make sure no clips at all are selected on the timeline. You can do this by clicking a blank space on the timeline.

Press X on the keyboard.

This can have surprising effects if you have a transition under the playhead - for example, giving you a transition from clip A to Clip B and then back to clip A again.



Selected clips that are not under the playhead are not sliced.

Slice works when the timeline is paused (in scrub mode), and when you are playing the timeline back using either the spacebar or JKL keys. If you are playing back the timeline and use the Slice tool, playback stops.

Slip Edit

Slip Edit button

This tool allows you to adjust the In and Out points of a clip without affecting its position on the timeline or its duration.

Click the Slip Edit button and drag the appropriate clip left and right with the left mouse button held down. You can view the Out point of the clip on the Preview window and on your video monitor.

The clip is not loaded into the trim window, so you will not see the In and Out points in the Source screen. However, as you slip the clip on the timeline, In and Out timecode markers appear above the clip.

The clip retains its position and duration on the timeline (as above, where the clip is butted up against a clip on each side). The In and Out points of the clip relative to all the media in the clip are the only thing that change.

If you have two video monitors hooked up to your breakout box, you can view the In on the Program video out and the Out on the Key Output.

Slide Edit

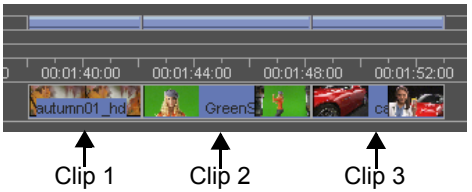
Slide Edit button

This tool allows you to adjust a clips position in a series of clips without affecting the Timeline In/Out points of the series of clips.

Select a clip on the timeline and click the Slide Edit button. As you drag the mouse left and right with the left mouse button held down, you can view the Out point of the clip on the Preview window and on your video monitor.

The clip is not loaded into the trim window, so you will not see the In and Out points in the Source screen. However, as you slide the clip on the timeline, In and Out timecode markers appear above the clip.

Before Slide Edit



After Slide Edit

The clip changes its position but the clip's Trim In/Out points will stay the same.

Lift

Lift button

Lifting removes frames from the In to the Out on the timeline and leaves a gap of the same duration as the frames you remove.

To perform a lift:

1 Mark an In point on the timeline using the button beneath the Preview Screen of the preview/trim window. The playhead position when the In button is pushed will be the marked In point.

2 Move the playhead (normally done by scrubbing the timeline) and mark an Out point using the Out button beneath the Preview screen. The marked Out must be to the right of the marked In point.

3 Press the Lift button in the timeline status bar.

If no clips are selected, then all clips within the range are affected. If clips are selected, only the selected clips are affected.

When you lift a timeline segment, it is placed in the Clipboard as if you had cut the segment, so that you can paste it somewhere else if you want.

Extract


Extract button

Extracting removes frames from the marked In to the marked Out on the timeline and closes the resulting gap by ripple deletion.

To perform an extract:

1 Mark an In point on the timeline using the In button beneath the Preview Screen of the preview/trim window. The playhead position when the button is pushed will be the marked In point.

2 Move the playhead (normally done by scrubbing the timeline) and mark an Out point on the timeline using the Out button beneath the Preview screen. The marked Out must be to the right of the marked In point.

3 Press the Extract button, which appears in the timeline status bar.

When you extract a timeline segment, it is placed in the Clipboard as if you had cut the segment, so that you can paste it somewhere else if you want.

If no clips are selected, then all clips within the range are extracted. If clips are selected, only the selected clips are extracted.

Delete Before Playhead / Delete After Playhead

There are two tools to cut a clip or series of clips off and delete the material on one side of the playhead. CTRL [deletes the portion of clips that is before the playhead. CTRL] deletes the portion of clips that is after the playhead.

If one or more clips are selected, those clips will be trimmed. If no clip is selected but there are one or more clips under the playhead, all clips under the playhead are trimmed. If there are no clips under the playhead, or if the clip that is selected is not under the playhead, nothing happens.

Trim to Playhead

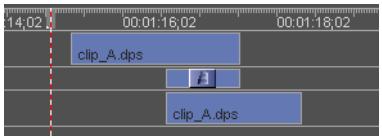
If you have selected a clip or a group of clips, you can trim them to the playhead, if you have set the Hotkey for them to do so.

Hotkeys for Trim In to Playhead and Trim Out to Playhead can be set in the User Definable Hotkey interface. See Chapter 26 for information on how to assign Hotkeys.

Once you have assigned the Hotkeys, you can use the tools.

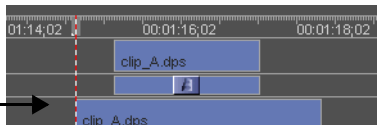
Trim In to Playhead moves the In point of the clip, so it extends or shortens the clip but does not change its position.

Before

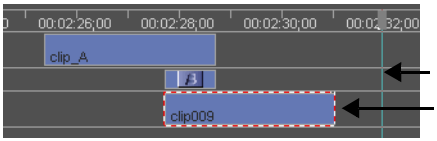


After

Trim to play-head

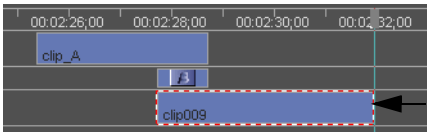


Trim Out to Playhead extends the end of the selected clip to the playhead. This option affects the duration of the clip.



Playhead

Clip to be trimmed



After

Trim Out to playhead

If the playhead was before the clip, the trim would have been disallowed. If the playhead had been in the middle of the clip, the end of the clip would have been trimmed to that point.

If there is a conflict on any track, the trim will not be allowed.

Trim to In / Out

When you have several clips selected, you can trim them so they all start or end at the same time. Clips retain their vertical relationship - sync, timing etc. Trim alignment doesn't alter the position of events on the timeline, it alters the duration of the clips selected.

There are three Trim Align options:

- Trim to In extends or shortens all the chosen clips so they have a common start time.
- Trim to Out extends or shortens all the chosen clips so they have a common end time.

- Trim to In and Out extends or shortens all the chosen clips so they have both a common In and Out time.

Using Trim to In or Out

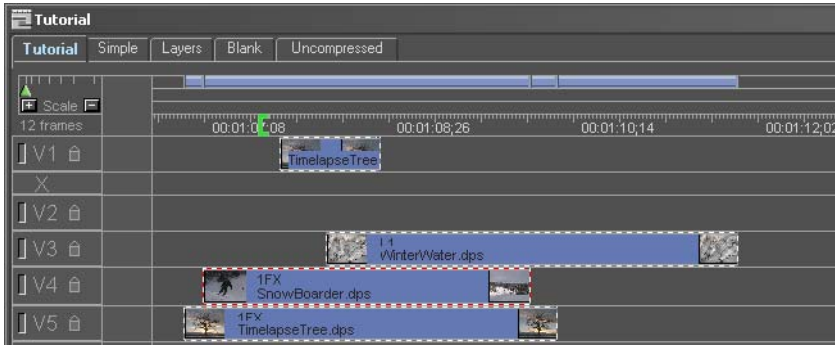
To perform a Trim to In or Out:

1 Select at least one clip.

2 Specify the point on the timeline to align the clips to. Do this by marking In and/or Out points on the timeline.

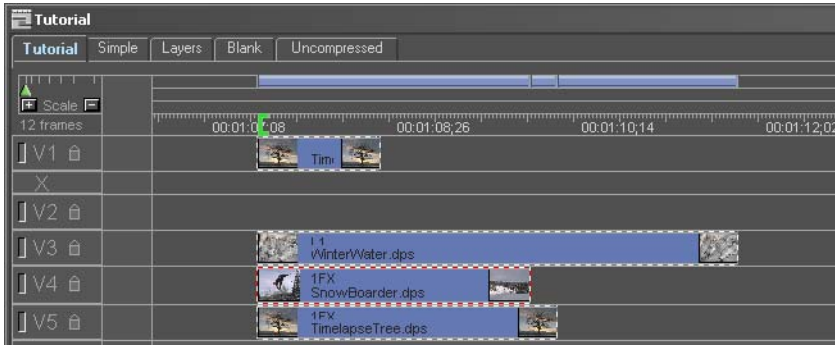
3 Right click in a blank spot on the timeline and select **Align > Trim to In marker, Trim to Out marker**, or **Trim to In AND Out markers** from the menu that opens.

Before you trim the selected clips...



After you use Trim to in, the out points on all the clips remain the same while the in points are aligned to the timeline marker.

Sync is maintained.



In and/or Out times of the clips are trimmed to match that of the marked position(s) on the timeline. If you leave one end of the clips unmarked, those ends remain unaffected by the operation.

If a clip does not have enough trimmed frames between the actual start or end of the clip and its current trimmed time to allow it to match the aligned

point, a message box opens. Choose to either Cancel the Align, Proceed with alignment skipping invalid clips or proceed with the alignment as far as the clips' available media will allow.

You cannot use this tool to trim linked clips, as that would alter the relationship between them. Locked clips and locked tracks cannot be aligned.

Clips that are linked or synced take all associated clips with them.

If there is an clip in a position such that to trim them in this manner would cause an overlap, the option is not available. If you still wish to do the trim, move one of the offending clips, or remove one of the clips from the selected group of clips, and continue.

Swapping Clips on Timeline

There may be instances where you may want to swap the positions of two tracks that are back to back on the timeline. Making sure the two clips are back to back (touching each other on the same track) and selected, right-click on the timeline and select **Swap Clips**. The two clips will immediately swap positions on the timeline.

Velocity, Ripple and Overwrite Mode Functionality

Velocity features three different editing modes that will distinguish the editing style of the timeline. This is helpful especially if you perform the same sort of edits most of the time. For example, if you know that you will be performing mostly overwrote edits in your project, you will probably want to put Velocity in Overwrite mode so you won't have to worry about selecting the correct hotkey every single time you perform the edit. You can choose which mode you want to edit in by clicking on the mode button on the bottom right corner of the timeline.


Velocity mode


Ripple mode


Overwrite mode

Velocity Mode

When the software is running in Velocity mode, this means that when you are editing, no ripple or overwrite edits will occur *unless* you use the appropriate hotkeys in order to enable those kinds of edits. There may still be cases where you are in Velocity mode and you want to perform a ripple or overwrite edit without changing modes.

To apply a clip using Ripple mode:

1 Click on the clip you want to insert and then hold down the mouse button.

2 While still holding down the mouse button, press the SHIFT key and drag the clip to the appropriate location on the timeline. You will see a cursor with two arrows pointing down and to the right, meaning that you are in Ripple mode.

3 Release the mouse button. You should see that all clips on the track should shift to the right as far as the duration of the clip you are inserting.

4 To apply Ripple mode to ALL tracks on the timeline, follow the same procedure as above, but press ALT+SHIFT on your keyboard. You should see the same cursor over the clip you are inserting, but the result will show that all tracks on the timeline will have shifted to the right as far as the duration on the clip you are inserting.

To apply a clip using Overwrite mode:

1 Click on the clip you want to insert and then hold down the mouse button to 'grab' the clip.

2 While still holding down the mouse button, press the CTRL key and drag the clip to the appropriate location where you wish to overwrite another clip on the timeline. You will see a cursor that shows two arrows pointing down, meaning that you are in Overwrite mode.

3 Release the mouse button. The result should show that the clip has replaced any other clip at that location on the timeline without shifting any other clips on that track.

4 To apply Overwrite mode to ALL tracks on the timeline, follow the same procedure as above, but press CTRL+ALT on your keyboard. You should see the same cursor over the clip you are using to overwrite, but the result will show that all tracks on the timeline have that same location overwritten. To perform an insert edit, hold SHIFT (after you have 'grabbed' the clip) while dragging.

Ripple Mode

Ripple cursor

Ripple mode allows you to insert a clip into any track on the timeline and shift all of the clips as far as the duration of the clip you are inserting. When the software is in Ripple mode, this will happen by default every time you insert a new clip in the timeline. You will see the ripple cursor as you are inserting a new clip in the timeline in this mode.

Adding clips from the gallery to the timeline, deleting clips from the timeline and trimming clips on the timeline are the only methods that will cause a ripple in Ripple mode. If you trim the In point of a clip (you can only trim the In point to the right in Ripple mode), all clips whose In points start to the right of the trimmed clip's In point will shift to the left, while the location of the trimmed clip's In point will stay the same. If you trim the Out point of a

clip, all clips starting to the left of the clip's original Out point will shift left or right, depending which way you trim.

Moving clips around on the timeline will not cause a ripple in this mode.

Overwrite Mode

Overwrite cursor

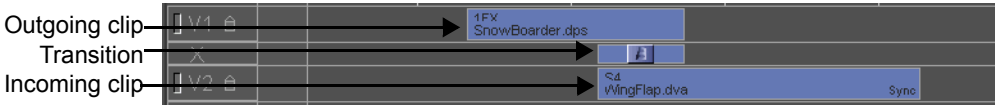
Overwrite mode allows you to overwrite, or replace, clips with other clips on the timeline. When the software is in Overwrite mode, clips will be overwritten if they are dragged over by default. Every time you drag a clip while in Overwrite mode, you will see the overwrite cursor unless you are creating a transition or if you are holding down SHIFT while dragging to temporarily disable this mode.

To overwrite clips on all tracks on the timeline, drag a clip to the desired location while holding the ALT button and release the clip. That same location on all tracks will then be overwritten.

Note: If you want to create transitions in Overwrite mode, you may still grab the clip being used in the transition, press CTRL+SHIFT and create the transition. This applies for both collapsed and expanded track modes.

Transitions

When you view an "uncollapsed" timeline, transitions appear as a track on V1 and a track on V2 which overlap their out and in times. In the overlap area there is a transition marker in the X track. You can't place clips in the X track; creating a transition is the only way an object can get there.



You can also view your V1, X and V2 tracks on the timeline in collapsed mode. Right click on the video track header and choose **Define Track Transition Modes** and choose **Collapsed** for the appropriate track. Now a transition looks like this:

Out-going clip Transition In-coming clip

If your transition is a dissolve (default), single track mode does not display a transition icon. However, if you switch to a different transition type, the icon displays over the transition area.

Either way you view the transition layers in Velocity, the tools for trimming that transition are the same.

Note: When you trim the In/Out point of a clip that is involved in a transition, the feedback you see in the preview window will always be related to the clip you are currently trimming, not the relative point on the opposite clip.

Create a Transition

To create a transition in dual track A/B roll mode, you need to have two clips, one on each track of the dual track (i.e. V1a, V1b).

If one (or both) of the clips has excess media before or after its trim point, you can drag the In or Out point of that clip towards the other clip on the other track. Once the media on that clip has been extended past the In or Out point of the other clip, a rectangle appears in the Transition track (labeled X) between them. It looks like a clip, but cannot be moved or trimmed by itself. In order to alter the transition's length and/or position, you must trim the two clips that overlap to create the transition.

You can also drag one clip to a position where it vertically overlaps the other clip.

For a transition in Single Track A/B roll mode (collapsed transition mode), only the appearance of what you are doing is different.

To create a transition in Single Track A/B roll mode, you must first grab the clip with the mouse, hold down CTRL+SHIFT and then overlap the other clip (the transition cursor will appear) until a transition has been formed. You can also perform the same operation while dragging clips from the gallery or trimmer to create a transition. After the transition has been created you may fine tune it my selecting one of the clips involved in the transition and using the left and right arrow keys. You do not have to hold down CTRL+SHIFT if a transition in this mode already exists and you want to change the size of it.

Audio in Transitions

If you wish sync audio (such as DVAs) to have an automatic cross-fade, in the main menu, under **File > Preferences > General**, place a check mark next to "Auto audio cross fade at transitions". Otherwise, turn this option off.

When this option is activated, any time you have audio and video (a DVA/LTA and DPS/LTV) synced file, and they are the same length, the audio will fade in/out at transitions and fades up from black. The audio does not fade up at transitions when audio is not synced with video.

Choose a Transition Effect

Right click on the transition and choose RT Transitions or Rendered Transitions (and a group from the submenu) to choose a transition and apply effects to it. Or hold down the Shift key on the keyboard and double-click on the transition to open the RT Transition window.

Velocity's transition selection is described extensively in Chapter 16.

Trim A Transition

Drag the out point of the first clip and the in point of the second clip to change the length of the transition on the timeline. If you have two monitors hooked up to your breakout box, you can see both the incoming and outgoing clips update as you trim.

If you are in the V1/V2 collapsed mode, you can drag the out point of the first clip or the In point of the second clip to shorten or lengthen the transition. Assuming there is sufficient unused media in the clips, you can also drag the in or out point of the transition in order to change its in and out points on the clips without altering the duration of the transition. You cannot use this trim method if V1a and V1b are not collapsed.

Swap A/B Track

If you have a string of A/B rolls and remove a clip, this leaves a nasty space on the timeline where two clips are on the same track rather than being on opposite tracks for the A/B roll.

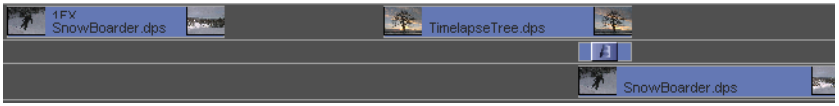
To re-create the alternating track nature of the V1a and V1b tracks, place the playhead in the gap created by the removed clip (between the two clips that are on the same track).

Right click and select **Swap A/B Track** from the menu.

All the clips following the gap that are on V1 move to V2, and all the clips following the gap that are on V2 move to V1. You can now use the gap tool or extend a clip across the gap to create a transition between them.

An A/B roll...

Ruined by the removal of a clip part way through



Clips swapped, ready to recreate a transition

Another way around this is to simply take the clip before the gap or the clip after the gap and razor it. Now, vertically move half of the clip to the other track (V1 to V2 or vice versa) without altering its horizontal placement on the timeline. Close the gap between the two clips, and create a transition.

Alternate solution: razor clip after cap and vertically move first half to other track

Chapter 13
Editing and Adjusting Audio

The Velocity software supports 16 mono channels when using the required system specifications.

By default, the Velocity timeline has eight mono audio tracks. A stereo audio clip uses two of these tracks.

Stereo (A1/2) and Mono (A3) audio. Note the S1 on the stereo clip, defining its sync group.

When you place a video/audio DVA/LTA clip on the timeline, the audio is automatically placed on the first available audio track (A1 if there is no other audio clip). If the audio was recorded in stereo, then there are essentially two synchronized audio clips, and they are placed on the first two available audio tracks (A1 and A2 if there are no other audio clips in that vicinity).

If there are other audio clips that would occur at the same timeline timecode as the audio clips you are adding to the timeline, for example in a transition between two video clips, the audio associated with the second DVA/LTA is placed on A3 and A4. If you then overlay another video/audio DVA/LTA clip on top of these, its audio is placed on A5 and A6. As you drag the video portion of a sync DVA/LTA clip around on the timeline, the audio portion may change tracks if you have the **Automatically bump synced audio to empty track** box checked in the General Preferences.

In addition to basic trimming and adjusting the sync relationships or audio clips, you can adjust the volume and panning. Velocity also allows you to apply Direct Show and VST audio filters to your clips.

Adding and Deleting Audio Tracks

To add audio tracks to your timeline, right click in a blank space on the timeline and select **Add Track**.

In the Add Track(s) window that opens, add the appropriate number of tracks in the Audio Tracks section. Note that you may also add video tracks at this time in the Video Tracks section.

Click **OK** and the new tracks will be added at the bottom of the timeline.

There is only one circumstance where Velocity will add the tracks required without your prompting. That may occur when copying and pasting a group

of clips from one timeline to another. If there are insufficient tracks for a particular group of clips, a message will appear asking if you wish to add more tracks.

To delete a track, right click on the timeline and select **Delete Track**.

In the Delete a Track window that opens, select the number of tracks to be deleted in the Audio Tracks section of the window. Velocity will only delete the last tracks of a selected type if they are empty.

Click **OK** and the tracks will be removed from the timelime.

Using the VU Meter

The VU meter allows you to view the audio level for each track, and to create audio nodes for each track.

The VU Meter is open by default when you start the program. If you have closed it (by clicking the X in the top right corner of the VU Meter window), you can reopen them by selecting **View > VU** from the main menu.

You can make the VU Meter window larger or smaller by placing the cursor over an edge pressing the left mouse button and dragging.

If you drag the VU Meter to a part of the screen where it overlaps another area, such as a gallery or timeline bin, and then you proceed to do work in that other window, it will overlap the VU Meter. If you have a lot of windows open at the same time, the VU Meter can get buried. Use Auto Tile to return it to its default position in the bottom right corner of the screen.

By default, the VU Meter displays two sliders that represent the Master output sliders. These sliders control the audio's final mixed output. The Preview sliders control only the level of preview audio played from the trim window or gallery. The Preview sliders can be hidden by disabling the **Show Preview VUs** check box in the VU Meter settings.

Velocity can have up to eight mono audio tracks. You can add up to eight sliders in the VU Meter, one for each of these tracks.

Displaying VU Channels in the VU Settings

Open the VU Meter settings window by right clicking on the VU meter section of the screen, by clicking on the Settings button in the lower left corner of the VU Meter window, or by choosing **File > Preferences** and then clicking on the VU Meter tab.

VU Meter Settings button

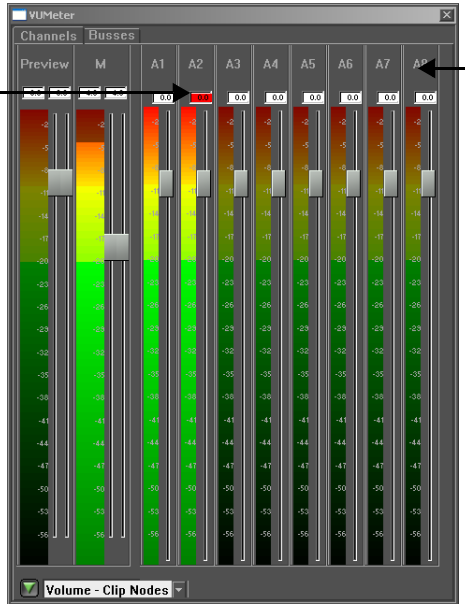
The Track column lists all the audio tracks on the timeline. Check marks in the Display column indicate audio tracks that have their own sliders in the VU meter. You may change which tracks you want shown on the VU Meter in this window my placing or removing a check box under the Display column. The "All" and "None" buttons allow you to quickly reset your selections.

See Chapter 26 for information on the rest of the settings in the VU Meter settings window.

Using the VU Meters During Playback

The VU Meter monitors audio during playback from the gallery, timeline or the preview/trim window. The colored scale lights up to indicate the audio output levels and a warning is displayed if audio saturation is detected.

Track header markers turn red when the audio is over-saturated



Tracks A1-A8 have been marked as displayed in the VU Meter settings

Click this button to access the VU Meter settings

When you playback the entire timeline you can adjust the Master volume on the VU Meters to adjust the audio amplification of the entire timeline.

You cannot adjust the audio levels of a clip when you play it in the trim window or gallery, but you can adjust the level at which the audio is previewed, using the Preview sliders in the VU Meter. Double-click the VU sliders to reset the volume level to 0db.

When a mono clip is collected into the gallery, equal output will be heard from both the Left and Right channels -- the audio panning is initially set to 50% left and 50% right. If this is not the desired panning for your mono clip, you may set the panning by right clicking on the clip on the timeline and using the audio options.

When a Stereo clip is collected into the gallery and placed on the timeline, the left and right are panned 100% to the left and right channels, respectively.

When you play a clip with audio from the timeline, you can adjust the amplification of the individual clip that is active using the sliders.

At the top of each channel is a marker telling the timeline track number that channel is associated with.

Each audio channel, including the Master audio channel, has a scale to indicate its audio level and a slider so you can adjust the audio amplification for that channel.

You can modify these settings if you select **File > Preferences** from the main menu and choose the VU Meter tab (see Chapter 26 for more information).

Using Audio Busses

There are two main purposes of audio busses. The most important purpose is that audio busses provide a means of mapping timeline audio tracks to specific physical audio outputs on your Altitude or Quattrus hardware. The second purpose of audio busses is to provide a method of applying effects or volume adjustments to multiple tracks in a single step. NOTE: All audio busses are stereo.

Add Bus button

To add a bus, go to the Busses tab of the VU Meter and press the Add Bus button in the lower left corner. You may add up to 25 busses. Once busses have been added, you can route an audio track on the timeline into an audio bus by clicking on the Select Bus drop down in the audio track header. All audio tracks default to the Master Bus (M).

Add VST Effects button

You may route multiple tracks to the same bus. Once this is done, you can control all these tracks' volume by moving a single pair of bus sliders. You may also add VST audio filters to all of these tracks by hitting the FX button beneath each bus.

Automation is not supported for Bus-based VST Filters.

Routing Busses to Physical Altitude Audio Outputs

Go into the VU Meter Options and press the Bus Routing button. The Bus Options window will open.

Deselect the Sub-Bus designation check box to route the bus to any physical output.

This dialog has two sections. The top section is for routing busses to physical outputs. The bottom section is for routing physical inputs to physical outputs, for use in E-E monitoring.

All busses other than the Master bus will be Sub-Busses by default; this means that they will be run into the Master Bus before final output. The Master bus will be set by default to be routed out of ALL Physical Altitude Audio outputs, in stereo. Altitude has a total of 26 physical audio outputs, and complete control is given to the user with regards to where the audio is sent.

By deselecting the Sub-Bus designation for a bus, you are given the ability to send the bus to any physical output. Note that only one bus can be mapped

to a physical output at a time, so you must first disconnect the master bus for physical output 'x', in order to map another bus to that output.

Audio Volume

Audio volume can be controlled on a timeline basis, and it can also be controlled on an individual clip basis.

Adjusting the Volume of a Single Clip

Velocity provides a few methods for adjusting the volume of the audio portion of your clips.

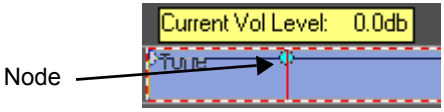
When you sync audio clips, as in a stereo pair, any volume node or gain adjustments you make to any clip in an audio sync group are applied to all audio clips in the sync group simultaneously.

Adjusting the Volume on the Timeline

To adjust the audio within a single clip:

Select the audio clip and position the cursor on the node line in the Audio control section. The cursor changes to a finger pointer.

Click the left mouse button to create a node (a gray dot). You can create as many nodes as needed. Double click the node to delete it.



Drag the nodes up or down to define the clip's volume level. The active audio node will change its color to light blue so that it can easily be identified. The line between the nodes indicates whether the audio clip's volume level has been increased or lowered: an ascending line shows audio levels being raised; a descending line shows audio levels being lowered.

All audio clips have a fade-node at the first and last frame positions. These fade-nodes can be dragged towards the center of the clip to create an auto-

matic audio fade in or fade out. The default fade type can be determined in the **File > Preferences > Audio Settings**, or can be changed on a per-instance basis by right-clicking on the fade itself.

To adjust fade-nodes vertically, left mouse click and hold the fade node, then hold the ALT key while dragging up or down.

Node Management

When dragging a node with the mouse, it will move in one dB increments by default. To fine tune node placement, left mouse click and hold a node, then hold the CTRL key to move it one tenth of a dB increment. Left mouse click and hold the ALT key to allow only vertical movement of a node. SHIFT will allow only horizontal movement of a node.

Hold down the CTRL key and drag the audio line between two nodes to shift this area uniformly. Hold down the SHIFT key and drag the audio line to raise or lower the entire audio curve.

You may also position the cursor over a node, click on the node to activate it, and then use the up or down arrows on your keyboard to increase or decrease the node position. As you change the node position you will be shown the current dB in a yellow box over the node. When you drag a node you will also be scrubbing the audio, to help you to position the node.

Note: When an audio track's height is small, volume adjustments aren't allowed. This makes it easier to grab clips.

To Adjust the Volume using the VU Meters

You may also use the VU Meters to adjust the audio level of an individual clip, an individual track, or the entire timeline using the drop-down box at the bottom of the VU meter window.

There are three choices in the drop-down menu:

Volume - Clip Nodes - When this option is selected and you move the slider for a particular audio track up and down, you create nodes on the clip on that track under the playhead on the timeline. **Note:** If the 'Touch Mode' option in the VU settings is disabled, it means the VU sliders will stay where you left them and overwriting any existing nodes under the playhead on the appropriate audio clip.

Volume - Clip Gain - When this option is selected and you move the slider for that track up and down, you adjust the volume for any clips under the playhead on that track.

Volume - Track Gain - When this option is selected and you move the slider for that track up and down, you adjust the overall volume for that entire track. Note that this can also be done using the volume slider on each audio tracks' track header.

Overall program volume can be controlled using the Master VU sliders.

Delete an individual node by double clicking on it. Delete all volume nodes and reset the volume to 0dB by right clicking on the clip and selecting **Audio Clip > Volume Reset**. Set the entire volume line to a specific volume by right clicking on the clip and selecting **Audio Clip > Volume-Channels**. This deletes any nodes you may have set and opens the Set Volume Control window:

The top of this window allows you to choose how a stereo audio track is treated.

Move Sliders Independently - Allows you to adjust the volume of the left and right portions of a stereo clip separately.

Lock all Sliders Together - This is the default. Both Left and right channels are adjusted simultaneously by the same amount.

Reset All Sliders - Leaves the sliders in the mode you set, but puts them back to 0 dB.

Audio Clip Navigation

Using the User-defined Hotkey interface (see chapter 26) you can assign a Hotkey to navigate from one node to the next within a clip.

A clip must be selected in order to use the assigned Hotkey. Once you get to a node, select it with the mouse and then you can use the up or down arrow to adjust that node.

Auto Fades

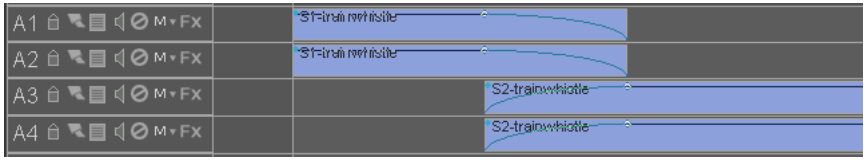
Auto fades at the beginning and end of clips can be automated. Note that auto fades and cross-fades do not create audio nodes. So, if you wish to edit the fade manually, you should apply it manually.

Audio Cross-fade at Transition

When two video clips are in a transition on tracks V1 and V2 (see Chapter 12) if these two clips have Sync audio that is trimmed to the same In and Out points, that audio may automatically have a cross-fade applied to it.

To turn on/off this option, go to **File > Preferences** in the main menu and choose the General tab. Change the **Auto Audio cross fade at transitions** option.

The cross-fade between the two audio clips is the length of the transition.



If the audio involved in one of the two sync clips is not trimmed to the same In and Out time, a cross-fade is not created. If one of the clips involved in a video transition does not have audio, the other clip will not have a cross-fade applied just to itself.

Audio Cross-fade outside of Video Transition

When two audio clips are not in a transition, but overlap each other on the timeline, you can still apply an audio crossfade between them.

Hold down the CTRL key while you select these two clips.

Press hotkey CTRL L to perform the cross-fade.

The cross-fade that is created has the duration of overlap between the two clips. If the audio clips don't overlap, a message will pop up to let you know that this function cannot be applied.

If one of the selected clips overlaps the other clip entirely (i.e., starts before and ends after the other clip) the same message will appear.

If a clip's in point is already involved in a cross-fade with another clip, you cannot select that clip and a third clip and apply another cross-fade to the in point. However, if a clip's in point is cross-faded with a second clip, you can still apply a cross-fade to the out point of that clip.

If a clip's In point has an audio fade on it, you can apply a crossfade to that clip still.

When you move a clip with a cross-fade applied, that cross-fade is updated and maintained as long as the two clips in the cross-fade still overlap.

Fade In or Out on a Single Clip

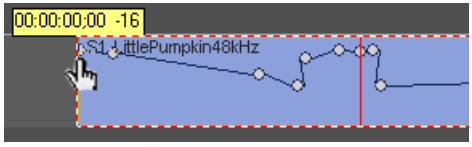
Right click on the clip and choose **Audio Clip > Audio Fade**. (You can also use Hotkey CTRL K for this function.) A window opens:

Set as Default - When this option is not checked, the Fade in and Fade Out always default to 1 second.

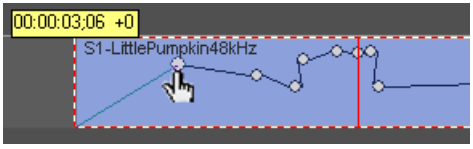
If you press Enter, the default fade In and Fade Out are used. Or, type a number into the first field and tab to the second field, type a number there and press Enter to close the window and make the change to the audio clip.

SuperNodes for Audio Fades

Velocity features SuperNodes to allow customized audio fade creation. To create an audio fade with a SuperNode, first locate the SuperNode at either edge of the audio clip on the timeline. You will know you have located the SuperNode once you see the finger pointer icon.



Once you have located the SuperNode, start dragging it outward to create an audio fade.



The creation of audio fades with SuperNodes are non-destructive, which means that if there are any nodes that may be in the way of creating an audio fade (like pictured on the previous page), you may drag the SuperNode over

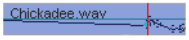
those nodes to overwrite them. However, if you decide that you want those overwritten nodes back, you can drag the SuperNode back in the opposite direction and you will find that the nodes return to their original locations.

Once you have created your desired audio fade, you now have the option to decide the shape of the fade. Right-click on the SuperNode and you will see a menu appear where you will be able to choose whether you want your fade to be Linear, Fast, Slow, Sharp or Smooth.

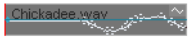
Muting a Clip

You may mute an individual clip by right clicking on the clip and selecting **Audio Clip > Mute**. You may also mute a clip by clicking on the Mute icon on the track header. This mutes both portions of a stereo clip. Muted clips show up gray on the timeline and have an audio node icon in their top right corners. To restore the audio, right click on the clip and select **Audio Clip > Mute** again to remove the check mark next to the Mute menu item.

Unmuted clip



Muted clip



To mute just the Left or Right of a stereo pair, right click on the clip and choose **Audio Clip > Mute Channels**. A window opens. Place a check mark next to Channel 1 or Channel 2 (where channel 1 is the upper of the two clips, and channel 2 is the lower).

Adjust Audio Panning

Panning is audio left-right balance of a clip or a stereo pair of audio clips. You can adjust panning on a per clip basis, on a multiple clip basis, or on a track basis. When you set up your master output (two tracks) you can set the panning for that, too.

When you record a stereo audio clip you record the left audio input to one clip and the right audio input to another. When you play back stereo audio, the default is to playback the left audio track to the left audio output and the right audio track to the right audio output.

When you record a mono audio clip you record the left audio input to the left channel only. When you playback a mono audio clip the default is for the left audio channel to playback 50% to the left output and 50% to the right output, so that you hear the same audio from both outputs. If you want to change how much of the left (or right) audio channel goes to the left and right audio output, use panning controls.

The timeline default setting is to show the volume on all audio tracks. You can change this on a track-by-track basis. To view panning, right-click on the track's track header and choose **Show Panning**.

Note: When an audio track's height is small, panning adjustments aren't allowed. This makes it easier to grab clips.

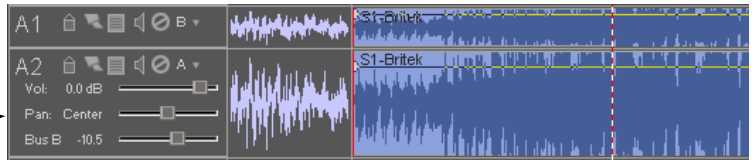
Adjust Panning on a Track

All the clips on a single track can have the same panning. This would be, for example, if you have a pair of stereo tracks on A1 and A2, A1 may be panned left and A2 would then be panned right.

To adjust panning on a track, right-click the track header and select **Track Based.**

Note: In order to adjust panning on a track by using the track header, you must increase the height of the track.

Adjust panning here



Move the slider left or right to customize the percentage of audio heard out of each speaker. Double-click the volume sliders to reset the volume level to 0db.

Adjust Panning on a Clip

You may also want to have panning assigned to individual clips on a track. This is normally done on the foley and sound effects tracks of a production.

With a track's audio display set to Panning view, create nodes and drag them up or down, which correspond to left and right.

Reset the panning to the default, deleting all nodes in the process, by right clicking on the clip and selecting **Audio Clip >Pan Center**.

To set the panning line for the entire clip to a specific percentage for the left and right channels, right click on the clip and select **Audio Clip > Pan-Channels**. The Audio Panning window will open and any changes made in this window delete any nodes you may have set.

Just like for audio volume, you can set the two sync audio tracks of a stereo pair to move together, or you can set them to adjust separately.

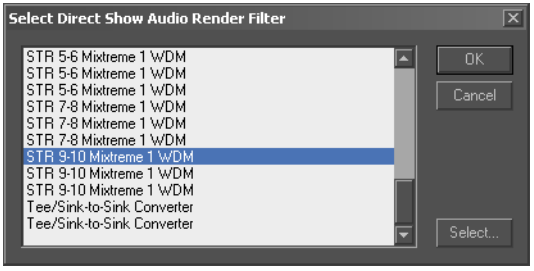
Audio Effects

If you have Direct Show filters installed on your system, these are accessible within Velocity for applying to WAV and DVA/LTA files.

Apply Audio Effects button

To apply a Direct Show filter to a clip, right click on that clip and select "Audio Effects" from the menu, or press the AFX button in the tool bar.

A menu opens offering you a selection of the filters that are on your system. Choose a filter and click **OK**.



Note: The Select... button opens a window that allows you to add or remove items from the main list.

When you choose a filter, the Direct Show Audio Effects window will open.

Press the Play button to preview the filter. (**Tip:** Check the bypass check box to hear the audio effect WITHOUT the Direct Show filter applied.)

Press the Render button to output a new file.

Your file is replaced on the timeline when the render is complete. If the original file was a stereo file, the new file will be a stereo file, if the original was a mono file, the new file will be a mono file. Whether the file was a LTA or a WAV file, the new file will be a WAV file. Its name will be based on the old file's name, with an extension added such as "-afx1.wav". If the original file had a sync relationship with a video clip (as in a LTA), that relationship is maintained.

Audio filters can also be applied to an entire track. These filters are called VST filters. VST filters are developed by third party companies and should all be installed in a common directory. Once installed, go to **File > Preferences**, select the Audio Settings tab and browse to the common directory in the VST Filters Location browse dialog. Velocity will now automatically list any filters installed to this location when you hit the FX button in the audio track headers.

Select an audio filter and press the 'Add" button to add it to the list. Double click the filter in the Applied Effects section of the dialog to access the individual effect's parameters. Making adjustments will update the audio in real

time. You may also choose to bypass a VST filter in order to hear the audio track in its unaffected state.

Some VST filters support automation, meaning you can create an audio effect envelope during playback. To do this, right click on the track header and select **View FX Automation Track**. A new audio track will extend downward. Now, in the VST Effects dialog box, select an effect you have applied and hit the Automation button. Here you can determine which parameters will be automated, and you will see which color will indicate each parameter. As you make adjustments in the VST dialog, you will see the effect envelope update, and vice versa.

Note: Like the VU meter sliders, the VST filter will stay in whatever state you left the controls, overwriting existing VST Effect nodes at the playhead position.

Speed Change

Speed Change button

As described in Chapter 12, audio speed change is handled the same way as video speed change. You can select **Effects > Clip Speed** from the menu, right click on the clip and choose **Clip Speed,** press default hotkey S, or click on the Speed Change button on the toolbar and scrub the clip in or out to create the appropriate clip speed.

To reverse an audio clip, right click on the clip and select **Reverse**.

Copy/Paste Audio Attributes

You can cut, copy and paste the attributes (volume, mute, and panning) to other audio clips. This is useful if you have multiple clips from the same location, microphone, etc.

Right click on an audio clip on the timeline and select **Copy Audio Attributes**.

Right click on another audio clip and select **Paste Audio attributes**.

To apply the same audio settings to multiple clips, first select the clips you wish to paste the settings to, then choose **Paste Audio Attributes**.

You may choose to apply the effects on a frame basis, or on a percentage basis, which will scale the effect over time to fit the target clip.

Voice Over

The voice over feature allows you to play a portion of a timeline while recording a new track of audio. Any real-time transitions and video effects will play back, as well as four tracks of audio of your choice.

To create a voice over file:

1 Mark an In point and an Out point on the timeline. (Use the playhead to move to the point you would like playback to begin at and press the Hotkey I. Then move the playhead to the point you would like to stop and press the Hotkey O. Marking In and Out on the timeline is covered in more detail in Chapter 12). If you do not mark an In and an Out point, playback begins at the start of the project and runs until you stop it. If you only mark an In point, playback begins from the In marker and continues to the end of the timeline. If you only mark an Out point, playback begins at the start of the project but ends at the Out marker.

2 Select **Output > Voice Over** from the main menu. The Voice Over window opens.

3 Choose a save destination for the WAV file you will be creating. The default save location is the audio folder in your Project Management settings. Or you can press the Browse button to open a window and choose a new location.

4 Choose a name for your Voice Over file.

5 Select the Audio Input source for recording.

6 Set your audio Data Rate, Stereo/Mono, and Sample Rate.

Press **Start** to begin playing the timeline from the In point and begin recording incoming audio.

If you Press **Stop** and then **Start** again, playback and recording will begin again from the In point on the timeline, overwriting your previously recorded audio.

If you press **Stop** and **Done** before the Out point has been reached, your audio file will be shorter than the duration from In to Out on the timeline.

When you have finished recording your voice over track, press the Done button. The Voice over window closes. The new stereo audio tracks are placed on the timeline, lined up to the marked In point. They are placed on the uppermost available adjoining audio tracks.

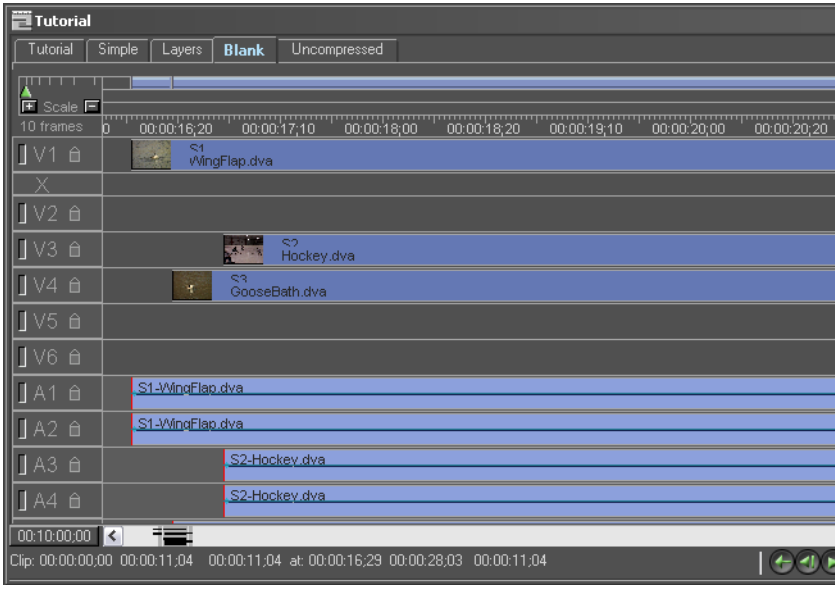
If no tracks are available, the Velocity timeline will automatically add a new track(s). It is up to you to add a pair of audio tracks to your timeline and add the WAV file from the gallery to the timeline.

Chapter 14
Multicamera Editing

Multicamera editing is a useful feature if you want to edit clips that show different angles of the same event. If you have a Quattrus system, you can perform multicamera editing of up to four streams of simultaneous video, as in a multi-camera shoot. If you have an Altitude system, you up to two streams of HD video or eight streams of SD video.

Note: While in HD mode: If your current playback standard is in interlaced (i) mode, you can use up to four streams simultaneously. If you are in progressive (p) mode, you can use up to two streams simultaneously.

To start working in multi-camera mode, you must first lay out your captured video on the timeline. Normally you will have the different camera angles synced up on various tracks on the timeline.



Multi-select the clips from the different tracks. In and out points may vary, and the clips do not even have to overlap on the Timeline at all. If you have a Quattrus system, they cannot be 32-bit, but they can be uncompressed.

Note: If the audio for a selected track is muted, you will not be able to hear that audio in the multicam interface.

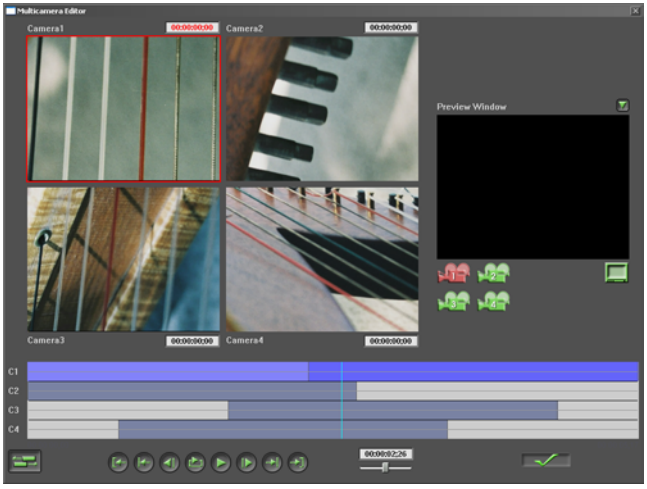
From the main menu, select **Edit > MultiCam Edit**, or right click a blank space on the timeline and choose Multicam Edit.

A MultiCam Editing Window appears.

The tracks across the bottom of the window represent the clips you selected on the timeline. The clips are labeled with the numbers of the tracks they previously occupied on in the timeline. The currently selected track is blue, and the currently selected view has a red outline.

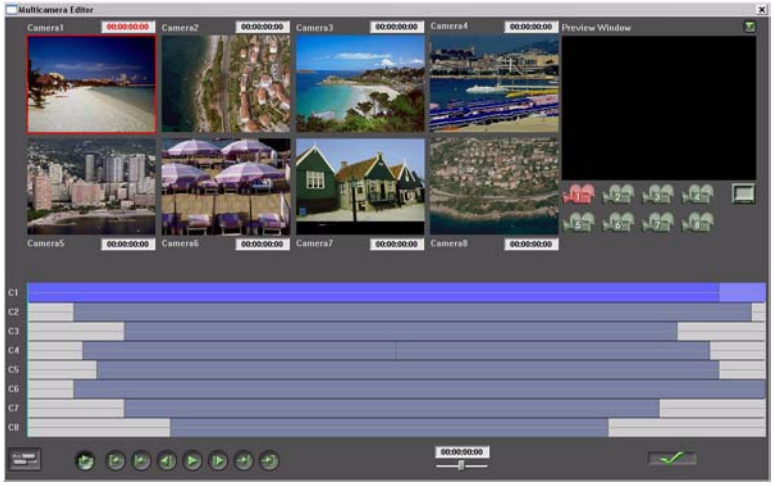
Using Quattrus, you can switch between up to four streams of video.

If you have chosen less than four tracks, the unused cameras display a message that “this camera is not in use”.



Using Altitude, you can switch between two streams of HD video.

Also when using Altitude, you can switch between up to eight streams of SD video.



If a particular point on one of the tracks has no clip, that camera shows black.

Alignment Mode

Multicam Transport controls

In the bottom left corner of the Multicam Edit screen is an Alignment button. If you click this button, the clips are aligned by timecode. So, for example, if you captured your clips without timecode, all your clips start at 0 (unless you have edited the clips' timecodes). Click the Align button again to return the clips to the positions they held on the timeline.

Clips that were captured with timecode (using batch capture or on the fly capture) can be aligned this way, also.

If your clips have no overlapping timecode, the align option is not available.

In the Multicam Settings window, there are two options for alignment mode: Slip and Move.

You can also align clips by timecode before entering the Multicam Editing interface. For more information, see Chapter 12.

Switching Between Tracks

Switching between tracks is similar to live switching.

Press the Play button to play the video from all tracks simultaneously in the left group of video windows. If the playhead is in a position where one of the clips hasn't started yet or is already over, the video window shows black. By default, you hear all tracks of audio selected unless they are muted.

Right click on the video images to live switch between video tracks. Or, Press the number keys in the keyboard to switch between the left (1) and right (2) HD video tracks in Altitude, or between top left (1), top right (2), bottom left (3) and bottom right SD video tracks (4) in Quattrus. If your Altitude system is in SD mode, you may edit up to eight tracks of SD video using Multi Camera Editing. You can also use the number keys to switch between these tracks.

The video monitor connected to your Velocity breakout box displays the selected camera during switching.

The timeline at the bottom of the window updates dynamically to show what changes have been made. Discarded segments are grayed out, while sections that are to be retained remain 'clip blue'.

When this stage of the editing is done, the Multi Camera Editing window has a series of non-overlapping blue boxes on the tracks.

Use the playback controls to navigate between edit points, playback, frame ahead/back, or loop the playback of the edit. During this playback, the video still plays in the views, but the chosen view has a red border so the edits are visible. Drag the light blue playhead left and right to scrub the output.

To preview the clips as they will be applied to the timeline, click on the Preview On check box. The track windows turn black and the Preview output shows the streams of video as a cuts-only edit.

To adjust the timing of your edits, scrub or play the video in the track windows. Right click on the camera buttons to switch, or use the 1, 2, 3, 4, etc. Hotkeys to alter your track edits.

Press the Apply button. The MultiCam Edit window closes.

The clips return to the timeline, as a cuts-only string of clips on the lowest-numbered of the original tracks. The selected area of the higher-numbered track(s) is empty.

You can now adjust the joins between clips on this one track using simultaneous edits and continue to maintain synchronization between them.

If you add an additional 'camera' to a higher numbered track and multi-select everything, you can repeat the whole process again.

Multicam Settings

Click the Settings button, or right click a gray area in the Multicam interface, to open the Multicam Settings window.

Apply Transitions - If you want to apply transitions to your multicamera edit, check this box. Enter the appropriate transition duration to the right of the check box. Then, in the Transition Track drop-down menu, select which track(s) you want your clips to be sent to. The transitions also appear when you are in Preview mode in the Multicam window.

If there is insufficient media to create the default transition -- for example, because you cut to a clip very shortly after it began originally on the timeline, or because two edits happen very close together, no transition is created.

When this option is not checked, your multicam edit is applied to the timeline as cuts-only.

Edit Synced Audio - If you chose to edit synced audio, the synced DVA/LTA audio tracks are cut in the same places as the video tracks, and are still sync groups. If you chose not to edit synced audio, then the audio is unsynced and unedited.

Tool tips (defaults to on) - When checked, if you hover the mouse over buttons on the Multicam interface, markers appear to tell you the purpose of those tools. Once you are familiar with the interface, you may find this information not useful and irritating. In that case, turn it off (uncheck it).

Condense edits to a single track (defaults to on) - when checked, after you apply your multicam edit to the timeline, the clips all move to whichever location you choose. When this is unchecked, the trimmed clips remain on the tracks they were on before. If transition mode is checked, then this box should be grayed out and ignored.

Place Edit Points Prior to Playhead - This allows you to wait until the primary shot goes bad before switching cameras. Velocity adjusts the In points for you. When you check this option, the Timecode box beside it becomes available. The number in this box is the amount all edit points will be shifted to the left (earlier on the timeline).

User Definable Hotkeys - Press this button to open another window. In this window, you can change the Hotkeys for various keyboard functions. For more information, see Chapter 26.

Align Using Timecode

These two options determine how Align using Timecode works (when you click the button in the bottom left corner of the Multicam Editor window).

Move - This is the default setting for the Align tool. Clips are dragged, keeping their trimmed In and Out points, so that their timecodes are aligned. The In and Out with respect to the timeline change.

Slip - Clips retain their timeline positions, but the trimmed In and Out of the clips is altered so the timecode of the clips matches at all points.

Chapter 15
Creating and Editing Titles

Title files are usually specialized image files. Velocity provides you with the Velocity Quick Titler and the rendered Title Generator effect. If you have a Quattrus board, your system comes with Inscriber TitleMotion. If you have an Altitude board, your system comes with Inscriber TitleMotion HD, which allow for titles to be created in HD resolutions. Either hardware configuration of Velocity supports the Inscriber ICG file format.

You can also install other titling programs, which can be accessed either from within Velocity, or as stand-alone programs.

Title Creation Options

The Velocity Quick Titler allows you to create simple rolls, crawls and stills in a DPT file format. DPT files contain an internal alpha channel and can be played back in real-time from your timeline or in the trim window.

For more complicated titles, use Inscriber TitleMotion Pro. Inscriber TitleMotion Pro can create still, rolling and crawling ICG files which can also be used in real-time on your Velocity timeline. More complex animated TitleMotion Pro files require rendering.

For general purpose rendered titles, use the Title Generator. This filter-like tool easily attaches anti-aliased scrolling text with colors, borders, shadows, etc., to video and still clips. Use any TrueType or Type 1 Windows font to create interesting and colorful titles for your videos. The titles you create this way are rendered effects that become part of the FX stack on the single clip they are applied to.

There are many other titling programs on the market which may work with Velocity. Check the Plug-ins section of the Leitch website at www.leitch.com for an up-to-date list.

Using the Quick Titler

The Velocity Quick Titler allows you to create simple rolls, crawls and stills in a DPT file format. DPT files contain an internal alpha channel and can be played back in real-time from your timeline or in the trim window.

Making a Basic Title

To open the Quick Titler, right click in the gallery and select **Quick Titler** from the menu.

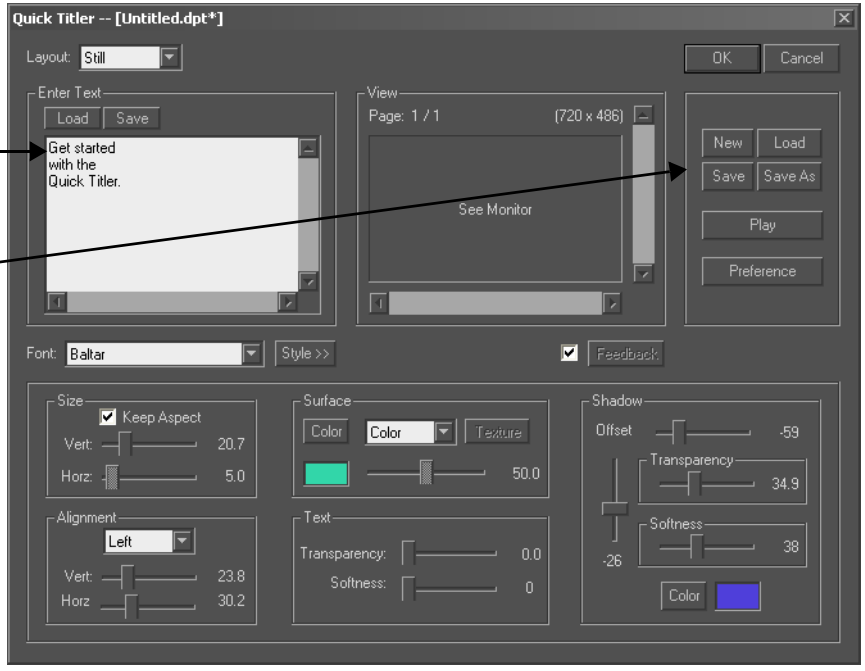
Create a Still

A still title is much like any other single-image file you can import into Velocity. Once you have created a still title, you can make it into a moving title by applying a DVE effect to it. For example, you can make it roll onto the screen by choosing a DVE warp and clicking on the Page Peel button, then setting keyframes so that the image starts off screen and a second or two into the effect is positioned fully on screen.

In the top left area of the screen is a drop-down menu entitled Layout. From the drop-down box, select still.

Load or save your text as a.txt file.

Load or save your title as a DPT file.



In the Enter Text section of the Quick Titler window, click the mouse in the white box and you can type your title's text. Or, in the same section of the window, click the Load button and browse to locate a text file you have pre-created. You can also save the text in the Enter Text area of the screen as a text file by pressing the Save button.

As you work on your title, you can view it on an external monitor connected to the Program Video Output on your breakout box. You can also view it on the Preview side of the trim window on your computer monitor.

Below the Enter Text area of the window, choose the style and font to apply to your text. The Font drop-down menu allows you to choose from all True Type and Type 1 fonts installed in your Windows Fonts directory.

Click the Style button to choose Bold, Italic, Underline and/or Strikeout. The default is normal. Fonts and Styles are applied to the entire title, rather than to a single character, word or line.

Adjust the size of your font by moving the sliders in the Size window. If you wish to keep the font's aspect ratio the same, just make it bigger or smaller overall, check Keep Aspect. This disables the Horz (horizontal) slider, and when you move the vert (Vertical) slider, both the height and width of the font change.

Use the Alignment controls to adjust the position of your title.

The drop-down menu at the top of this section of the screen alters the justification of your text, just like a word processor would.

Use the Horiz and Vert (horizontal and vertical) sliders to adjust the position of your title with respect to the top and sides of the screen.

Create a Roll

To create a basic rolling title, follow the instructions for creating a still, but from the Layout drop-down menu at the top of the screen, choose Roll.

Rolling titles move vertically, normally from the bottom to the top of the screen. (Once you have created your title, you can reverse the direction by placing the title on the timeline and using title options.)

Before typing your text, press TAB on your keyboard a few times, or your text will already be on screen when you start it playing.

Create a Crawl

To create a basic crawling title, follow the instructions for creating a still, but from the Layout drop-down menu at the top of the screen, choose Crawl.

Crawling titles normally move from right to left. Most commonly a crawling title is found at the bottom or top of the screen. You can change the direction after you have saved the title to a gallery and placed it on a timeline, by right clicking and choosing Title Options. You can also alter the speed with which it plays using these settings.

When creating text for a roll or crawl, press ENTER a few times at the start and end to put a blank page before and after. This makes the title crawl on

and off the screen, instead of appearing suddenly when its In point is reached on the timeline.

Add Surface Features

Surface features for a title include color and texture. You can add one, the other or both.

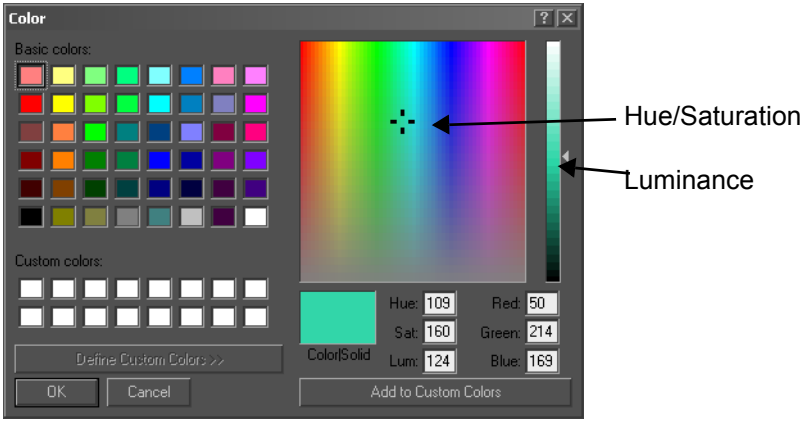
In the Surface section of the window, choose the type of surface you would like to apply to your clip. There are three options:

Color - Uses a single solid color to fill in the title's text.

Texture - Uses an image file to color the text. The image file is applied across the entire text as a single item, rather than being applied to each character individually.

Blend - Combines both color and texture to create a surface for your title.

To choose a color to apply to your title text, click the Color button. A color picker opens. First, select the hue you desire by clicking on the Hue/Saturation picker, then adjust the brightness by dragging the Luma slider.



Click **OK**. The window closes and in the swatch field below the Color button, the color you have chosen appears. This is also applied to your title on your video monitor if you have Feedback turned on.

To choose the file to apply to your title text, click the Texture button. Browse to find an image file to use as the texture map for your title text. The file type can be any of the normally supported graphic types (BMP, GIF, JPG, DIB, PCD, PCT, PCX, TIF, WPG or TGA).

If you choose Blend, move the slider to give priority to the color or the texture image you have chosen.

In the text box, use the sliders to adjust the softness and transparency of the text.

If you increase the Transparency number (0 makes the title text completely opaque, 100 is completely transparent, where the title cannot be seen at all) the background image will show through.

If you increase the Softness, the text gets a bit of a beveled appearance as it blurs outward, and then it turns into a furry mass.

Add a Shadow

Scrub through your title using the sliders to the right and bottom of the View window. This will only be necessary if you are making a rolling or crawling title. When you type text or scrub your title, it will appear on the external video monitor as well as on the timeline side of the trim window.

If you wish to give your title a shadow, adjust the offset sliders. There is no shadow visible when the offset sliders are both set to 0. Unlike some of the dynamically generated real-time effects (such as picture-in-picture) the shadow can be placed anywhere with relation to the main title - including above it.

Choose a color for your shadow by clicking the Color button in the Shadow section of the Quick Title Generator screen.

Use the Shadow Transparency and Softness sliders to apply these effects to the shadow. These effects are in addition to the transparency and shadow already applied to the main title, which are reproduced in the shadow.

To save your title, click the Save button. The first time you save your title, a window opens allowing you to choose a name and destination for the file. If you have already saved the title in this editing session since opening DPT titler, or if this is a title you previously created and wish to edit, the previously saved title will be overwritten without warning.

If you do not wish to overwrite a previously saved version of your title, click Save As, and a window will allow you to choose a new title and destination.

To play back your title, press the Play button. The background that appears behind it is either the video frame under the playhead or a solid color. This is set in Preferences (see next page).

Note: You can't play back your title until you've saved it.

If you place a check mark next to the Feedback button, your video display will be updated automatically as you make changes to your title. Otherwise, click the Feedback button to refresh the title image.

When you exit the Quick Titler, your title is added to the gallery. If your title is a still, the image will appear as a thumbnail. If it is a roll or a crawl, the thumbnail will indicate what type of moving text file it is.

Quick Titler Preferences

Click on the Preferences button to open a settings screen.

The Standard displayed is what your system is currently set up to output -- 720x486 (NTSC), 720x576 (PAL), or 1920x1080/1280x720 (HD). This is set automatically, and you can only change it if you have a dual-standard system and change the standard using the Leitch Hardware Manager. See your Quattrus or Altitude manual for details.

To adjust the speed your titles are played back at when you press the Play button in the Quick Titler window, choose a Playback Speed from the drop-down menu. Speeds available are slow, medium and fast.

Choose a background to view your titles over by selecting from the Background drop-down menu. If you choose timeline Cursor, then whatever is displayed on the timeline under the playhead will be the background for your title. If the playhead is over a black area of the timeline, the background will be black. If the playhead is over a spot on the timeline that has video and graphics, this will be displayed.

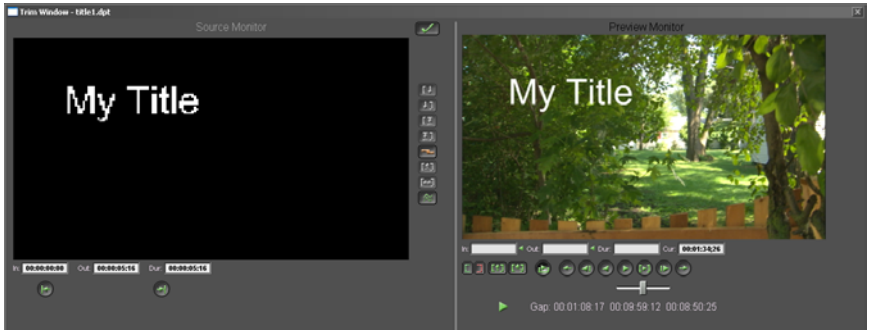
If you choose Color, click on the color swatch beside the menu to open a color picker window. Choose a color that will help your titles show up well and click OK.

Keep in mind, whether you choose a solid color or the video from your timeline, it will be displayed as a still even if you preview moving titles.

Using Title Files in Velocity

Once you have titles in a Velocity gallery, you can place them on the timeline either by dragging them from the gallery, or you can adjust their length, etc. in the trim window first. When you load a still title into the trim window, it appears in the In and Out screens. When you load a rolling or crawling title

into the trim window, the Roll or Crawl graphic (rather than the actual clip) is displayed.



DPT Title file

Title file overlapping with clip

On a Quattrus system, you can have up to six titles overlapping. On an Altitude system, you can have up to eight titles overlapping in SD mode and two titles overlapping in HD mode.

To add a title (TGA, ICG or DPT) to the timeline, drag the file from the gallery and place it on video track V3 or higher (V4, V5 etc.). The title will be superimposed on the video in lower numbered tracks.

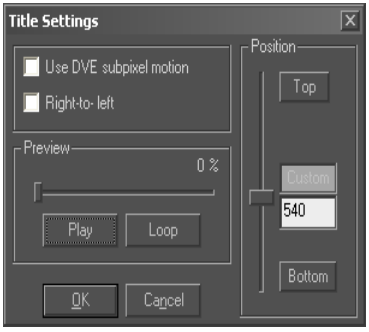
When you place a title on the timeline, it is treated like a still image file (of which even rolls and crawls are really only a special case). Therefore, its duration on the timeline will be equal to the Default Image File Length as set in the main menu under **File > Preferences** (click on the General tab).

Title Duration (Speed)

The speed of a title is determines by its length on the timeline. Change the duration of a still title by dragging the ends of the clip on the timeline.

Title Options

Right click on the title and select Title Options from the pop-up menu to open another window.



Note: The Title Options window is only available on a roll or a crawl clip. It will not be available with a still clip.

Use DVE subpixel motion - When this option is checked, it will use one DVE resource to help make smoother title movements.

Preview - Drag this slider to show a preview of the clip with the title through your output monitor.

Delay - You can delay the movement of the title by entering the appropriate value for the Start and End delay.

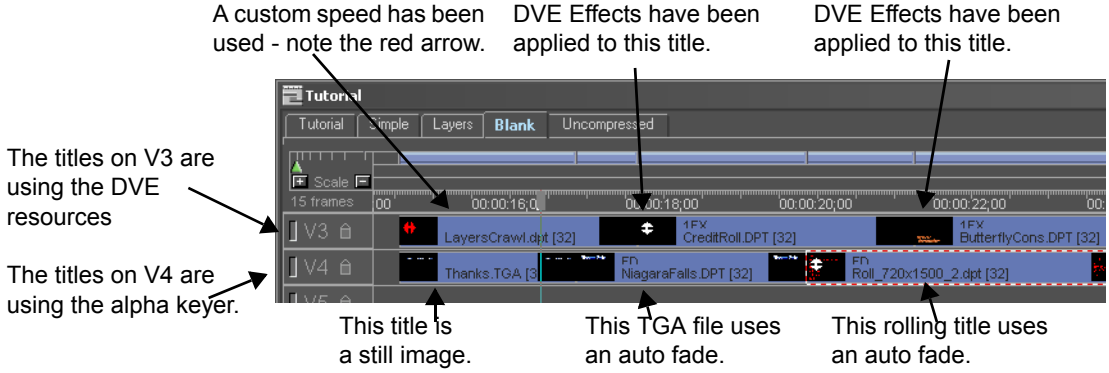
Applying Other Effects to a Title file

Like still images and video clips, you can apply any effect to a title file.

The most common effect applied to title files is a fade up and down. Use the Auto Fade feature or the Custom Fade feature for this effect.

You can also use the DVE Effects on crawling titles. Use the Transparency effect to Fade the text up and down or control the overall transparency. Use

the Perspective effect to rotate the text and control its position on the screen.



When you place another effect (for example a perspective tool) on your title file, the auto alpha key is deactivated. You will no longer be able to see the background clip. To reapply the alpha key, select apply FX, then choose DVE Effect and the Keys Borders Masks tab. Click on the Alpha Key button.

Moving a Title at a Non-Preset Speed

To achieve a different play speed for a moving title, simply trim in (make shorter) to speed up the moving title, and trim out (make longer) to slow down the moving title.

Chapter 16
Selecting and Customizing Transitions

When you place clips with a slight overlap on “a” tracks and “b” tracks (in expanded track mode), you create a transition. In this mode, a transition looks like this:

In condensed A/B roll mode (collapsed track mode), a transition looks like this:

In both cases, the audio fades from one to the other across the duration of the transition unless you specify otherwise. (This is found in the main menu under **File > Preferences**. Click on the General tab and check off “Auto audio cross fade at transitions”).

A transition is the change from one video clip to another by means of a conversion process such as a fade or a wipe. The conversion steps combine two clips into a single video output. The default is a dissolve.

Velocity has two types of transitions:

Real Time Transitions play back as soon as you place your clips on the timeline. They simultaneously access and combine video data for clips on V1 and V2. You may switch between real-time transitions, change the duration, add real-time effects, and see the results instantly.

You can choose from over 200 pre-made wipe transitions, all customizable in real-time using keyframes, borders, and filters.

On a Quattrus system, transitions can also include uncompressed video or one 32-bit video clip with alpha channel. A transition that involves two 32-bit video clips video clips must be hardware rendered.

Quattrus and Altitude also offer a wide range of real-time effects and transitions, however, some categories require the optional A3DX DVE module.

Rendered Transitions increase the flexibility of your system, though they must be processed before they can be made into a movie or output to video tape. Choose from over 80 pre-made customizable rendered transitions, or use the Transition Wizard to combine effects, graphics and existing transitions.

Copy and Paste Video Effect Attributes on Transitions

Attributes are the list of effects and settings that have been applied to a clip or transition. Effect attributes can only be applied to similar timeline objects. Attributes copied from a transition can only be pasted to a transition. When you paste attributes, they overwrite any previous settings applied.

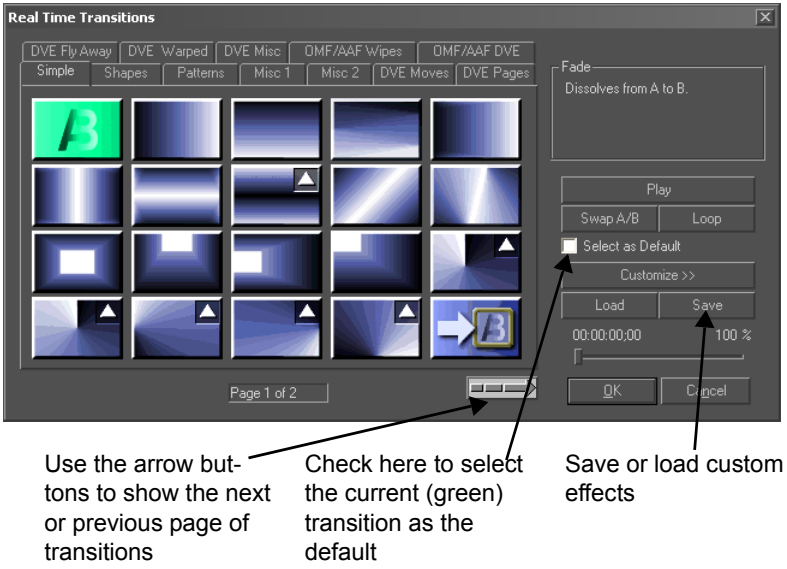
When you copy attributes from one transition to another, you are copying the effect (but not the associated clips) including any alterations applied to it. This is similar to applying a transition macro, but doesn't save a file.

To copy and paste effect attributes on a transition, first select the transition whose attributes you want to copy. Right click and select **Effects > Copy Video Effect Attributes**. Select the transition you want the attributes to be copied to. Right click and select **Effects > Paste Video Effect Attributes**.

Choosing a Real Time Transition

To access the transition viewer, hold down the shift key and double click the default transition that is created on the X track. Or right click on the transition and choose RT Transitions. A window opens.

A row of tabs in the Viewer displays Wipe transitions.



Use the arrow buttons to show the next or previous page of transitions

Check here to select the current (green) transition as the default

Save or load custom effects

Use the tabs along the top of the window to choose the type of transition, and the arrows to advance the transition pages. Click on a square to select a transition. That transition automatically plays in the Preview window and on the video monitor. A description of that transition appears in the top right corner of the window.

Select a transition by clicking on its icon. The transition will play automatically. If you want to re-play the transition you can click on the Play button again.

Play - Click on a depressed Play button to stop the playback. Click on it again to play the transition.

Swap A/B - Use the Swap A/B button to reverse which clip is played first.

Loop - Use this button to start a loop playback.

Customize - Use this button to open the Border/Effect and keyframing tools.

Load/Save - You may save a transition you have customized or load one you have previously saved.

Scrub bar - Use this bar to scrub through the transition without opening the keyframing controls with the Customize button.

Cancel/OK - Use Cancel to exit without saving, or OK to use your new transition selection.

Real-Time Wipe Transitions

Velocity comes with over 200 pre-made real time Wipe transitions divided into six groups.

Simple - The default transition (Fade from A to B) and many simple wipes.

Shapes - A page of simple geometric shapes and a page of complex mask based shapes.

Patterns - A variety of swirl, checkerboard, zig-zag, ooze, and shatter patterns.

Misc 1 - Two pages of widely different transitions. Many of these transitions combine more than one pattern or use organic shapes.

Misc 2 - Three pages of widely different transitions. Many of these transitions combine more than one pattern or use organic shapes.

OMF/AAF Wipes - Two pages AVID compatible 2D transitions.

If you wish to ensure Avid compatibility, you should use the OMF/AAF transitions exclusively.

Customizing Real-Time Wipe Transitions

Click on the Customize button in the real-time Transition Viewer. This opens the Custom Wipe window which includes the Key Frame Settings and the Key Frame Controls.

Play - Plays your transition with the settings you have chosen.

Swap A/B - Makes the transition go from the incoming clip to the outgoing clip, rather than the other way around.

Loop - Plays the transition repeatedly when Play is pressed. Otherwise it stops after one repeat.

Drag the slider on the keyframe timeline to scrub the clip.

Add - Creates a keyframe at the playhead's position on the keyframer.

Delete - Removes the active (blue) keyframe.

Copy - Copies all the settings from the active (blue) keyframe.

Paste - Pastes copied settings to the active keyframe.

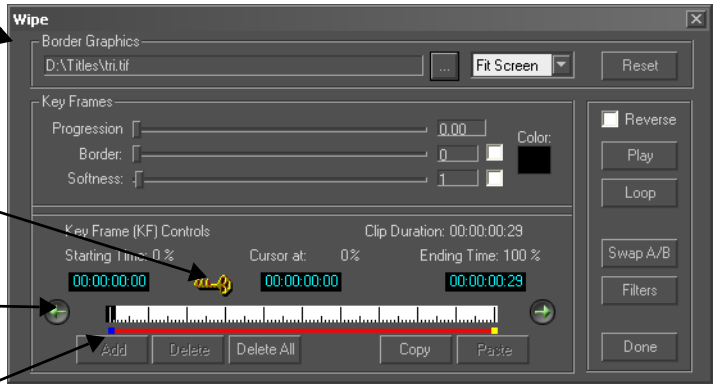
Unlike the other Keyframe windows, before you make any changes there are two keyframes, one at the beginning of the transition and one at the end.

The Border Graphics section only appears on systems that have a Quattrus or Altitude board installed.

The key symbol appears when the cursor is on a keyframe

Use arrows to move to next/previous keyframe

The blue square indicates the active key-



Reverse - Inverts the mask used for the wipe transition. This can make the transition go from left to right instead of right to left, for example.

Border Graphics - Click the browse button to choose an image. Once the file is chosen, Velocity treats it like any other border, so you can adjust or keyframe (animate) its width, etc. Alpha channels that are part of the chosen image file will be ignored.

Filter - Opens a window where you can choose real-time filters to add to the transition.

Progression - Keyframing this slider adjusts the speed with which the transition evolves. The progression doesn't have to be linear. You can assign a position to a keyframe, have the transition move backwards to a different keyframe and then go forward again.

Border - The thickness of the edge applied to the transition. Check the box at the end of the slider to change the border at keyframes.

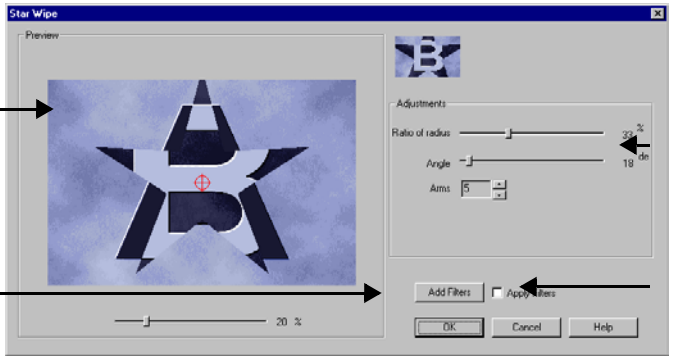
Softness - How blurred the edge of the transition is. Check the box at the end of the slider to keyframe the softness.

Color - If you choose a width for the border other than the default of 0, the border is filled in with a color. Double click on the "paint chip" to open a color palette.

Custom Settings for Specific Transitions

Some wipe transitions can be customized. These transitions have a small triangle in the upper right hand corner of their icons.

To access these custom settings, click the Filters button in the Customize window.



Preview window showing A/B icons representing your transition

Use the **Add Filters** button to apply real-time filters

This area is used by some transitions for custom settings specific to that transition.

This box must be checked before your filters will take effect.

The Real-time effects preview window

Custom settings may appear in the right side of the transition's Effects Preview window. In addition you may be able to move the center of the transition or change the orientation using controls on the preview window.

The customizable transitions are:

- Split Screen (Simple, page 1, number 8): orientation
- Clock Wipe Off Center (Simple: Page 1, number 15): Move center, start angle
- Clock Wipe Center (Simple: Page 1, number 16): start angle
- Radial Wipe Left (Simple, page 1, number 17): Location of fixed point on left side
- Radial Wipe Right (Simple, page 1, number 18): Location of fixed point on right side
- Radial Wipe Bottom (Simple, page 1, number 19): Location of fixed point on bottom side
- Radial Wipe Top (Simple, page 2, number 1): Location of fixed point on top side
- Radial Wipe Corner (Simple, page 2, number 2): Location of corner with fixed point

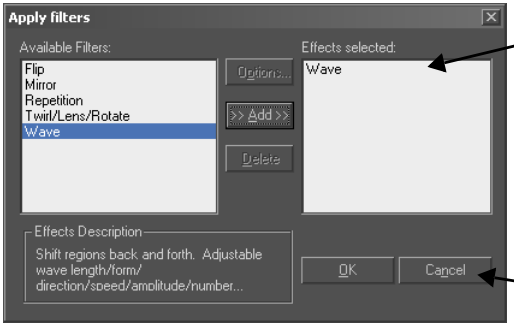
- Circle (Shapes, page 1, number 16): move center
- Diamond (Shapes, Page 1, number 17): center, angle, length of arms
- Star (Shapes, page 1, number 19): number of arms, angle, length of arms, center
- Checkerboard (Pattern, Page 1, number 16): rows and columns
- Random Checkerboard (Pattern, Page 1, number 17): rows, columns, seed (for randomizing the effect)
- Louvers (Patterns, Page 2, number 3): number of louvers, orientation
- Slices (Pattern, Page 2, number 6): number of slices, orientation
- Jaw (Pattern, Page 2, number 20): number of teeth, orientation

Using Real Time Filters

There are a number of real time filters to allow you to further customize your real time Wipe transitions. To select these filters click on the Customize button to open the Custom Wipe window and click on the Filters button. This will open the Real-Time Effects preview window.

Click on the **Add Filters** button. A list of available filters opens.

Highlight the filter you want to apply and click the Add button.



The effects selected are listed here.

Double click on an effect of click the Options button to change its options.

Save an effects list (with its settings) or

Note that the effects of the filters are cumulative, so the order in which you apply your filters may be significant.

Flip - This filter flips the transition horizontally, vertically, or both horizontally and vertically.

Mirror - This filter takes the transition, divides the screen into two halves, and mirrors the result of one half on to the other half. You may choose to cut the screen in half vertically, and mirror the left side on to the right (L -> R) or the right side on to the left (L <- R), or you may choose to cut the

screen in half vertically and mirror the top on to the bottom (T -> B) or the bottom on to the top (B -> T).

Repetition - This filter divides the screen into rows and columns and repeats the transition effect.

Twirl/Lens/Rotate - This filter provides different types of distortion effects based on the characteristics of optical lenses. Each effect can be adjusted for concavity/convexity and distance from the clip. In addition, rotation and twirl can be applied to the circular lens types.

Lens type

Circular Lens Custom Size - has the same effect as a true circular optical lens when placed in front of an image. Adjust the size of the lens using the mouse pointer and dragging its outer edge. Move the lens by dragging its center point.

Circular Lens Fit to Frame - This lens produces the same results as the Circular Lens Custom Size when it is made just large enough to cover the entire screen.

Pinch - Stretches the image under the lens while the edges are held in place by an imaginary circular ring the size of the screen. By adjusting the concavity/convexity controls, the image can be made to look as if the center was pulled out towards the viewer or pushed into the screen.

Custom Pinch - This lens produces the same results as the Pinch effect above with the addition of a controllable lens size and position.

Rectangular Pinch - Similar to Pinch except the edges are being held by r rectangular frame. Concavity and convexity can be applied. This lens does not support distance or twirl.

Lens Effect

Concavity/Convexity - Controls the lens profile. Moving this control to the right increases lens concavity resulting in a magnifying effect. Moving this control to the left has the opposite impact, i.e. the convexity is increased resulting in a de-magnifying effect. When this control is at none (i.e. 50), the lens does not distort the clip via magnification (rotation and twirl effects can still be applied to create interesting effects). The units used to represent concavity and convexity are relative numbers.

Distance - Defines the distance between the lens and the screen. Increasing the distance for a given concavity or convexity causes a greater magnification/de-magnification effect. The units used to represent concavity and convexity are relative numbers.

Twirl - Controls how an image is distorted when rotated. Two cases exist. When this control is not checked, the angle and turns simply rotates the area under the lens. When this control is checked, the angle and turns create a

whirlpool effect where the center is rotated the greatest while the circumference of the lens is rotated very little. This control is only active for circular lens types.

Angle - Determines the amount of rotation within one turn. Moving this control to the right rotates the lens counter-clockwise by the number of degrees indicated, up to 360 degrees. Moving it to the left changes the rotation to a clockwise direction for up to -360 degrees. This control is only active for circular lens types.

Turns - Controls the number of full turns to rotate the lens. Moving this control to the right increases the number of counter-clockwise turns while moving this control to the left increases the number of clockwise turns. This control is only active for circular lens types. Changing the number of turns on different keyframes results in a spinning circular section as a clip is played.

Wave - This filter creates a wave pattern in your transition. The type of distortion depends on the wave type chosen (i.e. sine, square, or triangle waves). You can set multiple waves as well as ranges for amplitude and period. The strength of this effect can be interpolated.

Wave Form - Choose from Sine, Square or Triangle wave.

Parameters For Direction - Selects the controls for either horizontal or vertical traveling waves.

Number of Waves - Determines the number of waves to generate for the selected direction. Set this control to zero to turn off the wave in a particular direction.

Speed - Determines how fast the waves travel past the screen. This adjustment ranges from 0 to 200. The number used for this adjustment is a relative number.

Intensity Range - Determines the range of amplitudes (wave height) allowed for wave creation. The min value sets the lower bound for wave intensity while the max value sets the upper bound for wave intensity.

Wavelength Range - Determines the range for wavelengths allowed during wave creation. The min value determines the lower bound for wave length while the max value determines the upper bound.

Effect Strength - Determines how strong the wave effect is. At the min of 0%, there is no effect. As this control is adjusted to towards the max of 100% the effect becomes stronger.

Predictability - Determines how well ordered the waves are created and combined. For a symmetric look, choose More. The Less option provides for a less orderly wave pattern.

Customize a Pre-Made Real-Time Wipe Transition

Select a transition and open the Real-Time Transition viewer. Click on the Patterns tab, go to page 2, and select the Slime transition (number 14).

Click the Customize button to open the keyframe controls.

Click the small box at the end of the Border slider (so that you can use keyframes with the border).

Double click the color box and select Red as your border color. Slide the border control up to 140. Slide the Softness control up to 120.

Move to the last keyframe (you can use the keyframe arrows at the ends of the percentage ruler), change the border color to yellow and slide the border control up to 140.)

Click the Reverse check box (in the upper left hand corner).

Click the Filters button, and on the window that opens, click the Add Filters button. Double click on the Wave filter (at the bottom of the available filters list).

Move the "number of waves" slider up to 9. In the Predictability section choose "Less". Click OK to return to the filter selection window and OK again to return to the real-time Effects Preview window.

Make sure the "Apply Filters" box is checked so the transition will use the Wave filter. Click Done to return to the real-time Transition Viewer.

Click the Play button to see the customized Wipe transition.

Making Your Own Real-Time Wipe Transitions

As well as providing you with over 200 pre-made real-time Wipe transitions you can create your own real-time Wipe transitions using an image file to define a gradient wipe.

The lower right hand icon on the first page of the Real-Time Transition viewer is the Custom Transition icon. When you click on this icon you are asked to select an image file. This image file is used to create the WFX file used by your real-time transition. The image file that you select may be any size. If it isn't exactly the size of a frame of video it will be expanded to fit the screen.

A gradient wipe uses the gray scale of your image to determine the order in which areas of the first clip become transparent so that the second clip shows through. The black areas become transparent first, followed by the next darkest areas, with the white areas becoming transparent last.

You may use a color image or a gray scale image to create your gradient wipe, however only the gray scale information will be used when creating your wipe. To help you to determine how your color image will look when it is used as a gradient wipe you may want to import your color image into a paint program and convert it into a gray scale image. Then you can adjust the brightness and contrast to produce the transition you want.

Example: Create a Real-Time Transition from a Logo

The logo on the following page was used to make the real-time transition found among the Shapes transitions (second page, bottom row). This example will explain a method that can be used to create this type of transition.

Two gray scale gradients were used to create this transition. A smooth gradient is important if you want your wipe to have a smoothly moving edge. You may use a paint program to create these smooth gradients. You may also use the Velocity Gradient Wizard to create your gradients.

Collect a white bitmap into the gallery, place it on the timeline, apply the Gradient Wizard (by selecting the clip on the timeline and clicking the VFX button in the toolbar. Choose the Rendered Filters category and scroll down the list to select Gradient Wizard).

To use the Gradient Wizard to create the circular black to gray scale gradient bitmap needed for this example:

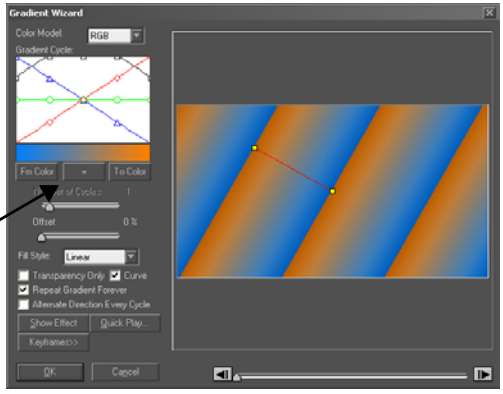
Drag the Transparency nodes to 100%

Drag the first color nodes to approximately 50%

Drag all the other color nodes to the bottom corner

Use the "Fm Color" button to set the color to 110 for all 3 RGB values

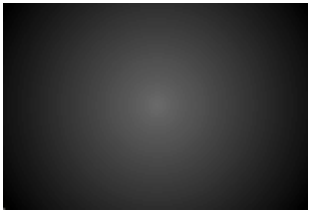
Use the circular fill style with 1 cycle



On the Preview screen drag the "To" node to the corner and leave the "From" node in the center

Once you have the gradient you want to use click OK and return to the timeline. On the timeline move the cursor to the clip with the Gradient Wizard effect and make a single frame. Note that the settings used (file type, size, etc.) are the settings found in the Movie Settings window for Images. For this example a TIF file was created.

Create a white to gray gradient using the "To Color" button to set the RGB values to 145 for the gray. Save as a TIF file. Note that the same gray RGB values were not used.

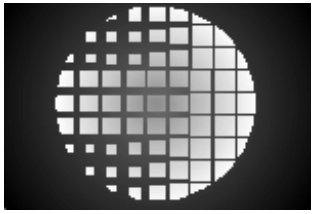


Black to Gray (RGB = 110)White to Gray (RGB = 145)

Open these two gradients and a black and white logo in a paint program. Resize the logo to the standard screen size (720 x 486 for NTSC, 720 x 576 for PAL). Select the white area of the screen, and copy and paste it on to the white to gray gradient. This creates a logo with a gradient, moving from the dark center to the light edge.

Logo - resized logo using the gradient:

Select the non-white areas of the gray logo (by selecting the white area and inverting the selection). Copy and paste this on to the black to gray gradient. This produces the final logo.TIF used with the Custom real-time Transition function.



When you use this file with the real-time Custom Transition function, a logo.wfx file is created. When you play the custom real-time transition, this file is used.

When you play this transition, the dark areas become transparent first, allowing the second clip to show though the first clip. The black edges defined by the image file become transparent and the wipe gradually moves in to the

center, leaving the pattern of the logo showing. There is a brief pause with the logo showing (because the same grays were not used in when the two gray scale gradients were created). Then the gradient used to create the logo area wipes the logo away from the dark center out towards the white edges.

Tip: Image file formats for Custom real-time Transitions

Use BMP, TIF or TGA image file formats to create your Custom real-time Transitions. Do not use JPG files. The edges of JPG images have small variations in color which can produce a flickering transition edge.

Real-Time DVE Transitions

Note: These transitions are only available if your system is equipped with the optional 3D DVE module.

You also have 200+ real-time DVE transitions to choose from. The DVE transitions have been divided into six groups.

DVE Moves - Transitions made with the DVE Perspective tool.

DVE Pages - Including page curls and turns made with the Warp tools.

DVE Fly Away - Transitions that fly, shrink and swing away.

DVE Warped - Effects that deform the images.

DVE Misc - A variety of unusual transitions. The icon on the lower right hand corner of page one opens a blank transition that gives you access to the DVE tools so that you can create your own transitions from scratch.

The icon in the lower right hand corner of the DVE Misc. page is a blank transition that gives you access to all of the DVE Effects tools, to allow you to create your own DVE transitions from scratch.

OMF/AAF DVE - Two pages of Avid-compatible 3D transitions.

If you wish to ensure Avid compatibility, you should use the OMF/AAF transitions exclusively.

Using Real Time Effects on a DVE Transition

To apply an effect to a DVE transition, select the **Customize** button that appears in the DVE Transition window. This opens the DVE Effects tools window.

When you first open the DVE Effects window, only the effects tabs that were used to create that DVE transition show. This is to help you to make changes to the effects that were used to make the transition. If you would

like to see all the DVE Effects tabs so that you can change settings that were not used when the transition was created, click on the **More** button.

Click on the **Done** button to save your new settings and to return to the Real-Time Transitions window. Click **OK** to use your new transition or Cancel to return to the timeline without saving your settings. You can also close the DVE Effects window and return to the Real-Time Transitions window by clicking on the "x" in the upper right hand corner of the window.

Note: Please be sure the Auto Field Align option in the Perspective tab is disabled as it may cause jitter for moving effects.

See Chapter 17 for more information on the DVE Effects interface.

Rendered Transitions

Velocity offers a large selection of pre-made transitions that need to be rendered before playback. If you cannot find the exact transition you need in the real-time transition viewer you will probably find it in among the rendered transitions, or you can make it yourself using the Alpha Channel Mask Wipe function or the Transition Wizard. Real-time transitions can only be used with DVA/LTA, DPS/LTV and still (i.e., BMP, TIF, etc.) clips. Rendered transitions can be used with any of the clip types used by Velocity.

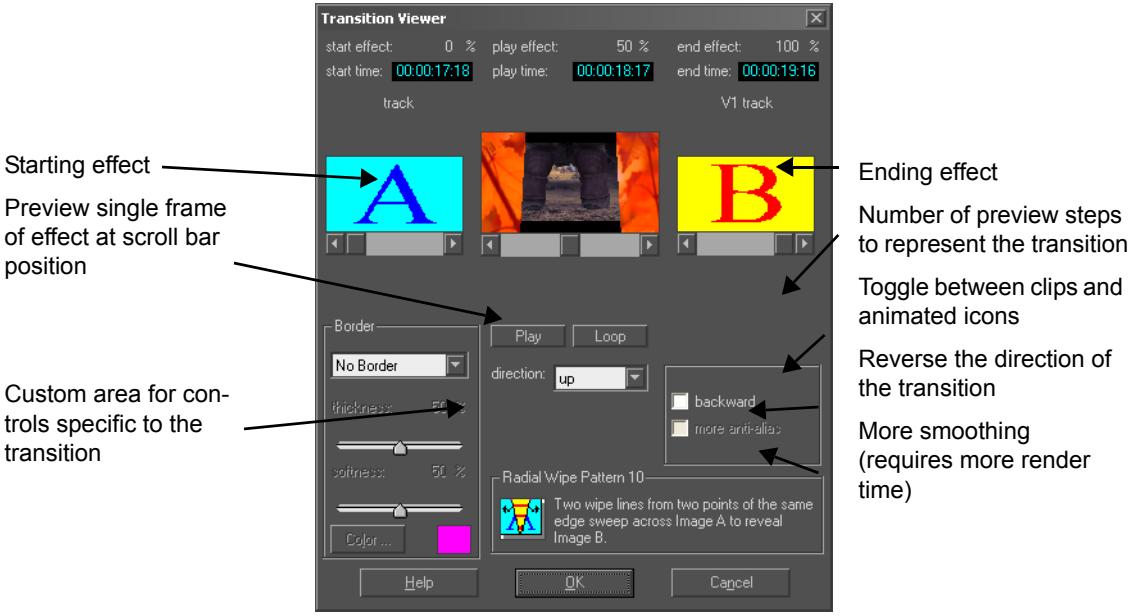
To select a pre-made rendered transition right click on the transition and select **Rendered Transitions**. The first four items are transition groups A - D which contain many of the commonly used transitions. Click on one of the groups and a window will open which shows animated icons representing the transitions available in that group.

Double click on the transition you want to use. The Transition Viewer window opens to allow you to set up the transition and play a quick preview before you take the time to render the transition.

Transition Viewer (Rendered Transitions)

The Transition Wizard opens each time you select a transition. To open it to adjust or preview an existing transition, hold down the shift key and double

click on the transition or right click on the transition and select **Rendered Transitions > Transition Wizard**.



The Transition Viewer window allows you to set some of the options for the transitions you choose and acts as a transition previewing tool.

Preview Screens - The Transition Viewer displays three preview screens. The left screen shows the effect that is shown at the beginning of the transition. The right screen shows the effect that is shown at the end of the transition. The middle screen shows the transition at various stages between the start and end.

Above the preview screens are the time that the transition starts, the time of the frame being shown on the central screen (which can be changed by moving its slider), and the time that the transition ends. Drag the slider under the left screen to adjust the timing of the start of the transition with respect to the effect. The Start Effect percentage shown above the screen will change from 0% to 50%, depending on how far you drag the slider. Normally the slider below this screen will be all the way to the left, at 0%, so that the transition effect starts when the transition starts. Similarly, you can adjust how far into the effect the transition is when it ends by dragging the slider under the right screen. The End Effect percentage shown above the screen will change from 100% to 50%, depending on how far you drag the slider. Normally the slider below this screen will be all the way to the right, at 100%, so that the transition effect finishes as the transition ends.

Show Effect - Clicking on this button updates the preview screens. The specific point of the transition shown is based on the location of the sliders on the scroll bar of each frame.

Quick Play - Clicking on this button creates a running preview of the transition. A percentage completion meter will be shown during processing. When completed, the transition preview will be played in the middle screen. The transition preview will use the number of steps selected in the Play Steps box (the default is 10 steps). While it is playing the Quick Play button will become a Stop button. The preview will repeat until you press the Stop button.

Borders - There are many transitions that will allow you to add a border. There are four different border settings in the pull down Border box: No border (the default), Border, Edge Anti-aliasing, and Blend at Border.

When you select a border, you can change the thickness and softness by moving the sliders on the percentage bars. As you increase the softness of a border, the edges of the border will gradually blend into the image.

To change the border color, double click the color square. A color chart will appear which will allow you to select or create colors.

Custom Area - Additional settings may be shown in this central area. For example, for many transitions there will be a pull-down box in the center of the screen which allows control of the direction of movement (i.e., up-down-left-right) during the transition.

Show Actual Source - Checking this box allows you to see the clips in the central preview window. To increase the speed of the preview you can choose not to see the source by un-checking this box. The preview will then look like the animated icons you saw in the Transition Group window.

Backward - Checking this box swaps the clips and reverses direction of transition.

More Anti-Aliasing - When this box is checked, the transition will use additional anti-aliasing (smoothing). This button will be grayed out when the function is not available.

OK/Cancel - Clicking OK accepts the transition and adjustments. The new transition appears on the X track replacing the previous one. Clicking Cancel returns you to the timeline without making changes.

Speed Tip

You can modify a transition by holding down the shift key and double clicking it on the Transition track (X). This opens the Transition Viewer window where you may make your adjustments.

Rendered Transition Groups A - D

Velocity has four rendered transition groups that are accessible from the Transition menu. Each group presents you with animated icons to help you to identify the transition you are looking for. These groups include the most commonly used transitions.

Transition Group A consists of 2D line wipes, simple compressions (some with fly aways) and checker boards. You can define borders for all these transitions. For most of these transitions you can define the direction of the moving line or fly away. For the checkerboard transitions, you can define the number of rows and columns.

Transition Group B all may have borders. This group contains radial wipe patterns, block wipes and a clock wipe. You can define the direction or origin of most of the radial wipes. Use the Backward check box to change the direction of the motion. Block wipes allow you to define the number of rows and columns or the number of slices. These are all 2D wipes.

Transition Group C consists of iris transitions, mask based transitions, different shaped matrix wipes, and a cut. The iris transitions and mask based transitions have additional controls that open when selected to allow you to customize the transitions.

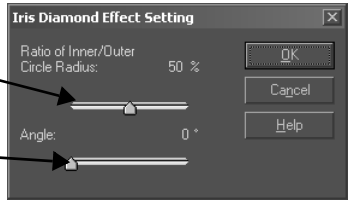
Transition Group D consists of 8 page flips, door openings, a cube spin, slatted wipes, a water drop effect and two dissolves, including the default dissolve. The page flips and water drop have additional setting windows, which are covered at the end of this section.

Iris Diamond (C2) and Iris Star (C4) Transitions

When you double click on the Iris Diamond or Iris Star transitions a window will open that allows you to control the shape and orientation of the Diamond or Star iris used in the transition.

Length of arms (lower ratios create longer arms)

Rotation of the iris relative to normal (measured counter-clockwise)



Mask Based Transitions (C5, C6, C7)

In a mask based transition, the effect used to process the two clips is based on a user-defined mask. A mask can be an image file or a sequence of

images. When you use mask based transitions, an additional window allows you to set parameters before the Transition Viewer opens.

There are three mask based effects in Transition Group C.

Creating a Mask Based Iris Effect (C5)

In this transition, Velocity creates an iris based on your mask. You select an image or image sequence which enlarges to reveal Clip B under Clip A.

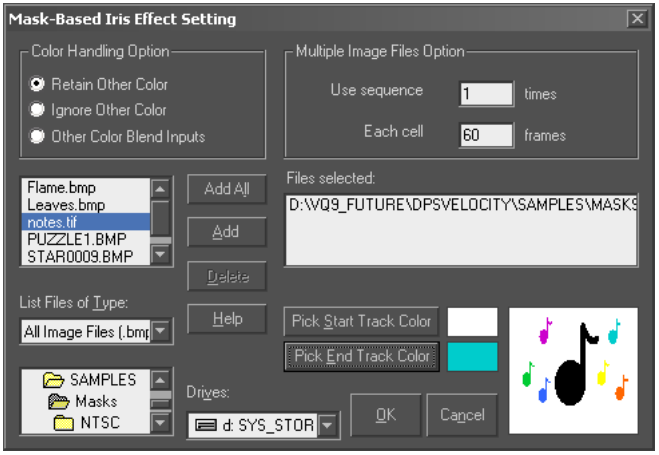
Before you can create a mask based iris effect, you need to create the image file or image sequence that you want to use as your mask. The image file can be created with any paint program. Create an image which contains at least two areas of solid color that can be used to define the iris. Create an iris shape that can grow to enclose the entire track image. Velocity will expand your iris shape by assuming it is in the center of the image file, but once you are in the Transition Viewer you can move the center of the iris to any location on your video clip.

If you are creating an image sequence to use as your mask you will achieve smoother results if the iris object's center does not change position. For example, if you use a bird with its wings flapping, do not move the bird's body. Just move the wings and your iris will be a bird that seems to be flying out of the screen. Which ever shape you use, the transition will start the image as a tiny dot in the center of the screen and grow it to fill the screen.

Right click on the transition, select Group C, and double click on C5. This will open the **Mask Based Iris Effect Settings** window.

Pick a file (or series of files if you are using an image sequence) to use as your mask by highlighting it and clicking on the Add button. A small preview of the image appears in the square in the lower right hand corner. To delete an image, highlight it in the Files selected box and click on the Delete button.

Click on the Pick Start Track Color button and use the eyedropper to pick the color in the image that will be replaced by the starting clip. If you are using an image sequence, this color is used for all bitmaps.



Click on the Pick End Track Color button and use the eyedropper to pick the color in the image that will become the iris shape. This color is replaced by the ending clip, growing to fill the screen as the iris grows. If you are using an image sequence, this color is used for all bitmaps.

Choose the color handling option that you want to use. This is really only relevant if your chosen file has more than two colors, and determines what is done with the others.

•**Ignore other colors** - Uses the two colors you picked to define the iris. Use this option if your image file was created from a photograph.

•**Retain other colors** - They appear on the screen and grow with the iris. Use this option to give your iris a fancy border, or a graphical element.

•**Other Color Blend Inputs** - The area defined by the other colors are a blend of the starting and ending clips (50% transparency).

If you have used an image sequence you may want to adjust the Multiple Image Files Options in the top right hand corner of the window. This will allow you to cycle through the sequence more than once. If you change the number of times the sequence is used the number of frames used by each image will be calculated for you.

Once you have entered all your settings, click on OK and the Transition Viewer will open with your mask based iris transition shown. You may move the center of the iris, add a border, play the transition backwards, and preview it using the transition scrubber and Quick Play.

Using the settings shown in this example produced the following effect:

Mask

Transition at 25%

Creating a Mask Based Wipe Effect (C6)

Velocity creates a wipe effect based on your mask. The mask is an image sequence which sweeps across Clip A, revealing Clip B as it wipes. It automatically scales the image used as the mask to fit the clip. At 0%, the mask is positioned just outside the starting edge of the frame before the wipe action starts. At 100%, the mask is positioned just outside the opposite edge of the frame after the wipe is complete.

The mask based wipe effect uses a mask to create a custom wipe effect. One color of the mask is defined as the color which will be replaced by the starting clip, one color is defined as the color which will be replaced by the ending clip, and the mask sweeps across the clip using these colors to determine the shape of the wipe's edge.

Setting up a mask based wipe effect uses many of the same steps as setting up a mask based iris effect. As with all the mask based effects creating an appropriate mask to use with the effect is the first step. The mask should have two solid blocks of color that can be used to define the edge of the wipe. You don't have to worry about the size of the image as Velocity will expand your image file to fit your screen. You may use an image sequence to define your mask if you want to have an animated wipe edge or if you want to animate the other colors in the image.

When you double click on the C6 transition a settings window will be opened to allow you to define your wipe. Once you have made these settings click OK and the effect will be shown in the Transition Viewer. Note the pull down box in the center of the Transition Viewer that you can use to change the direction of your wipe's movement (up, down, right or left).

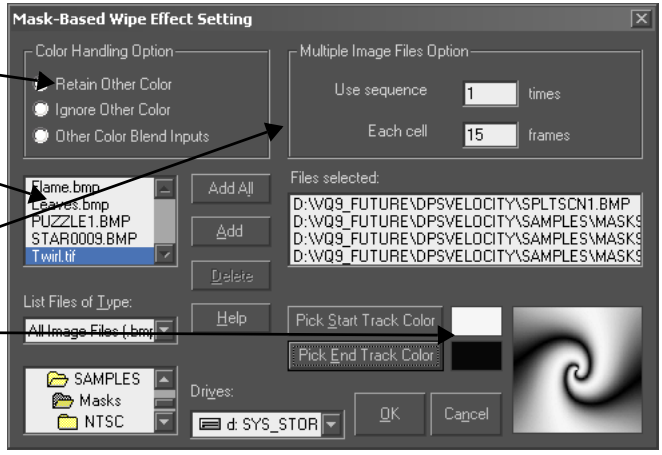
Consider the following example:

Select your color handling options.

Select the image file you want to use as your mask.

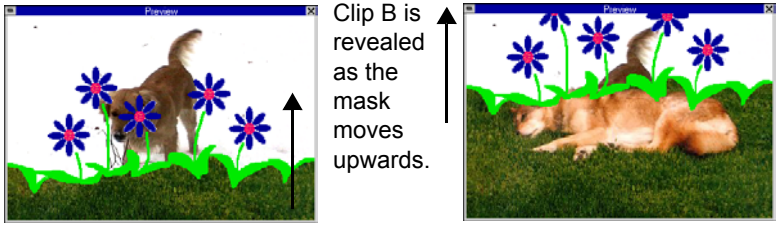
If you are using an image sequence, determine the looping options.

Pick the colors used to define the shape of your wipe.



Note: For this effect Ignore Other Colors uses all the colors not selected for the start track as colors for the end track.

In this example the mask sweeps upwards, revealing clip B as the wipe area moves upwards. The flowers are shown because Retain Other Colors has been selected in the Color Handling Option area.



Creating a Mask Based Sequence Effect (C7)

Velocity creates the transition based on a sequence of bitmaps. The mask is an image sequence which is used to combine Clip B with Clip A. As the bitmaps are added in sequence the ending track is revealed according to the next mask in the sequence.

The mask based sequence uses an image sequence to create a custom effect. One color of the image sequence is defined as the color which will be replaced by the starting clip, one color is defined as the color which will be replaced by the ending clip. As the image sequence plays, any animation in the selected colors will be used to create your transition.

Setting up a mask based sequence effect uses many of the same steps as setting up a mask based iris effect. As with all the mask based effects, creating an appropriate mask to use with the effect is the first step. This transition differs from the mask based iris transition and the mask based wipe transition in that the image used for the mask will not grow (as it does in the iris transition) or move (as it does in the wipe transition). Any movement in this transition will be due to the image sequence you select. While this gives you the maximum amount of control over the transition, you will need to consider exactly how long each transition will be and how many images you will need in your image sequence for smooth movement.

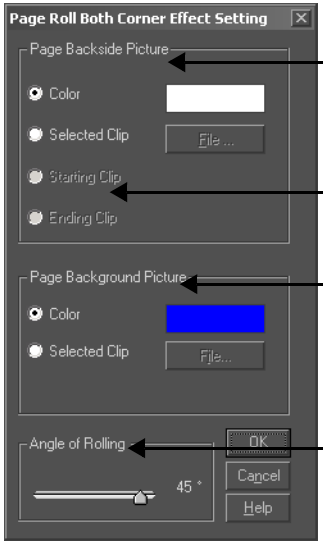
The mask should have two colors that can be used to define where clip 1 is shown and where clip 2 is shown. You don't have to worry about the exact size of the image as Velocity will expand your image file to fit your screen, although you may want to keep the same ratio of width to height to keep your image from looking stretched.

Once you have created the image sequence that you want to use with this transition double click on C7 to open the Mask Based Sequence Settings window. Select your image sequence, select the colors you want to use for the starting and ending clip, select your color handing options, and select how many times you want the sequence to be repeated. Click on OK when you are finished and the effect will be opened in the Transition Viewer. Preview the transition and when you are satisfied click OK.

Page Based Transitions (D1 - D8)

These are more commonly referred to as page curl transitions, and they create realistic 3D video-mapped page flipping or page rolling effects. When

you select one of these transitions (by double clicking on the transition's icon) a Page Based Effect settings window will open.



Use with all but D3 to define the color or clip shown on the back of the flipping page

These 2 additional options are available for D1 and 2 to define the image shown on the back of the page

Use with D3, 4, 7 and 8 to define color or the clip shown in the background

Use with D4 and 5 to define the angle of the rolling page

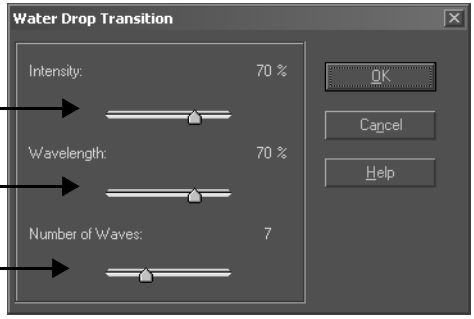
There are eight page-based transitions. There are three basic options: a Page Backside Picture, a Page Background Picture, and the Angle of Rolling. Only some of these options are available for each transition. When an option is not available it is grayed out.

For both the Page Backside and the Page Background, you may either pick a color or pick a clip to use. In some transitions you can have both backside and background effects. For transitions D1 and D2 the backside picture can also be the starting clip or the ending clip. To change the color double click on the color box. To select a clip or an image click on the Selected Clip option, click on the File button and select a file.

Water Drop Transition (D18)

This effect is like dropping a pebble into a pond and watching the waves appear with a second image. Ripples of water expand from a point to reveal

Clip B over Clip A. When you select the Water Drop Transition (by double clicking on the transition's icon) a settings window will open.



How distinct the waves are

The distance between the amplitudes of the waves

The number of ripples in your effect (1-20)

Move the red and white target to change the center point of the transition.

Creating an Alpha Channel Mask Wipe Transition

You may use your own image file to create a custom Alpha channel mask wipe transition by selecting the transition on the timeline and then selecting **Transition > Alpha Channel Mask Wipe** from the main menu.

The Select Alpha-Channel Mask window opens.

Select the file you wish to use as your Alpha channel mask. Check the preview box to see an A/B animation of your transition using the selected file as a mask.

An Alpha channel mask uses an image file to determine transparent areas of the first clip that let the second clip show through. Using the image file as a mask, dark areas of the mask become transparent first, followed by progressively lighter areas until the entire second clip is revealed.

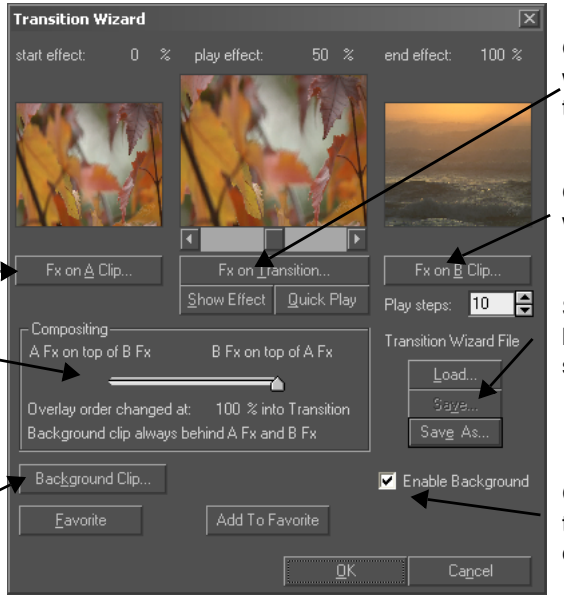
Usually the images used to define the Alpha channel areas are 8 bit gray scale images created as outputs from various programs or tools. However, Velocity will accept any color or gray scale image or video as the Alpha channel. If you use a color image the brightness of the colors will be used to determine the percent transparency.

Once you have changed your transition to an Alpha channel mask wipe the transition icon shown on your timeline will change to the "fx" icon shown.

The Transition Wizard

The Transition Wizard allows you to produce your own transitions and customize the effects. This tool can be used with Rendered Transitions only.

To open the Transition Wizard right click on an existing transition and select **Rendered Transition > Transition Wizard**, or use the main menu to select **Effects > Transition Wizard**. This will open a special Transition Viewer, with a few more options than the regular Transition Viewer.



Favorites

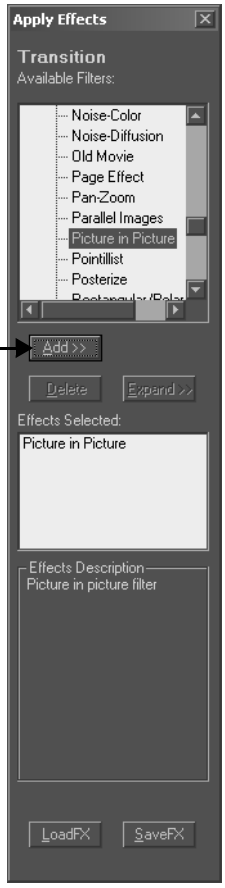
Using the Transition Wizard, you can create a catalog of the custom rendered transitions you use the most. Open your personal catalog by pressing the Favorite button. Click Add to Favorites to place a transition which you have created into your personal Favorites folder.

The Transition Wizard Example

Select a transition, right click on it, and select the Transition Wizard from the bottom of the menu.

Click on the FX on A Clip button. This opens the Apply Effects window. Use the Filter Categories drop down box to select Rendered Filters. Scroll

down the list and select Picture-in-Picture and click the Expand>> button. The Picture-in-Picture settings window will open.



Click the Add>> button to add the selected effect to the list and open its settings window.

On the Picture-in-Picture settings window click the Keyframes button. Move the keyframes slider to the first frame. In the Image section of the settings window click the Full button. Move the keyframes slider to about 25% and in the Image section click the Quarter button. Drag the red target of the picture so that the picture is in the bottom center portion of the screen. Click the Add KF button.

Move the keyframe slider to about 50%. Drag the red target so that the picture is at the middle right of the screen. Move the keyframe slider to the last keyframe. Move the red target so that the picture is in the top right of the screen. Click OK to close this window. Click OK again to close the Effects window.

Click on the FX on B Clip button. This opens the Apply Effects window for clip B. This opens the Apply Effects window. Use the Filter Categories drop down box to select Rendered Filters. Scroll down the list and select Picture-in-Picture and click the Add button.

Click the Keyframes button. Move the keyframes slider to about 25%. Drag the red target so that the picture is in the upper center, and click the Add KF button. Move the keyframes slider to about 50%, drag the red target so that the picture is at the bottom right corner, and click the Add KF button. Move the keyframe slider to about 75%, drag the red target so that the picture is in the bottom left corner, and click the Add KF button. Move the keyframes slider to the last keyframe and in the Image section of the window (upper left) click the Full button. Click OK to close this settings window. Click OK again to close the Effects window.

Click on the FX on Transition button. This opens the Apply Effects window for the entire transition. Select Rendered Filters, scroll down the list to the Twirl/Lens/Rotate and click the Add button. Click the Keyframes button. On the first keyframe set the angle to 0. Move the keyframe slider to 50% and set the Angle to 360 and click Add KF. Move the keyframe slider to the last keyframe set the angle to 0.

To select a background graphic that shows through when the video is not showing, check the Enable Background box. Click on the Background Clip button and browse to a background graphic.

Note the setting of the Compositing slider. Normally a transition starts with Clip A on top and it ends with Clip B on top. How and when that switch takes place helps to define the transition. In this case move the slider so that the switch takes place 50% into the transition.

Use the Quick Play button or use the slider under the central transition window to scrub through the transition.

Once you are comfortable with the Transition Wizard, you can also create your own transitions from scratch. Remember to save any of the custom transitions that you have created that you think you may want to use later.

Custom Transition Groups

Velocity has six pre-made Custom Transition Groups which provide you with an additional 114 pre-made transitions. To open them, right-click on a transition and select **Rendered Transitions > Custom Transition Group** and then click on the desired group. There are three flying video groups, plus Transparency, Brightness and Miscellaneous.

If you create and save your own transitions using the Transition Wizard you can organize them into a Custom Transition group of your own. Right-click

on a transition and select **Rendered Transitions > Edit Custom Transition Group > New**. The Custom Transition Group window will open.

Press the **Group Name** button. The Save As FXC file window opens. Browse to a location to save the group and type in a file name for the group. Then click **OK**.

In the box below the group name button, add a title for your group, and a description if you wish.

Using the browse button at the top of the screen, select up to 20 transitions to include in your new group and click the **Add** button.

The transitions that you add to your group may be FX Macros (FLT files) or Transition Wizard Macros (XWZ files). Up to 20 filters can be placed into one transition group. Any titles and descriptions given to the transition when the macro was created will be shown. To remove a file from your group, select it and press the Delete button.

Press the Icons button to create the animated icons for your group. When you click OK the group is created.

Custom group file names have an FXC extension. Your new group will be automatically given this extension. You must enter in a title for your new group. This is the name that will be shown on the Transition menu under Custom Transitions. The Description is optional.

To edit a custom transition group that already exists, right click on a transition and select **Rendered Transitions > Edit Custom Transition Group > Edit** from the menu. This will bring up a window that is identical to the one used to create a new group. You can delete a custom group by selecting **Rendered Transitions > Edit Custom Transition Group > Delete** from the main menu. This will bring up a window that allows you to select a previously created transition group and remove it by pressing the Delete button.

Chapter 17
Real Time Filters and Effects

Velocity has real-time filters that can be added to any transition or clip. You can use real-time filters to create various effects, modify transitions and make your own DVE transitions. Each effect has its own settings and key-frame panel.

Note: You must have a DVE board installed on your Quattrus or Altitude board in order to use the DVE effects.

The real-time video filters include Color Correction (Altitude only), 2D transitions, Video Proc Amp, and Video Freeze. The DVE Effect filter includes Perspective, Warp, Trails/Shadow, Pixel, Transparency, Crop and Keys/Borders (including Alpha key). If you have an Altitude or Quattrus board, in addition to the DVE effect tools, you also have Blur and Bandwidth tools available to you.

Other Real-Time effects include speed change, reverse and fades. These do not require rendering in basic conditions with any of the real-time hardware options.

A clip/effect must be rendered if:

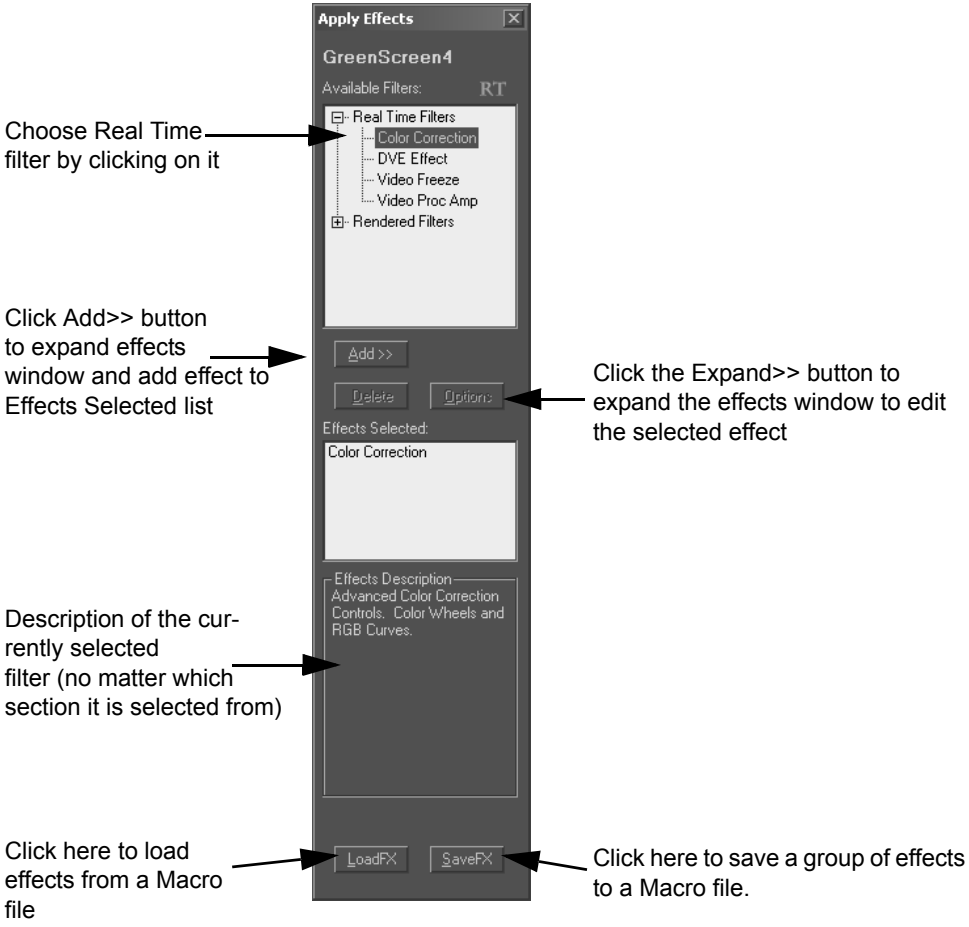
- If you apply an RT effect and an Auto or Custom Fade to the same clip.
- If you mix real-time and rendered filters on the same transition or clip.

Adding Effects in the Apply Effects Interface

Select a clip, transition or group of clips on video tracks.

Click on the Vfx button on the toolbar, select **Effects > Apply Video Effects** from the main menu, or right click on the clip and select **Video Effects**.

The Apply Effects window opens.



The Apply Effects window shows a list of the Available Filters based on the Filter Category selected. (If you are using plug in filters, you will have additional items on the Filter Categories list.) The Effects Selected section shows the list of effects currently selected to add to the clip.

Click on the ADD>> button to apply the highlighted filter to the selected clip (or double click on the highlighted filter). When you add a filter, its control window opens directly to the right of the Apply Effects window.

Apply Effects window

Keyframe section

Control window

Each tool within the DVE Effect has its own keyframe panel which operates independently from other keyframes that may have been set on the clip. For example, if you set a keyframe for a Perspective tool at 50%, and then you select the RT Keys/Border tool, you would not normally see the Perspective keyframe. The keyframe panel is blank, because you have not set a Border keyframe. If you add a Border keyframe at 50% the new keyframe is independent from the Perspective keyframe. This allows you to layer effects, creating keyframes without worrying about making multiple settings before adding each keyframe.

Note that the keyframe panel starts with just the first keyframe present, and no ending keyframe. The keyframe which is set last will be used for the rest of the transition or effect. You need only set the last keyframe if you wish the last keyframe to be different from the other keyframes.

To delete a filter, select it and press the Delete button on the interface.

After making your filter setting choices and clicking the Apply/Close button, the filter is added to the end of the Effects Selected list and the effects interface will close. Click the Apply button to apply the filter settings but

also keep the effects interface open. Click the Exit button to exit the effects interface without making any changes.

To adjust the effect later on, double-click an item in this list to reopen its control window, or press the Options button.

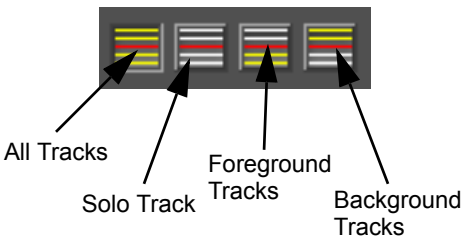
You can add as many filters as you like to a clip, and you can add both real-time and rendered effects. However, if you exceed the real-time resources, the clip will have to be rendered. The more rendering (i.e., the more rendered effects) you put on a clip, the longer the render will take.

When a series of real-time effects on a clip exceed the hardware's resources, the RT icon in the top left corner of the screen disappears.

You have the ability to re-arrange the order of the effects that have been applied to a clip by clicking and dragging them up or down on the list.

Previewing Tracks With Effects

If you are working with multiple layers of effects on multiple tracks it can tend to be a bit confusing when it comes to making changes to a specific track and not being able to see them very well due to the other tracks being visible. So, there are four viewing options to help you rule out specific tracks (based on how they are stacked on the timeline) you want to preview. These buttons are located directly to the right of the keyframe zooming tools in the effects interface.



The four options are All Tracks, Solo Track, Foreground Tracks and Background Tracks. Click on the appropriate button to only preview those tracks wile you are editing in the effects interface.

Track Based Effects

You also have the option to apply effects to a specific track on the timeline. When you apply a track based effect, the effect will be applied to all clips on

that track. To apply a track based effect, go to the track header of the track you want to apply an effect to and click on the Track Fx button.

The Apply Effects interface will appear and you may then choose which effect(s) you want too apply to that track.

Note: In VelocityHD only, when track based effects are applied, segments will stay real time as long as possible using the current hardware routing scheme.

Working With Keyframes

A keyframe is a frame in a clip where you may save your settings. Most effect sliders can be keyframed and adjusted.

Before you make any changes there is one keyframe at the beginning of the effect. Unless you add a keyframe at the end of the clip, the effect applied is static from the last keyframe until the end of the clip.

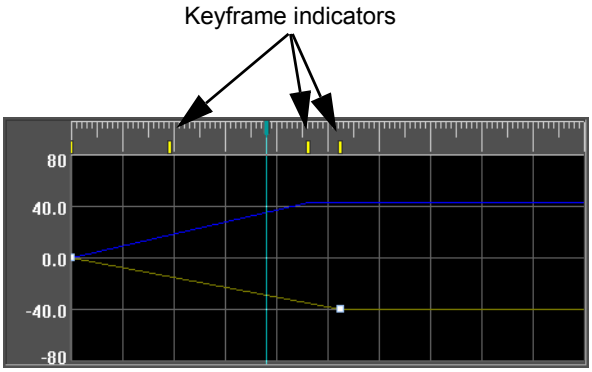
Move the effect sliders to change the settings for the currently active key-frame.

Velocity interpolates between keyframes to gradually change the settings between keyframes. Keyframes take an effect from being static to having motion or changing over time.

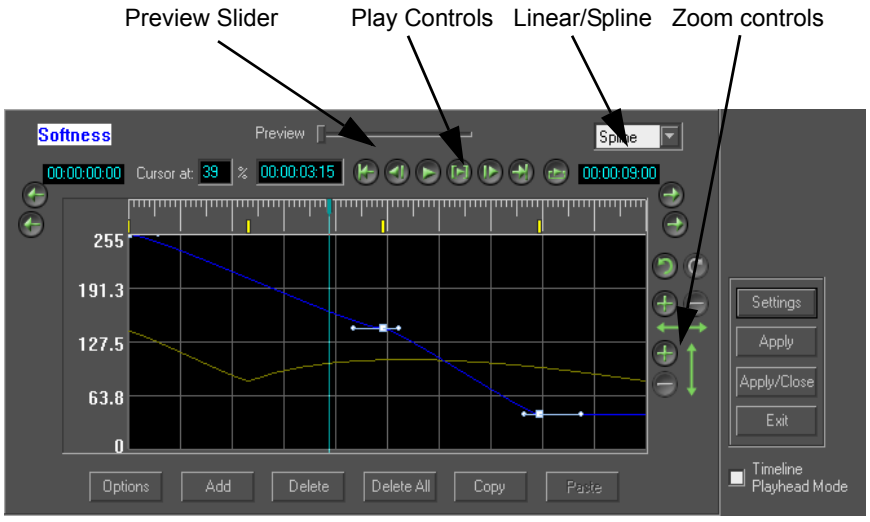
To move along the ruler, click anywhere in the keyframe grid and drag the playhead left or right across the ruler. Once the marker is the active tool on the interface, you can move frame by frame using the keyboard's left and right arrow keys.

Add a keyframe by pressing the Add button. You can add a keyframe to any frame of a clip. When you add a keyframe, the settings currently shown will be used for that keyframe. If you modify these settings, as long as the cursor is on the keyframe they will be recorded as the new keyframe settings.

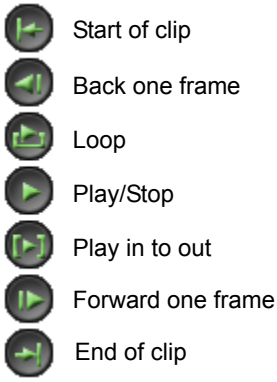
To move a keyframe once you have created it, place your mouse cursor over the keyframe indicator that you want to move. When the cursor changes shape to a double-headed arrow, drag the keyframe right or left.



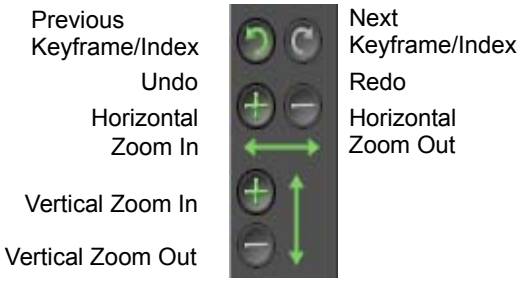
The Keyframe Interface



Keyframe Play Controls



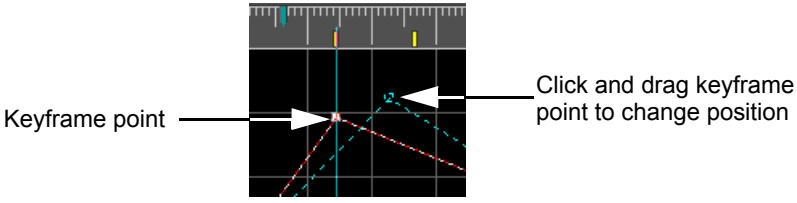
Zoom controls



Delete - Removes the blue, currently active, keyframe.

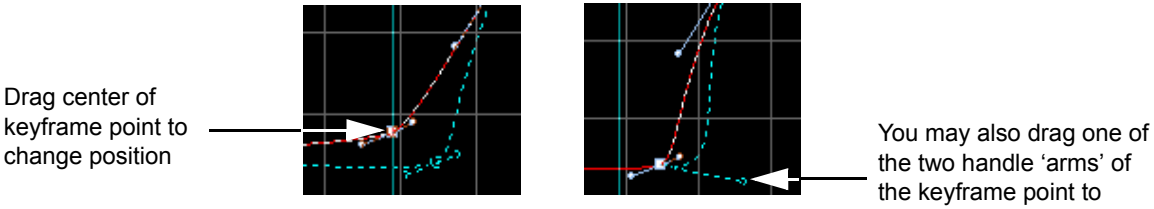
Delete All - Removes all keyframes except the first one, which can't be deleted. This is not the same as resetting the effect back to zero, because the first keyframe retains its settings.

Linear/Spline - This setting determines the way changes between keyframes are calculated. When set to Linear, the effect strength alters in a straight line between the different settings.



Linear change

When this is set to Spline, change happens on a curve.



Spline change

This creates a gradual beginning of the change between keyframes, then the change accelerates, and finally gradually eases into the next setting. With a linear tension, at 25% of the way between keyframes, the effect is 25% complete, whereas with spline, at 25%, the effect's change may only be at 10%.

Copy - The settings from the blue (currently active) keyframe are copied to the clipboard. You can also copy a keyframe by pressing CTRL + C on your keyboard.

Note: Another method of copying a keyframe is to 'grab' it, hold down the SHIFT key, and then drag it to another location. This will place a copy of the original keyframe at the new cursor location.

Paste - Move to the location you would like to paste the copied keyframe to by dragging the slider along the ruler and clicking the Paste button. You can also paste a keyframe by pressing CTRL + V after you have copied it.

If you select multiple clips, the same effects are applied to all the clips. Keyframes are applied to each clip individually. For example, if you use Proc Amps to fade to black, the fade to black will fade each clip. To fade across a series of clips, unify those clips first into a single clip. See Chapter 22.

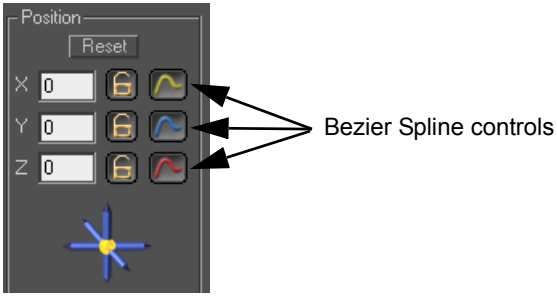
If you want to apply an effect up to an exact location on a clip on the timeline, place the playhead to that exact part of the clip and place a check in the **Timeline Playhead mode** check box in the lower right corner of the timeline interface *before* you apply an effect. When you then select a filter, you will see the playhead on that part of the clip in the keyframe section as well as a keyframe at the beginning of the clip. Choose your desired effect and click the **Apply/Close** button. When the clip is played back, the effect will be 0% applied at the beginning of the clip and will be 100% applied by the point where you originally assigned the playhead to maintain its position.

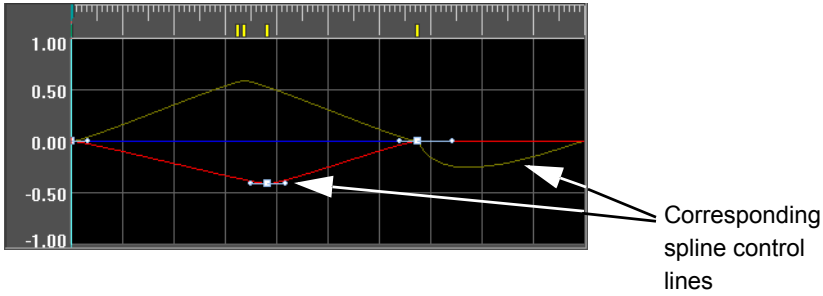
You will notice that there are undo and redo buttons underneath the zoom controls. You may use these functions for each change you make by either clicking on the appropriate button, or by pressing CTRL + X to undo pr CTRL + Y to redo.

Tip: In order for your playhead to stay in the same position while you switch effect tabs in the Apply Effects interface, click on the **Settings** button and uncheck the **Reset KF slider to 0% whenever a new effect tan is accessed** check box. If this box is checked, the playhead will lose its position as it is placed at the beginning of the clip.

Bezier Spline Controls

Bezier spline controls are meant to serve as variables for the various effect settings.





These controls are found in various effects interfaces in Velocity. You can tell by locating the buttons that have a curvy line on them. The colors of the lines correspond with the colors of the lines in the keyframe interface. For example, if you click on a blue spline control button next to a field where it gives an X axis value, the blue line in the keyframe interface will become active and you will be able to edit that value directly in the keyframe interface by moving nodes, making curves with handles, etc. For each button that has an individual color, that line color will be active in the keyframes interface so you may edit that value.

When you drag Bezier nodes in the keyframe interface, it may be convenient for you to disable any horizontal movement. Holding ALT while dragging a node in the Bezier editor will disable horizontal movement of that node. Holding SHIFT will move the entire curve up or down.

Using Effects Macros

An effect macro is simply a file with the effects that you have set up. A macro includes all the effects in the list, with their particular settings, key-

frames, etc. To save an effects macro, press the Save button. A window opens. Choose a location to save the file. It is saved as an FLT file.

To load an effects macro, press the Load button. Browse to the place where you saved the file. A loaded effects macro adds its effects to whatever effects are already in the Effects list.

Real Time Effects Settings

Click the **Settings** button at the bottom right corner of the effect screen to open the Apply Effects Options window.

Store Keyframes' Location based on Frame Position - This option will allow you to store the keyframes of an effect you have made based on its frame position, not based on percentage. Once this option is checked you will have two options:

> **Absolute Frame Location -** If this option is chosen, then the keyframe attributes that you apply to another clip will occur at the same frame location of the other clip. If the other clip has a different length, the effect will not change due to the fact that this option is frame based, not percentage based.
>
> **Relative Start/End Frame Location -** This option will allow you to keep the same start/end frame settings and apply them to another clip, while not having the original effect being changed.

View Timecode in Frames - When this option is checked, the timecode and duration areas will be shown in frames rather than in timecode.

Link Playhead and Preview slider - When this option is checked, the playhead will move with the preview slider while you are scrubbing a clip in the keyframe interface.

Reset KF slider to 0% whenever a new effect tab is accessed - If you uncheck this, the keyframe slider is left at its current location for easy synchronization of multiple effects.

Tool Tips - When this option is checked, you will be able to see a brief description of what buttons do in the keyframe interface when you hover the mouse over them.

Show Timeline Indices - When this option is checked and if there are any timeline indices present within the range of the currently selected clip, then you will be able to see the indices in the keyframe interface.

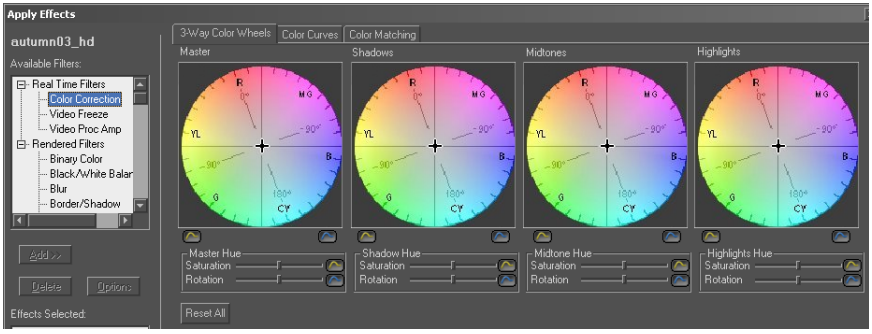
Undo Level - This field allows you to choose the number of edits you want Velocity to remember so you may undo them. There is no limit of undos, however if the number gets too high, it can take up some memory resources.

Color Correction

The Color Correction filter does not use any DVE resources, leaving those resources available for other purposes.

Note: Color Correction is only available as a rendered filter if you are using the Quattrus hardware. For more information on this filter and other rendered filters, see Chapter 19.

3-Way Color Wheels

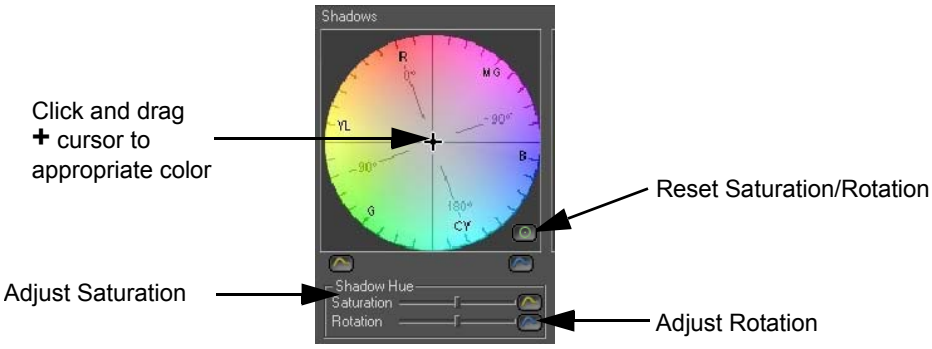


The 3-Way Color Wheels tab in the Color Correction window shows four color wheels. The four color wheels represent Shadows, Midtones, Highlights, and the wheel on the far left is the Master wheel.

In order to adjust the color settings in any of the color wheels, you can choose from one or two methods, or a combination of both:

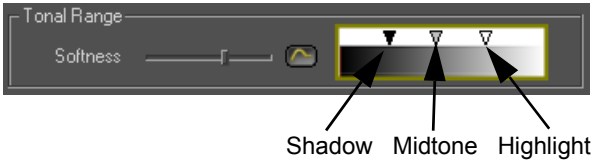
1 Click and drag the + symbol in the center of the color wheel to the appropriate color zone.

2 In the Hue section right underneath the color wheel, there are two sliders. One slider represents Saturation and once that is adjusted, it only adjusts the yellow Brightness line in the keyframe window. The other slider represents Rotation and once that is adjusted, it only adjusts the blue Contrast line in the keyframe window.



Adjusting the Tonal Range

Underneath the color wheels is a section called Tonal Range, which consists of sliders to help adjust the target value range between your chosen Shadows, Midtones or Highlights.



To adjust the tonal range of a clip:

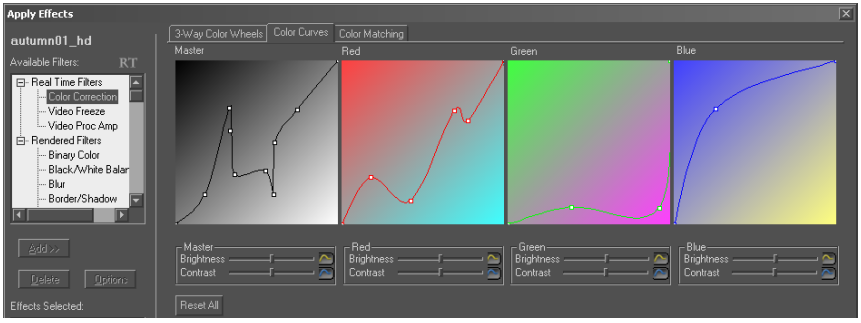
1 Load a clip into the Color Correction interface.

2 Make the proper color adjustments with the 3-Way color wheels to achieve the desired color for the clip.

3 Make additional adjustments to the Shadows, Midtones and/or Highlights by moving the appropriate triangular sliders (pictured above).

4 Adjust the Softness slider to select the proper level of blending between Shadows, Midtones and Highlights.

Color Curves

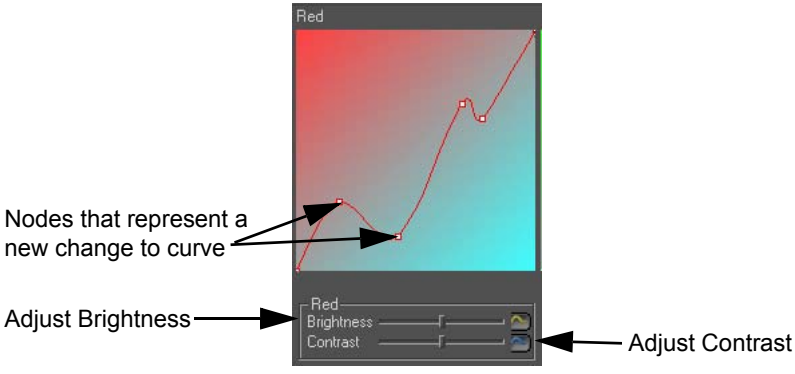


The Color Curves tab in the Color Correction window shows four color curve boxes. The four boxes represent Red, Green, Blue, and the box on the far left is the Master color curve box.

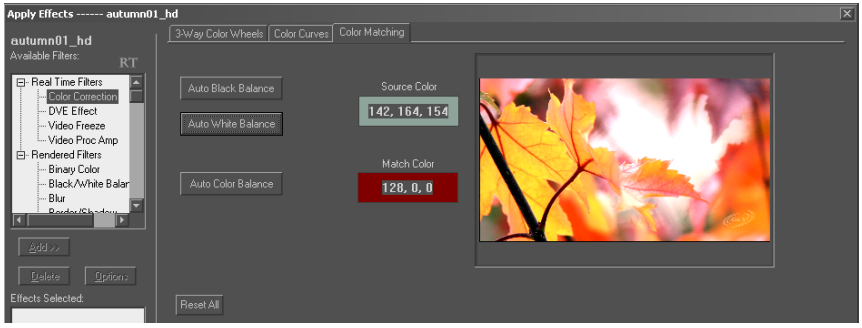
In order to adjust the color settings in any of the color curve boxes, you can choose from one of two methods, or use a combination of both:

1 Click on the horizontal line (which is the color curve) in any of the boxes and drag in the appropriate direction to get the desired color. You will see a node appear for every time you click on that line. Hover the mouse arrow over the dot until you see a finger, and you will be able to adjust the location of the node without making a new node on the line. To delete a node, double-click on it.

2 Similar to the color wheels, there are two sliders underneath each color curve box, one representing Brightness (which adjusts yellow Brightness line in keyframe window) and the other representing Contrast (which adjusts blue Contrast line in keyframe window). Adjust those sliders to achieve the desired brightness and/or contrast for each color.



Color Matching



The Color Matching tab allows you to choose a color from your selected clip through the shown preview window and swap that color with another chosen color.

The two areas to the left of the preview window represent the Source Color and the Match Color. The Source Color is the color you will choose to be replaced by the Match Color.

To perform Color Matching:

1 Hover the mouse over the loaded clip shown in the preview window. You will see an eyedropper appear instead of the mouse arrow.

2 With the eyedropper, select the color you wish to have replaced. The color you have chosen will appear as a border in the Source Color section.

3 Click on the black border in the Match Color section. The Color Chooser will open.

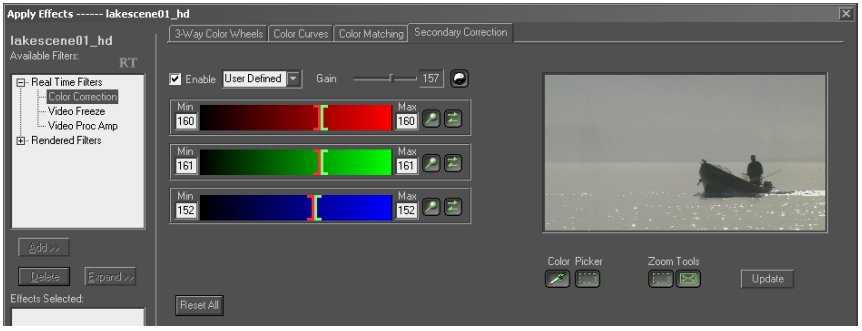
4 Select a color in the Color Chooser or create a custom color. After you have chosen a color, the color will appear as the Match Color section.

The end result will show your chosen Match Color replacing the Source Color you have chosen.

You also have the option to use the three buttons at the left of the screen: Auto Black Balance, Auto White Balance and Auto Color Balance. Auto Black Balance will automatically balance your clip with black based on the color you chose as your Source Color. The Auto White Balance button will automatically balance your clip with white based on your chosen Source Color. The Auto Color Balance button will automatically adjust the balance of your clip based on your chosen Match Color.

Secondary Correction

Note: Secondary color correction only works in real-time with systems equipped with the Altitude hardware. If you are using the Quattrus hardware, secondary color correction is available as a rendered filter. See Chapter 19 for more information on rendered filters.



Secondary color correction is a tool that allows you to apply color changes to specific color ranges of an image of clip without altering other color ranges of that image or clip. For instance, secondary color correction will allow you to change the red parts of an image to blue without changing the other color characteristics of the image.

Enable - In order for any changes to take effect, this box must be checked for any edit you perform.

User Defined/Green/Blue - This drop-down menu (to the left of the Gain slider) allows you to choose which color you want to select. When User Defined is selected, the Min and Max fields for each of the three color bars will be available for editing. If Blue or Green is selected, then only the blue of green color bars' Min and Max fields will be available for editing. However, if the In and Out points of the other color bars are moved around, then this option will become User Defined.

Invert - Click this button to make transparent areas opaque and opaque areas transparent.

Gain - Drag this slider to the right in order to further limit the selected color's range to allow the non-selected colors in the image/clip to stand out more.

Color Picker - There are two buttons underneath where it says Color Picker. The button on the left is the eyedropper tool and when you click this button, you will be able to choose a single color value when you hover your mouse over the clip image in the preview screen and left click. The button on the right is a tool that, when clicked, allows you to drag select a section of the image in the preview screen. The end result will be an average of the col-

ors selected in the box. The Preview window and external video monitor images refresh immediately.

Zoom Tools - There are two buttons underneath where it says Zoom Tools. The button on the left is a zoom dragging tool, which zooms on the selected area on the preview screen. The button on the right will return to the original full screen image.

Update - Click this button update the preview screen with the changes you have made.

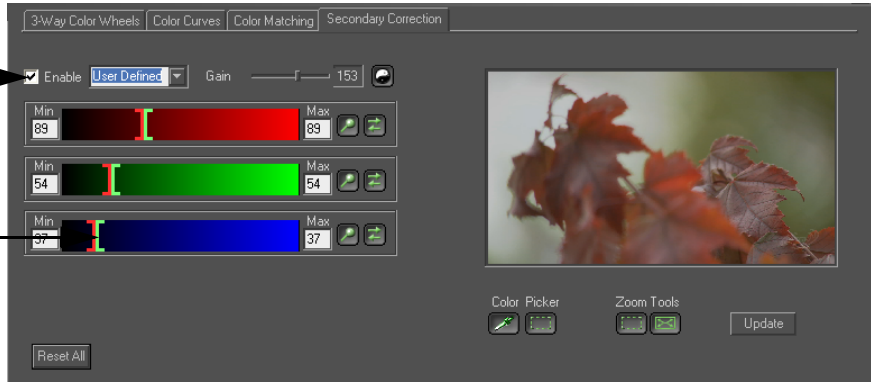
To apply secondary color correction to a clip:

1 Select the clip you want to apply the effect to, open the Apply Effects interface and open the Color Correction interface.

2 Click on the **Secondary Correction** tab. The secondary color correction interface will appear.

The Enable check box must be checked in order for the changes to apply

Adjust the In and Out points of each color value if necessary



3 Check the **Enable** check box. This must be enabled in order for you to see a preview of the changes you are making and have the changes be applied to the clip when you are finished.

4 Choose the color of the clip you wish to alter by dragging over the preview screen and clicking on the appropriate color with the eyedropper tool (you may also use the drag select tool). You may also select ‘Blue’ or ‘Green’ from the drop-down menu next to the Enable check box if you want to select the system defaults for those colors.

5 Once you have the appropriate color selected, go to either the 3-Way Color Wheels or the Color Curves to select the color you want to replace the previously chosen color with. You will notice the changes taking place on the Preview Window as you are selecting the new color.

6 Once the new color has been chosen, click back on the Secondary Correction tab and adjust the Gain to achieve the desired color range. You may click on the **Update** button if you want an updated image of the clip in the preview window.

7 Once all of the necessary changes have been made, click on the **Apply/Close** button to close the interface.

Video Proc Amp

Video Proc Amp does not use any DVE resources, leaving those resources available for other purposes.

You can adjust the proc amp settings of DVA and DPS clips on a clip by clip basis in real time. If you apply this effect to a 24-bit graphic file, Velocity must render the effect. This is a hardware render, and is quite fast. This effect does not work on RT Transitions, 32-bit images or titles.

Clip Based Color Correction - Adjust individual YUV channels.

- **Luma Gain** - The range of brightness of all areas of the video.
- **Chroma Saturation** - The color saturation. This control increases or decreases all colors by the same amount. At 0 the image is black and white, at 255 all of the colors are very saturated.
- **Black Level -** The level of the darkest areas of the video.
- **Hue -** This will change the color levels.

Waveform - Click on this button to open the Waveform Analyzer window.

Unity - Click on this button to re-set all the color sliders to their central positions.

Optional Reference Clip

Select - Load a reference clip to use for comparison purposes when you are adjusting the color. Use the Select button to open a clip.

Frame - Use the slider to advance through the clip.

Position - Use the slider to slide the reference clip across the original clip.

Waveform Vectorscope

The Waveform Analyzer provides you with most of the functions that are normally found on waveform monitors and vectorscopes. This can help you to adjust the output color of your clips. Keep in mind that you are analyzing digital image files, not video signals, so there will be no horizontal blanking, vertical blanking, horizontal sync or color burst waveforms displayed.

While the Waveform/Vectorscope window is open, you can adjust the sliders on the Video Proc Amp window and see your changes update in both your preview window and your video monitors.

Whether you select the Component, Composite or Vector tab, you can select:

Line Select - You may analyze the entire image or a single line. Use the buttons found to the right of this window to select **All Lines** or **Single**. If you want to analyze a single line you must select **Field 1** or **Field 2**. You may then choose the exact line you are analyzing using the slider to the right of the image or the numeric line value. When you click the **HiLite** button the individual line you are analyzing will be highlighted so that you can easily identify it.

Horizontal Magnification - You can change the horizontal magnification of your image from x1 to x50 to show detailed waveform information. When the image has been magnified you can use the scroll bar at the bottom of the image to select the portion of the image that is being analyzed.

Add Setup - Use this button to adjust the monitor's display of the black level by +7.5 units for NTSC signals. This button will not adjust the black level, just the way the waveform is displayed.

When setup is applied to a video signal it reduces the amplitude range available for picture information from 0 - 100 units to 7.5 - 100 units. Both the luminance and the chrominance levels of the entire signal are scaled down in order to fit into the reduced range. The peak white level remains at 100 units. North American NTSC video signals use setup. Japanese NTSC signals and PAL signals do not. Many test signals do not.

Waveform Monitors

The component and composite waveform monitors have a vertical scale calibrated from -30 to +130 units. (In NTSC this scale is in IRE units.)

For both NTSC and PAL a level of 100 corresponds to white. This is the correct level for the brightest portions of the video signal.

For PAL signals a level of 0 corresponds to black. For most NTSC signals a level of 0 is the level of the video signal during blank (or non-displayed) portions of the signal. A level of 7.5 (indicated by the dotted line) corresponds to black. This is the correct level for the darkest portions of most NTSC video signals.

Composite Monitor

This waveform monitor shows the video signal as it will be sent to the Composite video output.

Note that the Composite screen has been calibrated to correctly display 75% color bars. The 75% color bars are a standard test pattern that uses 75% of the color saturation for each color bar. In terms of the RGB levels, the 100% color bars would have a blue bar with B = 255 (100%) while the 75% color bars would have a blue bar with B= 191 (75%). Broadcast systems frequently use 75% color bars because the large chrominance peaks in 100% color bars may overload a transmitter.

Composite - Use this button to show the complete composite video signal.

Luminance - Use this button to show only the luminance portion of the video signal.

Chrominance - Use this button to show only the chrominance portion of the video signal.

Component Monitor

The waveform monitor shows the individual components of your video signal.

Parade - show Luma, B-Y and R-Y levels as side by side graphs

Luminance - show only the luminance portion of the video signal

B-Y - show the blue signal minus the luminance

R-Y - show the red signal minus the luminance

75% / 100% - select a 75% or 100% vertical amplitude range. Note that the vertical scale will not change, just the amplitude of the waveform displayed. The 75% / 100% setting allows you to change the calibration of the waveform monitor's chrominance gain to accommodate 75% or 100% color bar test patterns.

Vector Monitor

For standard colors using a standard color bar image, all the lines should intersect in the center of the small boxes. You may select a 75% or 100% amplitude range, depending on the type of color bar test patterns you use.

Preview Monitor

If you click the Preview tab, you will be able to see a preview of your clip after you have made your proc amp changes.

Using the Waveform Vectorscope During Capture

When you are capturing Component video you will be able to adjust the Input Proc Amp controls using the Waveform Analyzer. The Capture window and the Capture Settings window both have buttons labeled "Vector-

scope". When you click on that button the Waveform Analyzer will import the current input signal, to allow you to adjust the Proc Amps.

The waveform analyzer in the capture window has the vectorscope, composite and component monitors all open at the same time, in addition to a preview window, but the controls remain the same.

Video Freeze

The Video Freeze filter does not use any DVE resources, leaving those resources available for other purposes.

This effect is a real-time effect if you apply it to a DPS/LTV or DVA/LTA video clip. This effect does not work on RT Transitions or graphic files.

Freeze

Use the Freeze button to create a keyframe that will display the current video image for the rest of the transition. You can freeze on the image's Frame or just Field 1 or Field 2.

You can also freeze the image, and then set another keyframe using the None button to start playing the video again, and then set another freeze keyframe using the Freeze button.

Alternately, to simulate this effect you may capture a single frame of your clip, either by making a single frame or by collecting the single frame directly from your Altitude or Quattrus media drive's image file folders, and use the image file as your freeze frame.

Strobe

The Strobe effect displays a frame, then skips some frames (holding them back), then displays a frame, etc., giving a strobe effect. If you set the slider to a low number fewer frames will be held back, giving a smoother output. If you set the slider to a higher number more frames will be held back giving more of a strobed "slide show" effect.

The Hold Frames and Field Mode options allow you to select which portion of the image to use as your strobed video. Depending on the amount of movement in the original images, one or the other of the options may produce the most satisfactory results.

None

Select None if you do not want to use the Freeze effect.

DVE Effect

Note: In order to use DVE effects, you must have a DVE board attached to your Quattrus or Altitude board.

The DVE Effect can be applied to a clip via the Apply Effects window. It can also be applied to any DVE transition by pressing the Customize button in the Real Time Transition window.

When you select DVE effect, a tab-based window opens in the effects interface.

To disable or enable the preview for an individual DVE Effect tab, right click on it. You will see options to Enable this tab (defaults to on), Disable this tab, Enable only this tab and Disable only this tab. Enable/Disable only one tab allows you to mute or solo just that portion of the effect. If you disable a tab and click **Apply/Close** (to close the DVE Effect window), this effect will be disabled on the timeline as well. This allows you to turn off a portion of an effect without having to either A) delete every keyframe associated with a tab or B) delete the entire DVE Effect.

Perspective

The Perspective tool allows you to manipulate the 3D view of the image or the camera.

Image Size - Change the image size using the X and Y values. Click on the lock icon button to lock/unlock your settings. You can resize the image by clicking the re-size button and dragging the mouse. To keep the same aspect ratio (changing the values by an equal percentage), click the lock icon button next to where it says "Aspect". To temporarily override this setting, hold down the SHIFT key while clicking and dragging the mouse. Click on the Reset button to reset all of your settings to their default positions.

Perspective slider - If you have rotated your image around the X or Y axis the perspective slider will change the "wedge" shape of your image. You can also enter a numerical value in the box at the end.

Position - You can change just the X, Y and/or Z values by clicking on the position button and dragging the mouse to achieve the desired clip position. You can change the position of the image numerically by typing the numbers in the boxes. To move in the Z direction use the right mouse button.

Click on the Reset button to reset all values to 0.

If you click on the **Enable** check box, you will be able to use two additional sliders below it. The Ease I/O slider will slightly invert any curves that are shown in the keyframe section. The Curvature slider slightly changes the curvatures in the keyframe section.

Rotation - Rotate the image around the X, Y and/or Z axis. The rotation controls are used the same way as the Position controls.

Auto Field Align - When this option is checked, it will provide a sharper image for DVE effects without movement. This setting will be disabled by default, as it can cause jittering if the effect is moving around.

Click the Reset button at the bottom right section for this tool to reset the image back to its original size.

If you click on the WireFrame button, the WireFrame Viewer will open, showing you a sketch of what your effects will do on and off the screen. This is helpful for when your image is off screen and you want to locate it and/or apply effects to it.

Click on the Reset All button to reset all settings in the Rotation section of the Perspective tab.

Presets - By clicking on any of the presets on the right side of the window, you can quickly set a keyframe to one of several pre made settings.

Warp

Page Curl/Page Turn

If you use this tool on a transition, the video from the outgoing track is treated like a page either curling back in a tube shape (Page Curl) or turning back upon itself (Page Turn), revealing the video in the incoming track. If you use this tool on a clip, the effect will reveal the image that is on a lower-numbered track than the clip.

Progression - Use this slider to progress through the page curl or turn.

Radius - The size of the curl or the page turn.

Angle - The angle of the curling or turning page.

HiLite

Double (Page Curl only) - Check this box to see a double highlight. Uncheck it to see a single highlight.

Intensity - The intensity of the highlight.

Specular - The amount of light scattered by the highlight.

Backside color - Check this box and the back of the page will be the same as the color shown in the box. Otherwise the back of the page will show the back of the video. To change the color double click on the color box to open a color palette.

Split Mode - The page that is curling or turning may be split into sections and each section will curl or turn according to your settings.

Sphere

The video morphs into a spherical or elliptical object. The video can change position on the spherical object.

Radius - The size of the sphere that the video is mapped on to.

HiLite

Intensity - The intensity of the highlight.

Specular - The amount of light scattered by the highlight.

Eccentric - The sphere can be stretched along the X and/or Y axis, to create **an elliptical object.**

Position - This is the position of the center of the video that is used when mapping the video to the sphere. (To move the sphere relative to the background, use the Perspective tool's controls.)

Splash

The splash tool creates a circular rippling wave. Use this in combination with other tools, such as Transparency, to create transitions.

Radius - The waves move out in a circle. The radius controls the size of the outermost edge of the ripples.

Amplitude - The apparent height of the crest of the wave. A higher number gives a more pronounced wave effect.

Frequency - How many waves are generated in a given wave pattern. A higher frequency produces more waves which are closer together.

Phase - The exact position of the crest of each wave within a single wave. As the Phase slider is moved the wave appears to move.

HiLite - The amount of highlight used on each wave.

Eccentric - The waves do not need to stay circular. They may be deformed in the X or Y direction. Slight distortion will produced an elliptical wave pattern. Extreme distortion will produce an "X" shaped wave pattern.

Position - The position of the video that is being distorted. Use this in combination with the Perspective tool to reposition the center of the wave effect on the video that is being distorted.

Random

The video is divided into squares and each square is randomly displaced in the X and Y direction, allowing the video in the background to show through.

Block Size - The size of the squares used to produce the effect.

Amplitude - The amount of movement used when each block is displaced.

Horz Sine/Vert Sine

The video is distorted to follow a Horizontal or Vertical 3D sine wave pattern.

Phase - The exact position of the crest of each wave within a single wave. As the Phase slider is moved the wave appears to move.

Frequency - How many waves are generated in a given wave pattern. A higher frequency produces more waves which are closer together.

HiLite - The amount of highlight used on each wave.

Amplitude - The apparent height of the crest of the wave as shown by the displacement of the video. A higher number gives a more pronounced wave effect. The video can be displaced in the X and/or Y direction.

None - No Controls

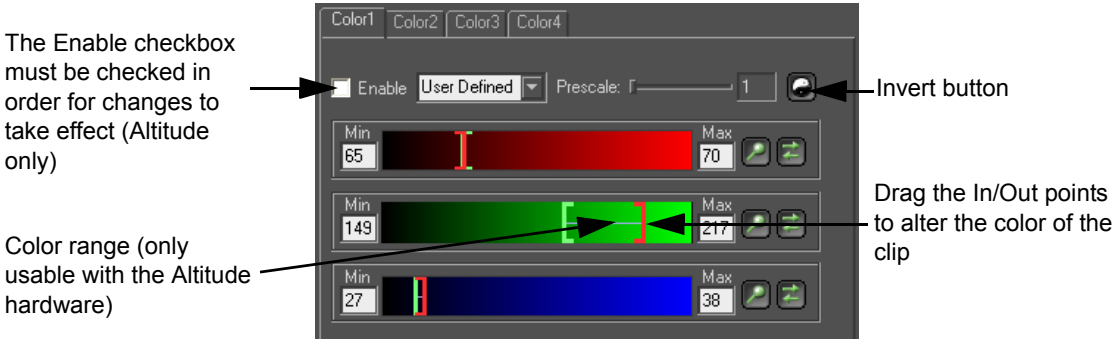
If you do not want to apply a Warp effect to your transition, click on the None button.

Keys / Borders / Masks

You may apply a border to your video using the Border buttons or a key to your video using one of the Keying buttons. If you have a Quattrus system, you can apply two DVE Effects to the clip and choose Mask Effect on both of them for an interesting effect.

Chroma Keying

Chroma keying uses the color, or RGB values, of the video image to determine which areas of the image will be made transparent. This is mainly used for clips that use a green or blue screen in them.



Enable (Altitude only) - In order for any changes to take effect, this box must be checked for any edit you perform.

Invert - Click this button to make transparent areas opaque and opaque areas transparent.

User Defined/Green/Blue - This drop-down menu (to the left of the Prescale slider) allows you to choose which color you want to work with. This color should match the color you wish to make transparent in your clip. When User Defined is selected, the Min and Max fields for each of the three color bars will be available for editing. If Blue or Green is selected, then only the blue of green color bars' Min and Max fields will be available for editing. However, if the In and Out points of the other color bars are moved around, then this option will become User Defined.

Prescale (Altitude)/Gain (Quattrus) - This slider adjusts the overall chroma keying strength *before* you have started choosing colors to be replaced, etc.

Color Picker - There are two buttons underneath where it says Color Picker. The button on the left is the eyedropper tool and when you click this button, you will be able to choose a single color value when you hover your mouse over the clip image in the preview screen and left click. The button on the right is a tool that, when clicked, allows you to drag select a section of the image in the preview screen. The end result will be an average of the colors selected in the box. The Preview window and external video monitor images refresh immediately.

Zoom Tools - There are two buttons underneath where it says Zoom Tools. The button on the left is a zoom dragging tool, which zooms on the

selected area on the preview screen. The button on the right will return to the original full screen image.

Update - Click this button to update the current frame (or zoom) with the applied effect.

After you have made your settings, you will then need to adjust the In/Out points of the color bars. Doing this will get rid of the color you have chosen to be transparent.

For example, if you have chosen green as your color to be transparent, the In point will already be set in the green color bar, and the Out point will be what takes the green away from your clip. Dragging the Out point to the right will take the green away from your clip.

After you have made a color range on a color bar by dragging the In/Out points to their appropriate locations, you may want to adjust settings specifically for that range. To the right of each color bar, there are two buttons.

The first button is the Zoom Color Range button, which basically replaces the whole color bar with what is in between the color range. This is helpful if you want to make more exact changes to your color range.

The second button is the Color Range Expand button, which when clicked, centers in on the very middle pixel in your color range. If you then drag an ‘1gxOut point to the right, for instance, then the In point will move to the left the same distance you have moved the Out point to the right.

If you want to move the location of your color range changing the size of the color range, click in the middle of the color range (you will see a hand icon as a cursor) and drag left or right to the necessary location on a color bar.

Note: Due to hardware abilities, you will only be able to expand the color range with the In and Out markers is you are using the Altitude hardware. If you are using the Quattrus hardware, the In and Out points will always be linked together, preventing a color range from being made. Instead, you will only be able to select one point for each RGB value.

After attempting to remove a color from a clip, there still may be traces of that color lurking around the edges of objects in your clip. The best tool to help remove this excess color is the Spill Suppression Finishing tool. Click on the Spill Suppression Finishing button above the preview screen.

Spill Suppression Finishing (Altitude only)

After you make the necessary chroma keying adjustments, a good final tool to use is Spill Suppression Finishing. This feature is mainly used to remove unwanted areas that normally reside on the edges of objects in your clip.

In the chroma keying screen, click on Spill Suppression Finishing next to the Chroma/Luma Selection option (which represents the screen you are currently viewing). You will now see sliders meant to adjust the Red, Green and Blue levels based on which screen is being used in the clip. Make the appropriate choice in the drop-down menu at the top of the screen and use the necessary sliders accordingly.

Borders

Click on the Borders button to add a border to your video. You have the choice of adding a Solid Color Border or a Predefined Border.

Softness - Defines how soft (or blurred) the edge of the video is with the Softness slider.

Size - Changes the thickness of the border. If you check the Symmetric check box you can adjust the X value and Y value will automatically be adjusted to give you a symmetrical border.

Border Color - Double click on the color square to select the color you wish to use.

Predefined Border Shape - If you are using a Predefined Border you will be able to select from a list of 7 predefined 3D profiles (shapes) and adjust the depth of the profile.

Keys-Masks

If you do not wish to use a matte, select None. This allows you to key without the interference of a secondary mask.

A mask effect, also known as a Garbage Matte, allows you to overlay one video over another, using an image as a cut-out.

Press the browse button. The Choose Mask Graphics/Video window opens.

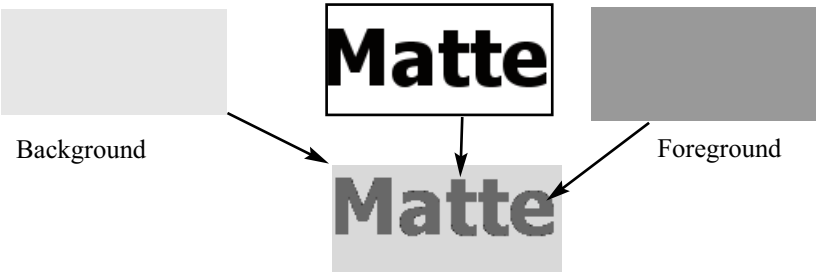
You can choose a still image, roll or crawl to use as a matte. If you have a Quattrus or Altitude system, you can also choose a 24 or 32-bit video clip. Still images can be black and white, gray scale or color with or without alpha channel. To get you started, there are some sample masks in your Velocity installation directory, found in Samples\Masks\NTSC, PAL or HD sized.

When you select a file in the left area of the screen by clicking it once with the left mouse button, the Selected Clip Info section of the screen updates to reflect that clip or image's statistics. This is for informational purposes only.

Show Alpha - This button is only available if the clip or image you have chosen is 32-bit (contains an alpha channel). Press to the view the clip's alpha channel, press again to view the clip in normal color mode.

If your clip is a video clip, or a rolling or crawling title, duration information for both it and the clip to which the effect is being applied in the timeline is listed. A Play button and a Clip At slider allow you to preview the mask clip.

When you click OK, this file name appears in the Mask field.



The way your image is interpreted depends on what type of keying you choose to do with it. If your image has an alpha channel and you do not choose Alpha Key, it is ignored. If it is a color image and you do not use Chroma key, the color information is ignored.

Now, choose a Matte mode.

None - Whether there is a matte image listed or not, it is ignored and you can key one image over another.

Apply DVE to mask only - Choose alpha, luma or chroma key. If you follow the matte with a DVE Perspective tool, the mask moves independently of the video.

Apply DVE to mask and video - Choose from alpha or luma key. If you follow the matte with a DVE Perspective tool, the matte and the video move together.

Overlay the matte image on current frame to show a preview of the matte.

Finally, adjust the softness of the key, and its threshold.

To remove the mask and set the Matte control mode to none, press the Reset button.

Simple Luma Keying

Luma keying uses the brightness, or luminosity, of the video image to determine which areas of the image will be made transparent.

Threshold - Determines the luminance level which will be used to determine which part of the video image is transparent. All areas which have a lower luminance than the luminance setting will become transparent. At low threshold settings only the dark regions will be transparent. At successively higher threshold values successively lighter areas will become transparent.

Softness - Determines how soft the edge of the transparent regions are. At the minimum value the edge is sharp.

Invert - When you check this box the transparent regions will become opaque and the opaque regions will become transparent.

Alpha Keying

The Alpha Keying button is not available for building DVE transitions. It can be accessed only through the real-time Filters.Your image clip must contain alpha channel for the Alpha Key button to be available.

Note: When you add an effect to a 32-bit video or graphic, the alpha key is automatically applied.

The Alpha Key tool allows you to apply an Alpha key to 32 bit image files with an internal Alpha channel. (The DPT still image files you create with Quick Titler are examples of this type of image file.) If you have created DPS/LTV files via imported image sequences or by rendering them in Fusion/DFX+ or another program, the alpha channel is automatically activated.

Once you have applied the Alpha key you can add additional RT effects and the image will still play in real time.

Threshold - As with other keys, the threshold determines the level that is used when determining which areas are transparent. At a setting of 0 all the Alpha key areas are crisply defined. At low settings, areas that were defined as semi-transparent will be faint. At high settings the entire image will become transparent.

Softness - This setting determines the amount of blurring that occurs at the edge of the keyed area. For best results with semi-transparent shadows keep this value high.

Invert - When you check this box the transparent and opaque areas are swapped.

To deactivate the alpha channel on such clips on the timeline, apply a DVE Keys Borders Masks tool to the clip and under Key-Mask type, choose None.

None

Even when no key or border is applied to your video, occasionally the edge may show. When the edge of your video is showing (for example, when you use a Perspective tool to reduce the size of the video) you can control how soft (or blurred) the edge of the video is with the Softness slider. The default setting is 0, which will give you a sharp edge.

Also use None to turn off the Alpha Channel on video (DPS/DVA) clips on the timeline.

Trails / Shadow

When you have one object placed on top of another object, you may want to give it a shadow to create a sense of 3D space. If you have a moving object, you can give it a Trail (a shadow of the image that seems to be left behind by the motion) or a Sparkle (a glittering trail).

IMPORTANT NOTE: Shadows can be rendered, and in some situations, so can trails and sparkles. To render Trails/Shadow, you must enable Real-Time Video Play/Record" in **File > Preferences > Velocity > Render Options**. However, when this tool is used in combination with a rendered filter, it will not work. Instead, use the Border/Shadow Effect to add a renderable shadow.

Shadow/Trail/Sparkle

Transparency - This setting determines how solid the shadow, trail or sparkle looks. Higher settings give more transparent results.

Decay (trail or sparkle only) - When used with the Trail or Sparkle effect this setting determines how long the trail is. Lower decay settings give longer trails.

Position - With the Shadow setting, determine the position of the shadow relative to the original video. Using the joystick, you can move your effect in any direction.

Solarize (Altitude only)

These two sliders alter how the pixels are displayed. A setting of 0 for all these sliders means that the tool has no effect.

Solar - This effect produces a selective reversal of color components in a video image. It creates a blend between the positive and negative image of the original as the colors are selectively inverted.

Poster - This averages the color in the image, changing areas of similar color to blocks of solid color.

Pixel (Quattrus only)

These three sliders alter how the pixels are displayed. A setting of 0 for all these sliders means that the tool has no effect.

Solar - This effect produces a selective reversal of color components in a video image. It creates a blend between the positive and negative image of the original as the colors are selectively inverted.

Poster - This averages the color in the image, changing areas of similar color to blocks of solid color.

Pixel - This makes the image appear to be made of larger pixels, giving a blocky look to the image.

Transparency

The transparency of the entire video image can be altered using the slider, allowing the background image to show through.

The Presets section offers examples of pre-made transparency effects.

Crop

If the video image shows black pixels around the edges, you may want to use this tool to crop the image.

There are four modes to choose from:

Variable - The Edge Pixel Visible sliders become active and you can adjust the cropping manually.

Auto (default) - The safe area values that are normally used for your video standard (NTSC or PAL) will be used. (Note: these will be a bit smaller than the maximum size, to compensate for the black pixels usually recorded as part of an analog video signal.)

Safe Resize - A set number of pixels will be taken off each clip: 10 each from the left and right sides, two from the top and three from the bottom. The remaining pixels will still fill the video screen, but anything on the edges (outside the overscan area) will be removed.

Symmetric - Takes an equal number of clips off the top, bottom and sides.

The Presets section offers pre-made cropping locations for your clip.

Bandwidth (Quattrus only)

The Bandwidth tab is available on systems using Quattrus hardware only. These settings apply to the DVE currently in use and the selected clip only.

Mode - There are three options:

Auto (based on Perspective) - When this is on, Velocity automatically sets the bandwidth depending on the scaling or perspective in use to avoid aliasing in the image.

Manual - Adjust the Horizontal and Vertical sliders to add (right) or remove (left) antialiasing from your image. Whenever you use Perspective to resize an image smaller, you may notice a loss of resolution. To eliminate any antialiasing, select Manual and set both sliders to 0 (or another setting that provides the amount of antialiasing you want).

Blur (Strong Blur effect) - Adjust the Horizontal and Vertical sliders to create a single-DVE blur effect.

Horizontal - As you drag the slider to the right, a small amount of blurring is introduced into the horizontal bandwidth of the image.

Vertical - As you drag the slider to the right, a small amount of blurring is introduced into the vertical bandwidth of the image.

These sliders allow you to avoid high-frequency noise that can occur when scaling down an image.

Blur (Altitude only)

The Blur tab only appears if you have the Altitude hardware. Using the blur feature will use up one DVE resource.

Note: The Blur effect can not be used in conjunction with DVE Perspective, DVE Transparency or DVE Trails/Shadows.

DVE Blur (Quattrus only)

The DVE Blur effect is available on systems using Quattrus hardware only. When you choose DVE Blur from the Real-Time effects list, you get a similar tabbed window as when you choose DVE Effect. The Bandwidth tab is replaced by a Blur tab.

The real time blur capabilities uses two DVEs. In effect, however, each DVE actually performs half of the blur with the downstream while the second DVE performs all the rest of the DVE functions.

This is a simple blur. It is not a radial zoom blur or a motion blur. It takes things that are sharp and makes them blurry.

If you keyframe a blur, it may look discontinuous. It is suggested that you use a dissolve transition between the same clip: one blurred and one unblurred. Or, for short animated blurs, use spline adjustments to change the keyframed behavior of the blur.

Horizontal - As you drag the slider to the right, a small amount of blurring is introduced into the horizontal bandwidth of the image.

Vertical - As you drag the slider to the right, a small amount of blurring is introduced into the vertical bandwidth of the image.

These sliders allow you to avoid high-frequency noise that can occur when scaling down an image.

Max Blur - This moves both sliders to their maximum positions (16 for Horizontal and 8 for Vertical).

Note: Software Rendering DVE Blur cuts the intensity of the Blur in half, making it the equivalent of a one-DVE Blur.

If you add this Blur effect to a mask, you can create an interesting soft-edged focus effect.

Changing the Clip Play Speed

There are two way to change the clip speed. The first way is to select the clip, then select **Effects > Clip Speed** from the menu, right click on the clip and choose **Clip Speed**, or press Hotkey S to open the Speed dialog box. If you have multiple clips selected, when you change the clip speed on one of them, that applies that change to all the clips.

When you select **Clip Speed** from the menu a window appears with a box allowing you to type a percentage. While you can change the clip speed from 1% to 50,000%.

No interfield motion - This option is useful for applying speed change effects to clips without interfield motion.

Keep Duration - Maintains the current length of the clip on the timeline as you apply slow motion to it. To maintain the In point of the clip, type a positive number. To maintain the Out point, enter the speed change with a minus (-).

Render - When this is checked, Velocity does a software render of the clip.

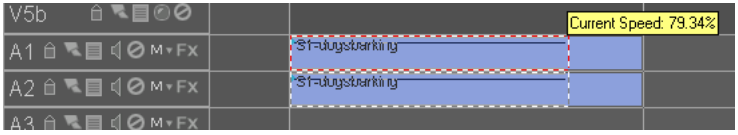
Mode (radio buttons) - You can choose Frame, Field 1, or Field 2 for slow motion. The Frame option can create a jumpy effect which can be remedied by using one of the two field modes. Note: If you use the Speed Change button, the last active mode will be used.

Set as Default - The currently set speed and speed change preferences will always be the default when you attempt to apply a speed change to a clip whose speed is at 100%.

Reset - When this button is clicked, all options will be reset to the proper defaults.

The second way to change the clip speed it to click on the Change Speed button on the toolbar. Mare sure that the clip(s) is selected, and then click the Speed Change button in the toolbar. Using the mouse, hover over the clip's In or Out point and pull the edit point in the appropriate direction. As you are pulling, the speed percentage will be displayed.

Clip speed button



Trim clip to change speed using Speed Change button

After you have changed the speed of a clip you may create transitions and apply other effects. If you add effects that need rendering you will be able to render the section that includes the clip with the speed change.

Reverse Motion

If you would like to play your clip in reverse motion you may right click on the clip and select **Reverse**. The clip will be played back in reverse from the dedicated video hard drive. You may add speed changes to clips that have been reversed. Reverse doesn't work on the audio portion of a clip.

Fade In/Out

Depending on the type of clip and the effect you want, there are three different fade options.

Real-Time Fade From/To Color (Quattrus only)

To apply Real-time Color Fade to DVAs, DPSs or image files (except 32 bit TGA files) right click on the clip and select **Real-Time Color Fade**. The Fade to Black/Color window opens:.

Alter the Fade durations by changing the numbers in the Fade In and Fade Out fields. A duration of 0 in either the Fade From or Fade To field turns off that half of the effect.

Change the color you are fading out to and/or in from by double clicking on the color square. A Color Picker window opens. Choose the color you want and click OK. The new color appears in the Color box.

You can only apply a Real-Time Color Fade if no other effect has been applied to any clip in the same timeline segment. If you apply another effect to the same clip the Real-Time Color Fade will be replaced by the new effect.

Turn off the Real-Time Color Fade by right clicking on the clip and selecting **No Effects**.

Auto Fade

This can be applied to a video clip or to a title or still image such as a TGA to fade it in and out on the timeline.

Right click on a clip and select **Auto Fade** from the pop up menu. When this option is checked the clip starts out completely transparent. It fades up from 100% transparent to fully opaque. The fade takes place over a duration as set by going to the main menu and choosing **File > Preferences**. Select the General tab and press the Auto Fade Defaults button.

The clip remains fully opaque until a specified period before the end. Then the clip fades out to 100% transparent, again over a duration determined in the Auto Fade settings.

All fades in a project auto fade over this duration. If you wish to alter the fade rate for individual clips, use a Custom Fade instead.

Any clip on the timeline that has auto fade applied to it displays a small FD in the upper left hand corner.

Auto fade indicator

You cannot apply Auto Fade to a clip that has fewer frames than the combined number of fade in and out frames.

If you apply a fade to a clip, and you apply another effect as well (say, it fades up from black and then has a transition at the end), the effect will have to be rendered.

If you apply Auto Fade to a video clip with audio, such as a DVA, it affects the video only, and does not apply a fade to the audio.

Custom Fade

To apply a Custom Fade, right click a clip and choose Custom Fade from the menu. The Custom Fade window opens.

Custom Fade allows you to keyframe a fade up or a fade down so it does not happen in a simple, linear fashion. It also allows you to have multiple fades in your project, all of which can fade at different rates.

There are four Presets: Fade In -Fade Out, Fade In, Fade Out and User Defined Default. All but User Defined Default create keyframes at 0%, 20%, 80% and 100% (assuming Fade In - Fade Out, the most complicated selection) and Transparency settings. After you choose a preset, you can adjust its Keyframe and transparency settings manually. The User Defined Default option allows you to create your own fade by applying keyframes in the necessary locations and clicking the Set as Default button.

You also have the option of manually entering the numeric value of the percentage and frame position of the playhead by clicking on the percentage or timecode and then typing in the appropriate values.

After you have adjusted the keyframes to create the appropriate custom fade, you have the option to set it as the default setting by clicking on the Set as Default button.

You can also save the custom fade my clicking on the Save button and giving it a name. It will be saved as a FAD file.

To load a previously saved custom fade, click on the Load button and select the appropriate fade file.

If you apply a fade to a clip, and you apply another effect as well (say, it fades up from black and then has a transition at the end), the effect will have to be rendered.

Note: There is an option in the main effects interface called **Disable Fade**, which when enabled, turns off any auto fades or custom fades so you can have feedback while you set up your effect. This check box ONLY affects the effect setup and has no bearing on timeline playback.

Copy / Paste / Add Video Attributes

Attributes are the list of effects and settings that have been applied to a clip, including speed change, auto and custom fade.

Select the clip with the attributes you want to copy. From the main menu select **Effects > Copy Video Effect Attributes**. Or, right click on the clip and select Copy Video Effect Attributes.

Select the clip you want the attributes to be copied to. From the menu select **Effects > Paste Video Effect Attributes**. The second clip will now have the same effects settings as the first.

Like effect attributes can only be applied to like timeline objects. So, if you have copied the effect attributes from a transition, they can only be pasted to a transition.

If you have multiple clips selected, the attributes are pasted to all of them. You cannot select multiple transitions at the same time, so this doesn't apply to them.

Add Video Attributes

Select the clip you want the attributes to be copied to. From the menu select **Effects > Add Video Effect Attributes**.

Paste attributes overwrites the attributes, so all clips have the same set of attributes. Add attributes applies the attributes to the clip(s), leaving any effects, etc. that are already there in place. The new attributes are placed at the bottom of the list, applied after the first attributes. You can only paste, but not add, attributes from one transition to another. You can add or paste attributes between clips.

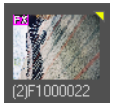
If you have two clips with a DVE Effect, and there are no overlapped settings, the two effects are just combined. If there are overlapping effects, an entire DVE Effect is added to the clip.

If you have a speed change on a clip and add that clip's attributes to another clip's, the speed change will be applied. But if the destination clip also has a speed change, the new speed change will not be added.

When clips that have keyframes are copied and pasted, those keyframes are applied on a percentage basis to the destination clip so the entire effect is displayed, no matter the length of the clip. After pasting a keyframed effect, you might want to check the effect's timing.

Clip Effect Info

A clip that has effects applied to it displays this info.



In the gallery, the clip displays a magenta FX indicator in its left upper corner.

In the timeline, a clip with an effect displays a the number of effects (# FX) in the top left corner. If there is an effect and a fade, it displays FX+FD.

When you copy or move a clip between timelines, the effects are always carried with a clip. When you move that clip between timelines and galleries, you must turn this preference on. From the main menu, choose File > Preferences and click on the General tab. Place a check mark beside Keep effect/filter when moving or copying to or from Gallery.

If the effects on a clip on the timeline have been disabled (right click on the clip and choose Disable Effects), the label telling how many effects have been applied turns red.

You can remove all the effects on a clip by right clicking on it and choosing No Effects. The only way to get back your settings, keyframes, etc., after doing this is to press Undo.

Chapter 18
Going Live

Live Feed is useful for creating live broadcasts (to the Web, for example). It allows you to mix live (or live from tape) video with stored clips, animations and graphics.

When you have an input connected to Velocity, a Live clip on the timeline allows you to mix live and pre-captured video, adding transitions, titles and other effects between them, such as picture-in-picture effects.

Note: If you are using the Altitude hardware, you will only be able to use Live mode with video.

Create a Live Clip

Right-click in the gallery and select **Live Clip**. An image file named "Live.bmp" will be added into the gallery. If you already have a live clip in the gallery, any subsequent new live clips will increment automatically (Live.bmp(2), Live.bmp(3), etc.) as copies of the original clip. You only really need one live clip in your gallery, as you can place it on the timeline as many times as you need.

If Live Feed is not enabled and you click on Live.bmp in the gallery or place the playhead over a Live clip on the timeline, the still image Live.bmp will appear on your video monitor and in the trim window. When Go Live! is not enabled, you can not view live video (except in Capture mode).

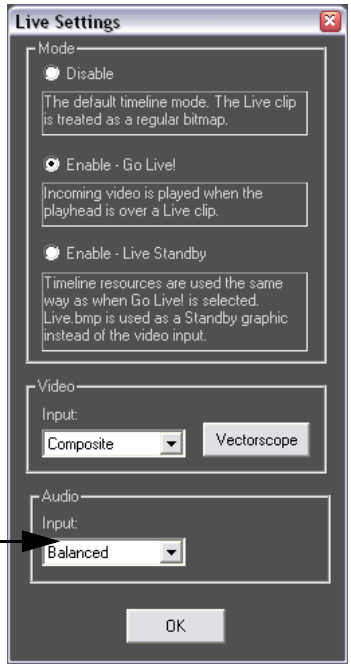
Place a Live Clip on the Timeline

Drag the Live Clip from the gallery the timeline.

When a Live Clip is placed on the timeline, any feed (live or taped) that comes into your selected video source will be output when that section of the timeline is played. You can apply titles and real time effects to that live incoming video.

Live Settings

To configure Live settings, select **Output > Live Settings**, or right-click on a Live clip on the timeline and select **Live Settings** from the menu. The Live Settings window will open.



The 'Audio' section is only available if you have the Quattrus hardware

Disable

Activate this mode by selecting the **Disable** radio button.When you view portions of the timeline in Disable mode, every time there is a Live clip on the timeline, you will see the Live.bmp image on your video and VGA monitors. The Live clip is treated like a bitmap, and any renders you do that contain the Live clip will contain the Live.bmp image.

Enable - Go Live!

Activate this mode by selecting the **Enable - Go Live!** radio button. You can also activate Live mode by selecting **Output > Go Live!** from the main menu.

As soon as you choose this mode, even before you click OK or close the window, the Live clip switched to the video input. If the playhead on the timeline is over a Live clip, the clip plays in the VGA and video monitors.

If you are using a Quattrus system and you select the radio button for **Enable - Go Live!**, both the video and audio menus will become available. Choose the input containing your live feed.

If you are using an Altitude system and you select the radio button for **Enable - Go Live!**, only a video section will become available. The only option for a video input is SDI due to the hardware buildup. There is not an audio section available.

When you are in Go Live! mode, you can click on the **Vectorscope** button. Whether the playhead is over a Live clip on the timeline or not, you can see the video coming in from the switcher (it will show whatever input was used last) and adjust the brightness, contrast and color balance interactively.

Enable - Live Standby

This mode is a combination of the Enable - Go Live! mode and the Disable mode. The hardware and operational limitations of Live Mode are applied so you can check for sections of your timeline that will need rendering when you actually Go Live! You can also put your Velocity timeline in Live Standby mode by selecting **Output > Live Standby** from the main menu.

Setting up Velocity for Live Switching

Before you can use the timeline and Live Switch (simple mode) in the Velocity interface with a MX20 mixer, you must set the correct Com Port, then adjust your Live video feed settings,

Com Port Settings

Go to **File > Preferences** or press hotkey F5 to access the general preferences and select Com Port tab.

In the Switcher section of the screen, check the **Enable** check box to ensure that the switcher will be enabled.

From the drop-down menu beside the Enable box, choose the Com Port that is connected via RS-422 converter to the MX20 mixer. The choices run 1-16. The mixer cannot have the same Com Port as the VTR or External Controller.

If you will be using the MX20 Control application in concurrence with Velocity, click in the box beside **Share with MX20 Application**. This places a check mark in the box and will allow you to switch seamlessly between its toolset and that of Velocity.

Chapter 19
Using Rendered Filters and Effects

Velocity has a large selection of resolution independent rendered video filters and effects that let you add spectacular effects to your image and video clips. Simulate the lens reflections seen through a camera lens while viewing bright light sources. Add an outward rippling water drop along with its associated natural refraction. Modify your video clips by blurring the colors in each frame, converting every frame into painting-like images, distorting and simulating visual effects such as the zooming/panning of a camera, the magnification of an optical lens, the waves in a swimming pool, or the rendered effects of shading, etc.

Each rendered filter is customizable using as many keyframes as the clip has frames. Keyframes change the way a filter affects a clip at any point in your video. Combine rendered filters and save them as FX macros, then apply them other clips and transitions.

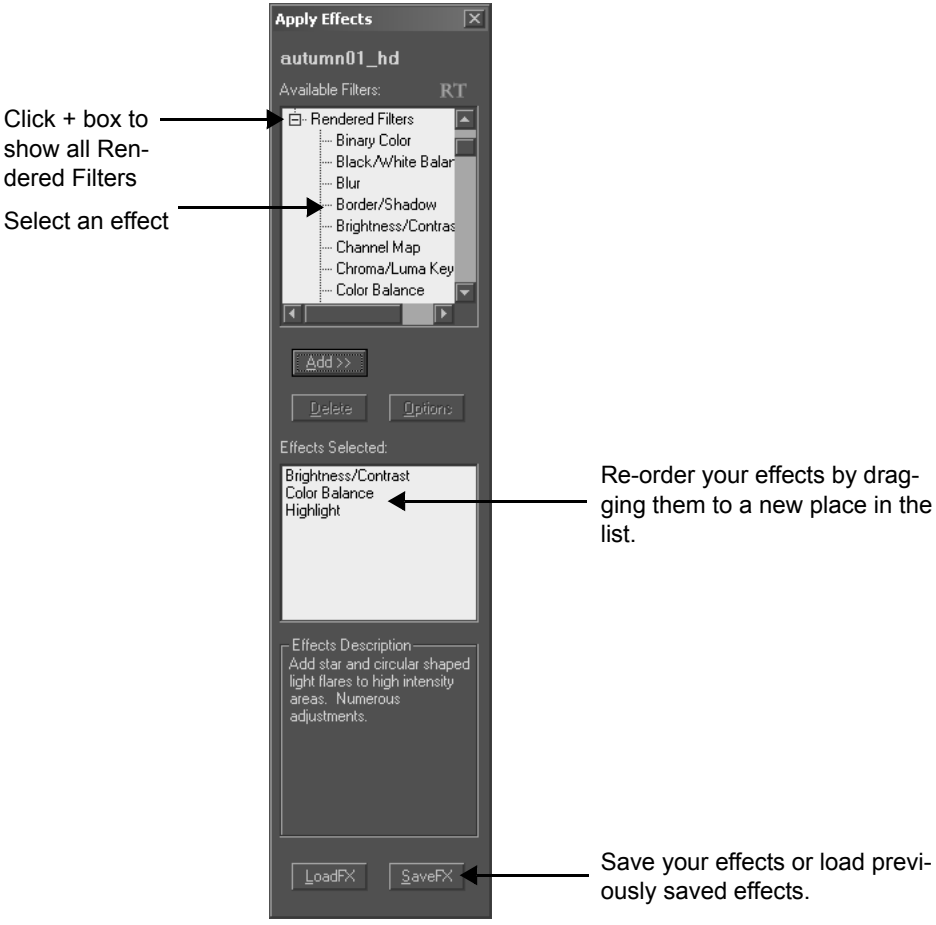
The 65 tools described in this chapter are rendered effects. They must be processed before they can be made into a movie. However, you will be able to see your effect work in real time through the preview window after it has been applied to a clip.

Apply a Rendered Filter to a Clip

To apply a rendered filter to a clip:

1 Select a clip, transition or group of clips on video tracks.

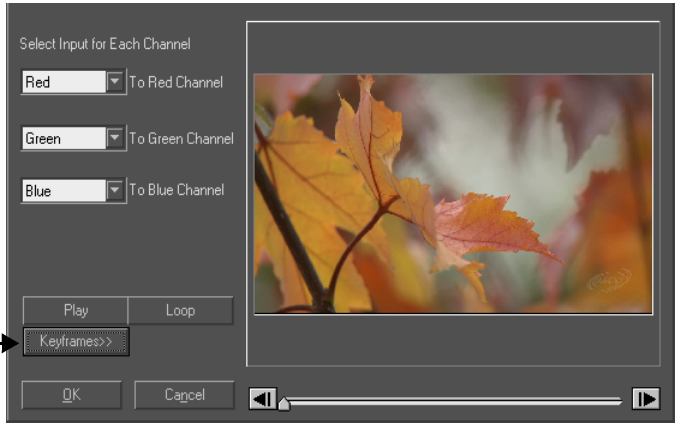
2 Click on the Vfx button on the toolbar or select **Effects > Apply Video Effects** from the main menu, or right click on the clip and select Video Effects.



3 The Apply Effects window opens. From the Filter Categories list, choose Rendered Filters.

The Available Filters list fills with 65 effects, listed alphabetically. The right side of the window shows the list of filters currently selected to add to the clip.

Click on the Keyframes>> button to open the keyframe controls.



4 To add a filter to the Effects Selected list, double click on it in the Available Filters list, or click on it once and click on the ADD>> button

When you add a filter, its control window opens. Each filter has a unique set of controls for that particular video effect.

5 To delete a filter, select it and press the Delete button on the interface.

After making your filter setting choices and clicking the OK button, the filter is added to the end of the Effects Selected list.

When you add more than one effect to a clip, the filters are processed in a cascading fashion, i.e., from the beginning of the list to the end of the list. Therefore the order of the filters can change the appearance of the final effect. If you want to change the order of the filters, drag and drop the items in the list. The more rendering (i.e., the more rendered effects) you put on a clip, the longer the render will take.

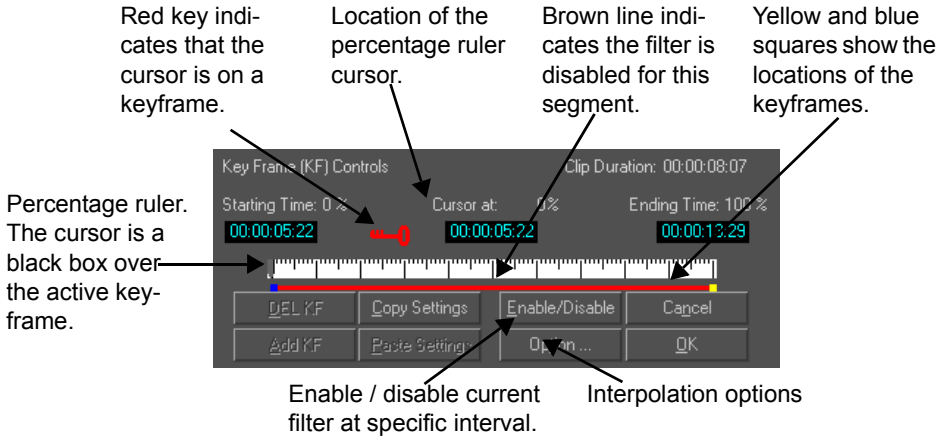
To adjust the effect later on, double-click an item in this list to reopen its control window, or press the Options button.

Using Keyframes with Filters

All filters allow you to customize the effect using keyframes. Some filters require the use of keyframes. The keyframe controls in each Filter Setting window all have a similar features to the one shown in this section. The Filter Setting window also contains a preview window to display the image at the keyframe cursor position.

To open the keyframe controls click the Keyframes>> button found on the individual Filter Setting window. When the keyframe controls are open this button will turn into a <<No Keyframes button to allow you to close the keyframe settings controls and remove all keyframes.

Keyframe Controls



Add KF - Places a keyframe at the current percentage ruler cursor position if there is not a keyframe there already. The starting keyframe and ending keyframe are automatically placed on the Percentage Ruler when the keyframe controls are opened. You can only add a keyframe if there is no keyframe at the current cursor location.

Delete KF - Removes the keyframe that is under the cursor on the Percentage Ruler. The starting and ending keyframes can not be deleted.

Copy Settings - Copy the settings of the current (blue) keyframe. This may or may not be the location of the cursor position.

Paste Settings - Apply settings saved using the Copy Settings button to the current keyframe. When the Paste Settings function is used on a keyframe the settings are automatically saved at that keyframe. Multiple Paste Settings can be performed from one copy.

Enable/Disable - When a keyframe is marked as disabled the effect is turned off between the disabled keyframe and the next keyframe. The original clip is shown without the effect. This interval is shown as a brown line under the percent ruler. (A red line is shown where the effect is enabled.) This control is very useful if you want a certain segment of the clip to be shown in its original state while applying the filter to other segments.

Option - Opens the Interpolation Options window. Here you can select the type of interpolation used between keyframes.

- Discontinuous - Uses the same setting as the previous keyframe until the next keyframe. There is a sudden change of state at each keyframe.

- Linear Interpolation - Treats the progression of the effect from keyframe to keyframe as a straight line. You may notice such things as a sudden change in direction at each keyframe.
- Spline-Based Smoothing - Treats the change of effect from keyframe to keyframe as a curve, with the greatest change happening at the mid point between two keyframes and the change slowing towards each keyframe. This gives a smooth change of state between each keyframe.

Cancel - Discard any changes made since entering the filter. If the filter was already applied to this clip before, the previous settings will be retained. If the filter was not applied on the selected clip before, this button will remove all effects of the filter from the clip.

OK - Apply this filter and these settings. This filter will appear on the Effects Selected list.

Keyframe Mover Cursor - The double arrow cursor lets you move a keyframe between its two adjacent keyframes. The starting and ending keyframes may not be moved. Place the cursor over a keyframe to change to this cursor.

Red Keyframe Indicator - When this key is shown it indicates that the cursor is over a keyframe. This indication is useful when you are trying to adjust keyframe settings or anytime when you want to move the percentage ruler cursor to a keyframe.

Other Standard Tools on Rendered Effects Interfaces

On Preview windows, the targets and lines for alignment can be removed by double clicking on the preview. They can be double clicked again and brought back. If you close "Save" the filter and reopen it again, targets and alignment tools on the Preview window return to their original, ON state.

Some filters have color pickers. To open a color picker, click on the colored square. The Color Chooser window will appear.

Unless stated otherwise, slider numbering systems are relative.

Tip: Filter adjustment - Filter sliders can be adjusted by dragging with the mouse pointer and then fine tuned using the Page Up and Page Down keys. Clicking the slider bar on either side of the handle will increment/ decrement the slider by the minimum amount.

The Rendered Filters

The following pages describe each of the rendered Velocity filters individually. The filters are listed alphabetically.

Note: For information on Video Screen Animation effects, see Chapter 20.

Color Enhancement Filters

Filter	What it Does	Parameters for Adjustment
Color Correction	Edit the shadows, mid-tones and highlights through 3 way color wheels, perform color matching, secondary color correction, and use color curves to adjust the overall coloring of your clips.	Refer to Chapter 17 for details on Color Curves, Color Matching and 3 Way Color Wheels. **Secondary Color Correction** - By clicking on this tab, you are allowed to choose a color and adjust the tolerance if that color by using the eyedropper tool to select a color and then moving the Tolerance slider. The **Enable Secondary Correction** box must be checked to enable this feature.
Color Frame	Creates a solid colored clip on the timeline. This filter is most useful with still images, which can be extended to unlimited lengths.	Double click the color box to open the color selection palette, and choose a color.
Star Field	Creates the effect of a spaceship travelling at a variable speed through a field of stars.	**Density** - Makes the star field more or less crowded. **Speed** - With the slider at 0%, there is no movement. At 100% you “warp” through the star field. **Seed** - Provide a random number for the computer to use in its calculations. Changing the seed causes the stars to appear in different configurations.

Filter	What it Does	Parameters for Adjustment
Binary Color	Converts the color of a clip into three primary colors, three secondary colors and white and black by comparing each color component to an RGB threshold you define (0-255).	**Threshold** - All colors above the threshold setting are changed to their maximum value (255). All colors below are changed to their minimum value (0). When the slider is near 0, the image is whiter, when it is nearer 255, the image is blacker.
Black/White Balance	Adjust the black and white levels of a clip. Through creative adjustment of the controls, you can create various levels of color reversal.	**White Balance > Black Balance** (normal case) - Sliding the White Balance control down from 100% will cause the whites in the clip to become brighter. Sliding the Black Balance control up from 0% will result in darker blacks. **White Balance = Black Balance -** Colors are separated out to the maximum and minimum levels. The image is made up of only the primary colors. **Black Balance > White Balance** - Colors are reversed in the interval between the Black and White Balance levels. If the gap is increased the clip becomes more and more color inverted.
Brightness and Contrast	Adjusts the intensity of colors in your image and the amount of difference between the darker areas and the lighter areas.	**Color** - Select the color channel (red, green, blue or all) to which the controls apply. **Brightness** - Darken a clip by sliding the handle toward Min or increase the brightness by sliding the handle toward Max. At Min, no color from the chosen channel remains. At Max, the selected color is given its full value. Keyframe this slider to create a fade to black effect. **Contrast** - Lowering the contrast makes the image appear more gray. Raising it makes any difference in brightness more pronounced.

Filter	What it Does	Parameters for Adjustment
Channel Map	Maps different color channels to the Red, Green and Blue channels of a video.	Choose a particular channel (Red, Green, Blue or Grey) to be mapped into the Red, Green, and Blue channels. Mapping all three channels onto themselves results in the original clip. Mapping “none” into a particular channel removes that channel from the clip.
Color Balance	Raises or lowers the percentages of Red, Blue and Green to change their color values.	Use this filter to emphasize and de-emphasize colors. At 100% the color reflects the original image/video. Increasing above 100% adds more color to the clip while decreasing below 100% decreases the color level. At the highest setting, the color selected is at its maximum value of 255. At the lowest setting, the color selected is removed from the clip entirely.
Color Filter	Allows only the selected primary or secondary color to remain on the clip.	Choose a color button to select which color in your clip you wish to keep. Select Red, Green, Blue, Cyan, Magenta and Yellow. All other color components are eliminated. Choosing a color deselects any previously selected color.
Color Offset	Shifts the color components a specified distance. The red, green and blue color components can be shifted both horizontally and vertically.	The horizontal RGB sliders shift the colors in the X direction. The vertical sliders shift the chosen color in the Y direction. The shift values are all relative.

Filter	What it Does	Parameters for Adjustment
Color Replacement	Substitutes one color in a clip for another color.	**Old Color / New Color** - Press to activate the eyedropper color selector and choose the color you wish to replace from the Preview. Or, double click the color box to open up a full range color selector. **Color Tolerance / Saturation Tolerance** - Tighter tolerances allow only the replacement of those colors that are very close to the old color and saturation level. Looser tolerances allow many colors and saturation levels to be replaced. The numbers associated with these two controls are relative. **Maintain Relative Shade** - Keeps the relative shade of the original color so characteristics from the original are still visible in the result.
Color to Gray	Converts a color clip to gray scale colors.	There are no specific adjustments in this filter. However, keyframes can be used to turn off the effect for part of the clip.
Hue and Saturation	Changes the hue (color) and color saturation (intensity) of the video in the clip. The hues of all colors are changed in a similar manner.	**Hue Rotation** - At 0 deg., the original colors are preserved. If the shift is positive (i.e., moving the slider to the right), the colors are shifted so that the reds become green while the greens become blue and the blues become red. If the rotation is negative (i.e. moving the slider to the left), the colors are shifted the opposite direction. **Saturation** - Move the control towards the left to create a faded image where colors are barely visible. Slide the saturation control to the right so to create a very bright, intensely colored image.
Invert	Switches the brightness and color of the clip.	There are no specific settings for this filter. You can use keyframes to turn on and off the effect.
Solarize	Produces a selective reversal of color components in an image or frames of a video clip. Creates a blend between the positive and negative of the original.	**Level** - Determines which pixels will be inverted. Pixels below the level are reversed, while those above remain the same. This value parallels the RGB range of 0 - 255. At 255, all shades of the color component are inverted. 0 means no change.

Filter	What it Does	Parameters for Adjustment
Tint	Makes the image look as if it is viewed through colored sunglasses. The selected color passes through while all others are blocked out.	**Pick Color** - Click to activate the eyedropper color selector. Move the eyedropper to the color you want to be the tint color and click the left mouse button. Or, double click the color box to open a full range selector.

Image Repetition Effects

Filter	What it Does	Parameters for Adjustment
Mirror	Takes half of the screen, inverts it and places it onto the opposite half of the screen. Applied to video, this creates symmetrical motion.	**Flip Orientation** - Choose one of the radio buttons representing the four halves of the screen. This half-screen is duplicated and reversed. The top button selects the top half of the video screen, the right button selects the right half etc. The chosen half of the image is flipped and repeated on the other side.
Kaleidoscope	Takes a 45 degree segment and repeats it around the entire screen.	**Select Reflected Region** - The pie shaped slice you choose is reflected or repeated around the screen. This creates interesting moving patterns when applied to video.
Kaleidoscope - Advanced	Creates two reflective edges and symmetrically repeats the image between them. Move the center point and the reflective edges. Select, change and keyframe both the source and destination regions.	**Number of Sectors** - The slider moves by twos in a range from two to 32 pie-shaped areas. The more sectors you have, the smaller the source region. **Source Angle** - Select the section of the screen that you wish to repeat. Either drag the slider, or drag the red sector boundary line on the preview display when “display Source Angle” is shown on the toggle button. **Destination Angle** - Select the position and orientation and of your kaleidoscopic effect. Either drag the slider, or drag the red sector boundary line on the preview display when “Display Destination Angle” is shown on the toggle button. Adjust the centre of the Source/Destination Region by moving the red target with the mouse.

Filter	What it Does	Parameters for Adjustment
Repetition	Tiles the same clip across the entire screen.	**Columns** - The number of times your picture is repeated up and down the frame (vertically). **Rows** - How many pictures appear horizontally across the screen. **Movie Quality** - The resulting high quality preview output takes additional time. This option affects the preview, not the final render of the clip.
Repetition 3D	Creates a 3D tiled effect with the selected clip. The tiled wall is an infinite plane and can be moved based on user controls. Controls are provide to simulate flight across this infinite plane.	**Velocity** - The speed with which the tiled wall moves toward you. **Elevation** - Changes your viewpoint relative to the ground. Increasing the elevation raises the view-point further away from the ground. **Antialiasing** - Increases smoothness on borders but slows down preview and rendering. **Angle of Plane** - Rotates the tiled wall of images away from you. At Min, the tiled wall is vertical and faces flat with the viewpoint. At Max, there appears to be a horizon about a third of the way from the top of the screen. Drag the balled tip of the red line on the Preview window to change the direction the tiled wall moves toward you from.

Pixel Effects

Filter	What it Does	Parameters for Adjustment
Crystallize	Organizes similar colors in an image into irregularly shaped cells. Use key-frames and different cell sizes to create a progres-sive freezing effect.	**Size** - Near min, the crystals are very small. Near max they are larger and blocky. The cell size value is a relative number.

Filter	What it Does	Parameters for Adjustment
Mosaic	Breaks clip image into mosaic tile blocks. Keyframe this effect for an interesting transition (i.e., start with the block size at the minimum, and end with the block size at Maximum).	**Normal** - Standard square block. **Mosaic Special** - Blocks with highlit edges. **Block Size** - Near min, the mosaic blocks are very fine and the original image is apparent. Near max, the blocks are large and obscure the original image.
Snow	Randomly generates a snowfall with simulated wind and gravity. In Velocity, snow can also fall up.	**Heaviness** - Increase the amount of snow by dragging the slider to the right. At 0%, no snow falls. At 100% there is a virtual blizzard. **Distance** - With the slider to the far left, snow seems farther from you and appears to fall all at a constant rate. At its closest (100%), some snowflakes appear to fall faster than others to simulate near and far flakes. **Random number seed** - Change this to make snowflakes appear in different configurations. **Target** (red pendulum on preview) - Drag to change the snowfall's direction. If the target is below the center (270 degrees) the snow falls straight down. If it is slightly to one side, the snow falls as if it were being pushed by wind.
Noise Color	Adds noise to a clip by randomly varying the selected color.	**Color** - Choose red, green, blue, yellow, magenta, cyan or all. The value of the chosen color (and its complementary color) are increased or decreased randomly. So, if you choose Red, you will see cyan noise as well. **Color Variation** - Near Min, little variation occurs, and not much noise is generated. Near Max, the color is varied across a greater range. The numeric values are relative.

Filter	What it Does	Parameters for Adjustment
Noise Diffusion	Shift an image's pixels in a diffusion pattern. Adjustments at keyframes can create interesting noise explosions.	**Noise Density** - Near Min, a very sparse noise cloud appears near objects. As you move the slider towards Max, the cloud gets thicker. **Diffusion Distance** - Adjusts the noise's proximity to objects in the clip. Near Min, noise hovers near objects. Towards Max, the noise cloud disperses farther from the original object. **Shift Color Components** - When checked, individual colors vary in the generated noise. The numeric values are relative.
Posterize	Collapses individual color shades in a clip, reducing similar colors into areas of solid color.	**Color** - Select a primary or secondary color to apply the effect to. Or, to apply the effect to all colors, choose All. **Level** - Drag left to decrease the number of colors. This in turn creates a more pronounced effect. Near min, very few color shades remain. Near Max, almost all shades are kept.
Pointillist	Colored dots on a black background.	**Dot Spacing** - Near Min, dots are closely spaced. As you drag the slider towards Max, the dots become farther apart. **Dot Size** - Dots are very small near Min. They get larger as you move the slider towards Max. If the Dot Spacing is closer than the Dot Size, the cells collide and become irregularly shaped.
Displacement	This filter repositions each pixel by a rate based on a displacement mask file. The result is a distorted image based on this mask. Select an image file, an animation file or video file as the displacement mask.	Use the X Displacement slider to adjust how much the pixels are shifted in the horizontal direction and the Y Displacement slider to adjust how much the pixels are shifted in the vertical direction. The displacement values are relative numbers.

Edge Effects

Filter	What it Does	Parameters for Adjustment
Blur	There are four types of Blur: Radial spin, Radial Zoom, Motion and Gaussian blurs. The Blur Target applies to both types of Radial Blur only. You can move the center point of the blur (a red target on the preview screen) with the mouse. Use keyframes to gradually move the blur target and interpolate between different blur amounts.	There are four types of Blur: **Radial Spin** - Simulates rotation. **Direction of Spin** - Choose either clockwise or counter-clockwise rotation. **Radial Zoom** - Simulates a fast camera zoom. **Direction of Zoom** - Choose either in or out. **Motion** - Blurs via a user defined direction. **Direction of motion** - At 0 degrees, the blur is directly to the right. As you move this slider to the right, the angle increases counter-clockwise. A blur of +90 degrees goes straight up. Move this slider left and the direction changes to clockwise.A -90 degrees blur goes straight down. A range of -360 to +360 degrees allows full clockwise and counter-clockwise rotation. **Gaussian** - Blurs the entire clip evenly. **Blur Effect** - Controls the strength of the blurring effect. At Min, no blurring occurs. As the value is increased, a greater amount of blurring occurs. The blur value is a relative number. **Outside Edge** - Radial spin and Motion blurs require extra image information from outside of the screen to be pulled in. Use Transparent Background to extend the edge and Solid Color to create a single color edge.
Sharpen	Increases the sharpness of a clip by emphasizing edges.	**Level** - Drag to the left to increase the degree of sharpening. With this control near Min there is little or no effect. As the level is increased towards Max, the edges become very pronounced. The numeric value is relative.

Filter	What it Does	Parameters for Adjustment
Convolution	Design your own filters through mathematical calculations. A five by five matrix processes every pixel in the picture. You can enter numerical values from negative to positive 999 into the matrix. The values can be used to enhance sharpening, blurring, embossing and many other effects. The formula used is to multiply each matrix value of the corresponding pixel, add the products together, divide the sum by the scale value, add the offset value, and apply the result as the value of the new effect to the pixel being evaluated. The result is automatically calculated. The numeric values are relative.	**Reset** - Re-initializes the matrix to its original "no effect" state. **Scale** - Normalizes the matrix so that the filter does not impact the overall brightness of an image. This value is automatically calculated. Override this function by typing a different number into the Scale field. **Offset** - adds a constant offset to the calculated value. This value effectively lightens or darkens an image.
Edge Detection	Detects all edges of a given direction in the clip.	Select one of the direction buttons to determine which side or corner the detection is performed from. Selecting one of the buttons deselects the previous one. Experiment with the different directions on a clip to get the most desirable result.
Emboss	Creates a raised relief effect.	**Pick Base Color** - Press to activate the eyedropper color selector. Move the eyedropper to the color you want to be the base for the emboss and click the left mouse button. Or double click the color box to open up a full range selector. The base color can be changed over time using keyframes. **Horizontal and Vertical Offsets** - Changing the horizontal offset to the positive side of center creates a raise and shift right effect. Values are posted in actual pixel displacement amounts. Lower displacement values usually work best.

Filter	What it Does	Parameters for Adjustment
Shading	Converts the color of a clip to a different surface height (giving the image depth) and applies a light source to show shading. Possibilities include: **3D Sculpture Effect** - Use the original clip for both surface shape and color. **Chrome Effect** - Use the original clip for the surface shape and a solid surface color (i.e. a chrome color). **Raised 3D Text Effect** - Use white on black text with soft gray borders as the surface shape file, and use a solid surface color. **3D Tile/Water on Glass Effect** - Use 2 filters, Displacement followed by Shading. Use the same mask file with both (white on black areas with gray soft edges). The right amount of soft edge gray can produce 3D water drops on a window, ceramic tiles, etc.	**Surface Shape** - If you uncheck Use Original Clip the surface height (i.e. shape) is determined by the file you choose by pressing the File... button. **Surface Color** - Check Use Original Clip to retain natural colors. If you check Use Solid Color and double click the colored square, different shades are created only via the light source. **Lighting** - Parallel light creates surfaces that appear to be lit by sunlight. Point lighting has a more man-made appearance. **Distance** - The further to the right the slider is, the farther the light appears to be from the surface. **Shading Brightness** - As the slider moves right, the generated shading gets brighter. **Surface Depth** - As you drag the slider to the right, the surface rise for given input colors increases, and surfaces seem to pop out more. **Advanced >>** - Opens more controls to the right of the preview window. **Light Source** - Double click to choose the color for your light from a colors dialog box. **Ambient Light** - Double clicking the color box to bring up a full range color dialog box.

Filter	What it Does	Parameters for Adjustment
Shading (*continued*)	Drag the preview screen's red target to move the light source. This determines the location of the light source relative to the center of the clip. An expanded scale is used so that when placed at an edge, the light source is positioned farther from the center.	**Intensity** - When this slider is all the way to the left, you "turn off" ambient lighting, and all lighting will come from the casting light source. **Surface Reflection Level** - Increases the amount of light that the new surface "picks up" as you move the slider to the right. This increases the contrast. **Surface Glossiness** - Increases the definition of highlights as you move the slider to the right. Glossy surfaces reflect sharper highlights while non-glossy surfaces result in wider highlight areas.
Smoothen	Increases the smoothness of a video. As the intensity gets higher the picture looks smoother, slightly blurred with less-defined edges.	**Level** - Drag to the left to increase the degree of smoothness. With this control near Min there is little or no effect. As the level is increased towards Max, the clip image becomes blurred as all rough contours are diminished. The numeric value is relative.
Texturize	Adds texture from a secondary clip. Use keyframes to gradually and selectively introduce texture to clips.	**File** - Opens a file selection dialog box so that an image or video clip can be picked as the texture. You can view and play your selected clip using the Play option in the File... dialog box. **Effect Strength** - The degree of influence the texture clip has on the main clip. Near Min, the texture clip will not appear at all. Near Max the texture clip becomes dominant. The numeric value is relative.
Three D	Adds scratches, dust and flicker. Use with the Color to Greyscale filter to create black and white old movies.	**File** - Select the other clip needed to complete the 3D effect. Usually, this is the same clip recorded from a slightly different perspective than the main clip. The picked file is offset with red while the original clip is offset with blue. To create a 3-Dimensional effect, the main clip and the clip selected should be taken at the same time with slightly different perspectives.

Overlay Images

Filter	What it Does	Parameters for adjustment
Old Movie	Adds scratches, dust and flicker. Use with the Color to Greyscale filter to create black and white old movies.	This effect has no parameters for adjustment.
Gradient Wizard	Creates colorful, moving video gradients and transparencies. You can keyframe color, direction, size, phase etc. so they evolve over time. **Fill Style** - Provides a choice of linear, circular and conic gradient styles. The control handles (on the preview screen) determine the boundaries for each style as shown: **Color Mode** - Affects the Gradient Cycle window (the graph). Use the drop down box to select either RGB (red, green, blue), HSV (hue, saturation and value) or CMY (cyan, magenta, and yellow) color models. **Number of Cycles** - Controls the number of times the gradient repeats. When set to 0 no gradient is produced. The maximum number of cycles is 10. **Offset** - Determines how much to shift the gradient colors. At 0%, no shift is produced. As the offset increases the gradient colors gradually shift position until 100% where the cycle is complete and no shift is apparent again.	**Gradient Cycle Window** - This graph with its four curves controls how the gradient colors change from the beginning of a cycle to the end. Adjust colors by dragging the three corresponding color component curves by their five color node handles. Moving a color curve towards the top increases that color component. The black curve represents the gradient's transparency. Raising this curve increases the opacity of the gradient on top of the attached clip. **Fm Color** - Starting color in the color cycle. Click this to open up a window for precise control of the starting color in a gradient. **To Color** - Ending color in the color cycle. Click this to open up a window for precise control of the ending color in a gradient. **=** - Sets the ending color ("To Color") equal to the starting color ("From Color"). **Curve** - When this box is checked, curves connect the color node handles in the Gradient Cycle window. If it is not checked, straight lines connect the color node handles instead. **Repeat Gradient Forever** - Covers the entire video screen with the selected gradient by repeating (linear) or expanding (circular and conic) the gradient pattern.

Filter	What it Does	Parameters for adjustment
Gradient Wizard (*continued*)	**Transparency Only** - When this box is checked, the gradient colors are deactivated. Only the black curve in the Gradient Cycle window is active to allow you to make the clip gradually transparent to the background. Raise the black curve in the Gradient Cycle window to increase transparency at desired points of the cycle.	**Alternate Direction Every Cycle** - If you are using multiple cycles this will reverse the gradient direction at each boundary. This creates smoothly changing values.
Lightning	A single bolt of lightning flashes from one point to another. The two red points (connected by a red line) on the filter preview window adjust the beginning and ending points.	**Branch** - The number of off-shoots from the main lightning bolt. At 0, only the main is created. Add up to 10 branches that stem off from the main lightning bolt. **Primary Intensity** - Brightness of the core of the bolt. **Secondary Intensity** - Brightness of its outer edge. **Primary Color** - The bolt's core color. **Secondary Color** - The outline shade of the bolt. **Random number seed** - The same seed always produces the same lightning bolt, assuming other parameters are the same. Different seeds produce different bolts.

Filter	What it Does	Parameters for adjustment
Firework - Automatic	Simulates a varying color fireworks display. A rectangular region on the filter preview screen shows where the firework explosions initiate from. The red rectangular Explosion Region on the Preview window determines the origin of the fireworks. Drag the upper-right and lower-left nodes. As the firework filter progresses in time, explosion trails are carried out of the initial region.	**Style of Firework** - The ring style firework explodes from a circular origin while the spherical type explodes from a center point in all directions. The random option gives you some of each. **Explosion** - The number of individual fireworks. The maximum number of explosions varies based on whether Simultaneous Fire is selected. **Duration** - At 100, fireworks start at the start of the clip and take the entire duration of the clip to complete the explosion, whether Simultaneous is selected or not. **Trail Length** - A setting of 0 results in spark-like explosions. Larger settings result in longer length trails. **Trail Quality** - At the Min setting of 0, trails are dotted lines. At the Max setting of 100, trails are solid. **Simultaneous Fire at% Delay** - When unchecked, each firework goes off at a random time. When checked, all fireworks fire simultaneously. The Delay slider times a simultaneous explosion. 0% is at the beginning of the clip, while 100% fires all fireworks at the end. **Seed** - A random number used to vary the effect. Different seeds change the firework. **Random Color** - Check here if you do not want to choose a color for your fireworks. The other color option boxes disappear. **Starting Color** - Click to open a window and select a color. **Color Variation** - At 0, all fireworks are the same color. Move the slider to the right to increase the difference of hue between fireworks.

Filter	What it Does	Parameters for adjustment
Firework - Single	Simulate a single explosion firework of either a ring or spherical style. A circular region on the preview screen controls where the firework explosion is placed. 3D rotation with a ring style firework provides a greater sense of depth.	Many of the controls for Single Firework are the same as Automatic Firework. These settings are unique to the Single Firework: **Starting Time** - At 0%, the explosion occurs at the beginning of the clip. At 50%, the explosion occurs in the middle of the clip, etc. **Orientation** (ring style only) - For x = 0 deg, the firework ring is parallel to the ground plane (horizontal). As the angle increases, the ring rotates towards vertical. Y spins the firework around its center, and Z tilts it to the left. **Start/End Color** - Adjust the range the firework's trails cycle through. Double click in the Starting Color and Ending Color boxes and choose from the Color Picker window that opens.

Filter	What it Does	Parameters for adjustment
Title Generator	Adds text directly to a video clip. This effect can be applied to a clip multiple times to create text scrolling in different directions. The titles created with this effect must be rendered. To create real-time titles as separate files for layering on your timeline, use a standard CG program, DFX+ Text+ tool, or Velocity's Quick Titler (see Chapter 15).	There are six preset motion types provided. **Vertical Movement** - Rolls text up the screen. **Horizontal Movement** - Moves text in a single line from right to left. **Static** - A still title. **Vanishing Horizon** - Text moves towards a definable horizon and then vanishes. The horizon is a movable red target in the preview screen. You can keyframe moving it. **Panel** - Static text is displayed on a beveled panel. **Circular** - Text moves in a circular path. The circle's position and radius can both be keyframed. Change the starting point of the text by moving the smaller circle around the radius of the larger circle.

Filter	What it Does	Parameters for adjustment
Title Generator (*continued*)	When creating moving titles, you may not see any title in the preview window during the first frames of the sequence, since scrolling starts from outside the frame. **More>>** - Opens up advanced functions such as keyframes, borders, shadows, transparency control etc. It is often easier to first prepare the text and determine the basic characteristics such as motion, color and fonts before opening up the advanced controls. Note that when keyframes are active, all settings must be made on a keyframe to be saved.	Set the motion control first since it changes the selections available in subsequent controls such as Alignment. **Enter Text** - Type text in this field. Perfect alignment in this window is not necessary since the alignment controls provide an easy way to format the text onto the video screen. Use the load and save buttons to retrieve and store any text file. You can also use standard ASCII text from a word processor. **Speed** - Choose one of five predefined speeds for moving text ranging from very slow to very fast, or choose custom speed. This opens window with a slider. The speed range is from 1 (slowest) to 100 (fastest). Check Fit to Clip to set the duration of the scrolling text to the length of the selected clip. **Anti-aliased** - Check to sub-pixel render moving text. Antialiasing may make text with thin lines look washed out. To speed up rendering, turn this control off. **KF Color** - When checked, font colors are keyframeable over time (e.g., red to blue to green, from 0-100%). **Color** - Double clicking on the color box opens up a window where you can select the text color. **Align** - Depending on the Motion Control setting, different options may be available. If the Right to Left scroll button is selected, a single line of text can be positioned along the top, middle or bottom of the clip. If Vertical Scroll is selected, the lines of text can be placed along the left, center or right portions of the screen. For all alignments except Center, adjust the margins by moving the red lines on the preview window. **Fonts** - Click to open the font selection box. Choose any Windows True Type font currently available on your system. You can also choose style, size, overstrike.

Filter	What it Does	Parameters for adjustment
Title Generator - Advanced Functions	***Text*** **Text Transparency** - Allows adjustment of text transparency. Normal text has no transparency (i.e. the transparency slider remains at the 0% setting). ***Border*** **Thickness** - When set to 0, no borders are created. **Softness** - Applied to the text. **Color** - Double click to open up a color palette to adjust the border color.	***Shadow*** **Transparency** - Create semi-transparent shadows which provide a more integrated feel as the words seem to be part of the video. **X/Y Offset** - Adjust the size and direction of the shadows. If both X and Y offsets are 0, no shadows are created. Increasing the X offset in the positive direction moves the shadow to the right. Decreasing the X offset moves the shadow towards the left. The Y offset operates in a similar manner but in the vertical orientation. **Color** - Double click the color box to bring up a color palette. **Panel Controls** - When you use the Panel motion mode, the Shadow Controls are replaced by the Panel Controls. Transparency affects the panel that the text is being displayed on. A partially transparent panel will act as a color filter for the section of video it is covering. Size will increase or decrease the size of the panel and Thickness changes the panel edge to give the panel different 3D depths. **Mark Start** - This button is found above the percentage ruler in the Keyframe controls. It is used to adjust the point when you will start to see text on your clip. Move the percentage ruler cursor to your desired starting point. When you click on this button a small red triangle mark will be placed under the ruler, indicating that this is the starting point. Note that the starting mark may be placed anywhere on the percentage ruler, not just on a keyframe. The “mark start” and “disable keyframe” functions provide a way to display both static and moving text for only a portion of your clip.

Lens Effects

Filter	What it Does	Parameters for Adjustment
Highlight **Auto Highlight Detection** **Sparkle**	Highlights come in two varieties: sparkles and flares. Unless stated otherwise, all numeric values are relative. Places highlights on bright spots on the clip. This places both types of highlights (assuming both have been enabled). A sparkle in any particular spot will have a flare too. To have some sparkles with flares and some without (or vice versa) apply a second Highlight effect (in the Apply Effects Window) with different settings. A sharp star-like effect. Under Parameter Adjustments For, select Sparkle. Place a check beside Enable.	Manually Insert Highlight - Place a single highlight point on the screen. Drag the highlight target (the red crossed circle on the view screen) position (and key-frame movement on) the highlight. **Max Number** -Range = 1 to 20. With large Minimum Distance and Threshold settings, the computer may not be able to create this many highlights. **Threshold** - The sensitivity of automatic highlight detection. At 0, potentially greater numbers of high-lights are generated. Near the maximum value of 100, highlights are created only for brighter sections of the picture. **Min Distance** - At its minimum of 0, highlights can be close together. When set at the maximum value of 100, highlights are spaced far apart. **Add Lower Intensity Arms** -Places fainter arms between the sparkles' major arms, doubling the num-ber of points to the sparkle. **Outer/Inner Colo**r - Click a color box to get an eye-dropper to choose a color from your frame. Double click to open the color chooser window. The Outer Color appears at the edges and tips of your sparkles. The Inner Color is at their core. **Intensity** - Sparkle brightness. Near 0 highlights are invisible. Near 100, highlights are very bright. At the maximum value, the screen may be covered by bright highlights. **Number of Arms** - Between 1 and 10 arms. **Angle of Rotation** - Rotates the sparkle arms counter-clockwise. Measured in degrees. Move and keyframe the angle of rotation for a cool effect.

Filter	What it Does	Parameters for Adjustment
Highlight (*continued*) **Flare**	A smooth, circular effect. Under Parameter Adjustments For, select Flare. Place a check in the enable box.	**No Decay** - Creates flares that end in a hard ring rather than fading out. **Outer Ring** - Creates a ring outside the flare. Adjust the colors and brightness of flares the same way you did for sparkles.
Multiple Prism	Creates multiple repeated images surrounding the center region. The effect is similar to looking through multiple prismatic lenses.	Choose the region to be repeated by dragging the red circle on the preview screen to adjust the size of the repeated area, and drag the target at the centre of the circle to move the centre of the repeated area. A quick way to re-center the circle is to click on the Center button, bringing the target area back to its default position. Adjust the orientation of the repeated images by dragging the red line that emanates from the circle in the preview area. The current position of the line is posted next to “Angle” below the preview area. **No Center Image** - Creates a “donut” effect rather than having the centre image and its copies wheeled about it. **Surrounding Images** - Determines how many repeated images surround the center image. **Rotation Turn** - Positions the group of images around the center. Increasing this slider by a value of 1 rotates the multiple images a full 360 degrees. Open the keyframer and change the Rotation Turn value over time to create an effect where your multiple images spin around the original image. **Image Displacement** - Adjusts the distance the surrounding images are from the center point. As you move the slider from Min to Max, the surrounding images move further away from the center image.

Filter	What it Does	Parameters for Adjustment
Parallel Images	Repeats an area (between two parallel lines) towards an edge of the clip. The image starts out big, but gets smaller and smaller for each repetition. This is similar to placing an image between two mirrors, with a finite number of repetitions.	Position the red line and target on the preview window to provide the image duplication you want. The moveable red target is location of the center of the parallel lines. Rotate the red line emanating from this target to change the angle of the repeated image. **Align Horizontal / Align Vertical** - Put the parallel lines in preset configurations. The Flip button Rotates the parallel lines 180 degrees. **Rotation Turn** - If you keyframe your effect, use this to rotate your image by more than 360 degrees. An increase of 1 on this slider rotates the parallel lines 360 degrees. **Facet Width** - The distance between the two parallel lines; defines a larger or smaller source image. **Image Displacement** - How far parallel images are displaced from the original. At 0 there is no apparent effect. Higher numbers extend the distance of the parallel images.
Lens Reflection	Simulates the multiple internal reflections of a camera pointed toward a bright light source. All values are relative numbers.	**Brightness** - Near Min, the reflection is faint. Near Max, it is a deep glowing reflection spot. **Size** - Diameter of the rings. At Min, no spot is apparent. Near Max, a large reflection spot is created. **View Lens Reflection Only** - Check here to preview your effect without seeing the video clip behind it. This may help you make fine adjustments. Drag the Lens Reflection Target on the Preview screen. Lens reflections spread out across the screen. Keyframe and move the target position for an interesting effect.

Filter	What it Does	Parameters for Adjustment
Star Highlight	Creates a single highlight. Position your star by dragging the Preview target. Make the star larger or smaller by dragging the target's surrounding red circle.	**Intensity** - Brightness of the highlight. At 0, no highlight exists. At 100, a very bright, large highlight is created. **Number of Arms** - Your star highlight can have from two to 10 arms. **Angle of Rotation** - Adjusts the star arms' positioning. Changing this at different keyframes results in a spinning effect. **Thickness of Arm** - At 0, the highlight has very thin arms. As the number increases (towards 100), the base of the arm broadens. You can also keyframe the arm thickness.

Image Warping Effects

Filter	What it Does	Parameters for Adjustment
Twirl/Lens/Rotate	Provides five different types of distortion effects based on the characteristics of optical lenses. Each effect can be adjusted for concavity/convexity, and distance from the clip. Apply rotation and twirl to the circular lens types. Generate sequences by applying keyframes and moving the lens and adjusting its size and rotation.	Depending on which type of lens you choose, different controls become available. **Outside Edge -** Options determine how the filter will fill in information pulled from outside the screen area. The Use Mirrored Tiles option uses information from the original clip to project outward and away from the edge. This usually results in a natural looking effect. Select Use Solid Color and double-click on the colored square to open a color selection dialog box.

Filter	What it Does	Parameters for Adjustment
Twirl/Lens/Rotate (*continued*)		
Circular Lens Custom Size	Has the effect of a true circular optical lens placed in front of an image.	Adjust the size of the lens using the mouse pointer and by dragging its outer edge with the mouse. Move the lens by dragging its center point.
Circular Lens Fit to Frame	Produces the same results as the Circular Lens Custom Size when it is made just large enough to cover the entire screen.	The controls are used in exactly the same way as the Circular Lens Custom Size controls.
Pinch	Stretches the image under the lens while the edges are held in place by an imaginary circular ring the size of the screen.	Adjust the size of the lens using the mouse pointer and dragging its outer edge. Move the lens by dragging its center point.
Custom Pinch	Similar to the Pinch effect, with the addition of a controllable lens size and position.	Adjust the size of the lens by dragging its outer edge with the mouse pointer. Move the lens by dragging its center point.
Rectangular Pinch	Similar to Pinch, except the edges are held by a rectangular frame. Concavity and convexity can be applied. This lens does not support distance, spin, or twirl. **Concavity/Convexity** - Lens profile. Moving this control to the right increases lens concavity resulting in a magnifying effect. Moving this control to the left demagnifies the image. When this control is at 50, the lens does not distort the clip via magnification. The units used are relative numbers. **Distance** - Changes the perceived space between the lens and your video image.	**Twirl** - Uncheck if you wish the area under the lens to be simply rotated. Check the Twirl box to create a vortex effect where the center is rotated a lot while the outside edge of lens is rotated very little. **Turn** - Moves left for clockwise turns and right for counter-clockwise turns. Each single digit represents a complete rotation. **Angle** - The amount of rotation within a single rotation. Move to the right to rotate the lens counter-clockwise by up to 360 degrees, or to the left to rotate clockwise by up to -360 degrees. Changing the number of turns on different keyframes results in a spinning circular section as a clip is played.

Filter	What it Does	Parameters for Adjustment
Water Drop	Creates a circular ripple effect. Drag the red target on the preview screen to determine the wave's center point. To make an expanding wave pool, set the Wave Diameter to zero at your first keyframe and 100 at the second	**Wave Amplitude** - The height of the ripples. Near the Min of 0%, waves are very faint. Towards 100%, waves become sharper and very distinct. The percentage is relative. **Wavelength slider** - Near the Min of 0%, the waves are very faint. As this control is increased towards 100%, waves become very wide. **Number of Waves** - Ranging from 1 to 20. **Wave Diameter** -. At the minimum of 0%, waves are not visible since they are all collapsed in the center. As this control is nears its maximum value of 100%, the wave diameter grows greater than the screen size. **Outside the Edge** - Information outside the edge of the clip must be used to fill in the edges of the clip. Mirrored tiles give the effect of extending the screen edge using reflections from the clip.Or select Use Solid Color and double click on the color box to choose from a full range color selector.
Rectangular-Polar	Translates between rectangular and polar coordinates. Wraps a rectangle into a circle by pulling in the top edge until it becomes a point and stretches the bottom edge until it becomes a full circle. Text can be wrapped around into a circular shape.	On the Preview window, Drag the target to the point you wish to have your effect go around. Drag the edge of the Adjustment Circle to resize. Center the target on the area of your video that you wish to be the middle of your rectangle. Drag the edge of the Adjustment Circle to surround the area you wish to encompass. **Angle Offset** - A positive angle rotates the output counter-clockwise. Turns represent complete rotations, and Angle degrees are partial rotations.

Filter	What it Does	Parameters for Adjustment
Rectangular-Polar (*continued*) **Polar to Rectangular**	Takes a circular region and unwraps it into a linear form. Use this to create symmetric shapes from radial objects or to create distortion effects.	Define the region to be converted using the Adjustment Circle/Center. If the Adjustment Circle is positioned or sized in a way that it is partially outside of the screen, black is used to represent missing areas. **Angle Offset** - Shifts the resulting output left or right. Increasing the Angle Offset shifts the resulting output to the left.
Wave	Shifts regions of a clip back and forth. The type of distortion depends on the wave type chosen (i.e. sine, square, or triangle waves). You can set multiple waves as well as ranges for amplitude and period. The strength of this effect can be interpolated Both horizontal and vertical waves are active at the same time. The same controls adjust the vertical waves as you use for the horizontal waves.	**Waveform** - Select the type: Sine, Square or Triangle. **Parameter For Direction** - Horizontal or Vertical. Horizontal waves move left and right as the screen image moves up and down. Vertical waves travel up and down as the screen image moves across. **Number of Waves** - The number of waves to generate for the selected direction. The range is from 0 to 10. Turn off one or both waves by setting the this adjustment to 0. **Speed** - How fast the waves travel past the screen. The speed range is from 0 (slow, slider all the way to the left) to 200 (fast, slider all the way to the right). The number is relative. **Intensity Range** - The range of amplitudes (wave height). The Min slider sets the lower bound for wave intensity, while the Max slider sets the upper bound for wave intensity. **Wave Length Range** - The range for wavelengths allowed during wave creation. The Min value determines the lower bound for wave length, while the Max value determines the upper bound for wave length.

Filter	What it Does	Parameters for Adjustment
Wave (*continued*)		**Outside the Edge** - Since water waves reflect their surrounding, information outside the edge of the clip must be used to supplement the effect. Mirrored tiles gives the effect of extending the screen edge with screen information. Use Solid Color (double click the color box to choose from a a full range color selector) fills the edge area with a single hue. **More / Less Predictability** - How the waves are created and combined. To achieve a disorderly interference pattern, choose Less. For a more symmetric look, choose More. **Effect Strength** - Near the min of 0%, there is no effect. As this control is moved towards max, waves become large.

Filter	What it Does	Parameters for Adjustment
Explosion	Breaks your clip into pieces and flies them in random directions. Click the **File** button to choose a Fragmentation Map. Any image file of any format that Velocity supports will do. The screen is broken into pieces determined by the gray values and RGB values in the map file. For example, a map file image with blue on the left and red on the right will be split up into two halves during the explosion sequence. The more colors a map file has, the more pieces the video sequence will be split up into. A map file can be created in your favorite paint program. Experiment with different shapes when creating them.	**Phase** - Adjust over time, using keyframes. Phase determines how far the pieces are from each other. To produce an explosion, start with a Phase of zero on the first keyframe and set the Phase to 100 on the last keyframe. To make the pieces implode together, start with a greater Phase and end at a lower phase. **Average Motion** - Changes the average amount of spin each fragment has. **Speed Variation** - Changes the variety of speeds fragments move at as they fly out from the explosion target. At the minimum speed variation setting of 0, all pieces move away from the explosion center at the same rate. At the maximum speed variation of 100, the "exploding" fragments have many different speeds. **Random number seed** - Alters the paths of the moving pieces. Try different seeds to get varying effects (and preview the effect) until you achieve the desired one. The same seed will always provide the same results (assuming the other controls are the same).

Filter	What it Does	Parameters for Adjustment
Explosion (*continued*)		**Fragment Motion Controls** - Select which planes you wish fragments to have motion and rotation on. These buttons all toggle between enabled (pressed) and disabled states. The 2D preset has motion along the X and Y axes and rotation along the Z axis. The 3D preset has motion and rotation along all three planes. **Blast Z Direction** - Determine the way fragments move on the Z axis. The Random button makes some pieces come toward the screen, and some shoot away from the screen. If there is no motion along the Z axis, these buttons will have no effect. **Antialiasing** - Smooths out jagged or rough edges on the explosion fragments. This makes the edges of moving pieces look sharper, but adds to rendering time.

Filter	What it Does	Parameters for Adjustment
Page Effect	Manipulate a clip like a sheet of paper flipping or rolling in the foreground.Change its flip/roll angle, its radius and phase over time. The background is any clip on a lower-numbered track than the clip with this filter applied. To create a real time page effect, see Chapter 17. Drag the red rectangle on the preview screen to alter the size of the page effect. The page size can be interpolated over time. Move the red target to change the direction of the flipping or rolling motion.	**Page Effect** - Select Page Flip or Page Roll. **Angle** - At zero degrees, the page effect starts at the bottom of the page. As the angle increases, the effect moves counter clockwise from bottom, right, top, left and back to the page bottom again. Use keyframes to interpolate this angle over time creating a changing curl around the page edges. **Radius** - With a small radius, the flipped or rolled part of the page is smaller. With a large radius, the entire page tends to curl at once. **Phase** - At zero, the page is flat. At 100% the page is completely flipped or rolled. Without keyframes, this parameter automatically varies from 0% to 100% through the duration of the clip. Use keyframes to change this value over time to create a flipping/rolling effect. **Page Backside** - There are three choices: Solid Color (double click the color selection box to adjust the color), Current Clip, or Selected clip. If you choose Selected Clip, use the File button to choose a clip. **Border** - There are two types: Solid color (double click the color box to choose a color) or Selected Clip (use the File button to select a clip to use). **Border Thickness** -At zero, there is no border. Drag the slider to the right to thicken the border. **Split Page** - (Page Flip only) Divides a page into smaller pages. Select from three horizontal, three vertical, and three square matrix sizes. **Flip Pattern** - (Split page type only) Choose a straight repeating pattern, a vertical mirror, a horizontal mirror or a combined horizontal and vertical mirror. **Advanced** - Opens the advanced border controls on the right hand side of the screen. You may control the Border transparency, the Light intensity (the brightness of the border color), and the border profile (the 3D shape of the border).

Perspective Effects

Filter	What it Does	Parameters for Adjustment
Picture-in-Picture	Resize and position a foreground clip over a background clip.	Place a background clip on a lower numbered video track (V1 or V2) and place the foreground clip (the clip the Picture in Picture effect is applied to) on one of the higher numbered video tracks. **Image** - choose from three preset sizes: Full Image, Half Image and Quarter Image. You can also click and drag the corners of the red box on the preview window. To change its position, drag its red (target) center. **Keep Aspect Ratio** - when checked, locks the height/ width ratio of the red Picture In Picture frame. **Movie Quality** - Check here to see high-quality pre-views in the Picture In Picture box. Processing time increases when this option is activated. **Border width** - The slider controls the thickness of the border. A setting of 0% applies no border. If you double click in the Pick Color box, a color picker window opens, allowing you to choose your own border color. **Shadow** - When the two sliders are set to 0%, there is no shadow. Move the X and Y offset sliders right to cre-ate a shadow.

Filter	What it Does	Parameters for Adjustment
Pan-Zoom	Provides zoom-in and crop capabilities. In combination with key-frames, the zoom window can be moved to create panning and zooming effects.	The output window on the right displays the area that is covered by the red box in the left preview window. Define the pan-zoom output area using the red box on the left preview window. Drag the corners of the red box to make it larger or smaller. Drag the target in the middle to reposition the box. **Movie Quality** - Check here to see high quality images in your output screen. This will increase render time. **Full/Quarter Image** - These two buttons provide preset sizes for the output image. Full Image is 100% of the original video frame. Quarter Image is four times larger. **Keep Aspect Ratio** - Check here to lock the height and width of the output image Uncheck to stretch or squish the output image.
Flip	Simply flips the image	**Flip Orientation** - Use the radio buttons to flip the video clip horizontally, vertically or both.
Freeze Video Frame	Freezes any frame in the clip from its origin until the end of the clip.	Add a keyframe to select the frame to be frozen. The default is the clip's first frame.

Keying Effects

Filter	What it Does	Parameters for Adjustment
Transparency Assignment	Allows five ways to key out regions of a clip. Each method has its own controls.	You can also use the real time Transparency effect for timeline playback. See Chapter 17.
Apply Uniform Transparency	Applies a transparency setting to an entire clip.	**Foreground Transparency** - At Min the clip is completely opaque. As the slider is moved towards Max the transparency of the clip increases, allowing any clips you have placed on lower-numbered tracks to show through.
Use Color Keying	A key color is compared to regions of the clip. Regions that match the key color are made transparent. All the settings can be changed over time using keyframes. The key color's hue, saturation and luma values are used to determine the transparent regions (unlike chroma keying, which uses hue and saturation but not luma values). For this style of keying you cannot use white as the key color in the normal way. To key out a white background, check the Reverse box and set the tolerance slider to the maximum value.	**Reverse Effect** - Make the transparent areas opaque and the opaque areas transparent. **Color** - Click the Pick Color button to activate a color selector (eyedropper), then select a color on the preview screen. Or double click on the color box next to this button to display a color selector. The selected color will be made transparent. **Tolerance** - A tight tolerance causes only colors very close to the selected key color to be transparent. A loose tolerance results in more colors becoming transparent. **Border** - Softens the edge or add a color border to the edge of a keyed object that has a color gradient. Unlike other borders, it is not designed to add a border to sharply defined areas of high contrast. The Color button selects the border color. The soft option creates a feathered edge effect to the border.

Filter	What it Does	Parameters for Adjustment
Alpha Channel Keying	Alpha channel keying uses an image file to determine transparency. Alpha channel areas are usually 8 bit gray scale images. Black areas become transparent and white areas become opaque. Gray areas are given a percent transparency depending upon how dark they are.	**File** - Select the file you want to use as the Alpha channel. Velocity accepts any color or gray scale image or video as the Alpha Channel. If you use a color image the brightness of the colors will be used to determine the percent transparency. **Transparency** - Defaults to 50. By moving this slider from 0 to 50 black areas go from 0% to 100% transparency and white areas will remain opaque. By moving this slider from 50 to 100 white areas will go from 0% to 100% transparency while black areas will remain 100% transparent. You can use this feature with keyframes to create your effect
Difference Keying	In Difference keying the foreground clip is compared to a difference clip. Matching areas are made transparent on the foreground clip. For example, the foreground clip may contain a person in a scene while the difference clip may contain the same scene without the person. Applying difference keying allows you to display the person walking in front of your background clip instead of the previous scene.	**File** - Select the clip you wish to compare this clip to. **Color Tolerance** - Adjust the degree of color difference used to determine which areas are considered matching and made transparent. At 0 tolerance there has to be an exact color match before the matching areas of the foreground is made transparent. The Foreground Transparency slider may be used to adjust the transparency of the remaining foreground clip.
Use Color Keying on a Mask	Uses a mask file for color keying (based on RGB color values). First, choose a mask file, then select a key color from the mask. If a color match occurs between the two clips based on the selected color and tolerance, that area on the clip becomes transparent. You can keyframe to create customizable transitions, etc.	This effect is very similar to Color Keying, but with two additional settings. **File** - Select an image or video clip to be used as the mask. A thumbnail of the mask will be shown. Choose the key color from this mask. **Advanced** - Opens additional options to modify the mask.

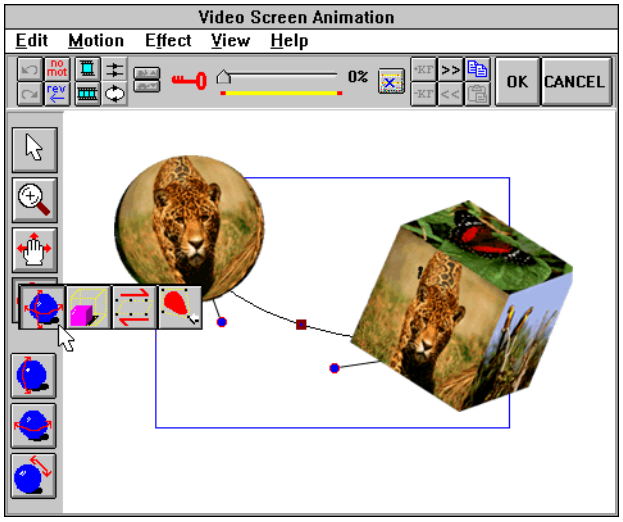
Filter	What it Does	Parameters for Adjustment
Chroma/Luma Keying	Select a clip and a color or luminosity to be made transparent so that you can superimpose an image from one clip onto another.	Use the drop down box at the top of the Chroma/Luma Keying control window to select the type of keying. Available controls depend on the key type.
Chroma Keying	Makes sections of your clip transparent based on your selected hue and saturation. Areas which do not match the selected hue and saturation values remain opaque, and are shown as the foreground, while transparent sections allow a background clip to show through.	**Pick Key Color** - Click to change your cursor to an eyedropper. Select a key color on the preview window. All occurrences of that color on the foreground clip become transparent (show the background clip). Or double click the color box to open a color palette window. **Hue Tolerance** - How closely the hue of a region must match the selected color before it becomes transparent. At the left, only areas with very exact hue matches are transparent. At the right, all hues become transparent.
Luma Keying	Only the brightness or luminosity is a factor in determining which areas are made transparent. Hue and saturation do not play a role.	**Saturation Tolerance** - Controls how closely the saturation must match the key color before a region becomes transparent. When this slider is set near the left, close saturation levels are required for transparency. When this slider is set all the way to the right, any saturation level of a given hue becomes transparent.
Blue/ Green Screen Keying	If you are using blue or green screen keying, you probably shot your video with action occurring in front of a special blue or green curtain. Blue/Green screen is useful for tough keying situations like keying smoke and fine details like hair, or for fast motion, etc.	**Foreground Transparency** - The transparency of the areas that remain after the key has been applied. **Reverse** - Makes transparent regions opaque and opaque regions transparent. **Luminance Threshold** - Selects the luminance level used to determine which part of the image/video frame is transparent to the background clip. **Feathering Level** - The keying characteristics at the boundaries of foreground objects. Adjust this slider to achieve clarity of the foreground edges over the background.

Filter	What it Does	Parameters for Adjustment
Chroma/Luma Keying (*continued*)		**Threshold** - The tolerance allowed on the blue (or green) for keying. At maximum, the entire clip becomes transparent.
Cut-Out	The Cut-out filter allows a method for applying filter effects to selective areas of a clip. Use the File button to open a cut-out mask file. Filters placed on the Effects Selected list prior to the Cut-out filter will impact only the regions defined by the white cutout areas.	Before using this filter you will need to create a cut-out mask. This can be any black and white bitmap image file. You may create cut-out masks using any paint program or from clips that have been placed on the timeline by selecting the clip, and selecting **Effects > Make Cut-out Mask** from the main menu. To create the cut-out shape, click on the image to create a starting point. Continue to click on the image to create points joined by straight lines. To close the shape double click. The last point will be joined to the first point and the cut-out shape will be outlined by a red and white line. Once you are satisfied with your cut-out mask click on the Save button. Once you have created a cut-out mask, use the Pick File: button to select a cutout file or view the actual clip being used.Filters placed on the Effects Selected list prior to the Cutout Filter will impact only the regions defined by the white cutout areas.

Filter	What it Does	Parameters for Adjustment
Color Pass	Creates a mask allowing through only a selected color. All the pixels that are within the tolerance range for your selected color will be kept as is, and everything else changes to black. This filter can be used to separate out an object from a background of a dissimilar color. The tolerance values are relative numbers.	**Pick Color** - Activates the eyedropper color selector. Move the eyedropper to the color you want to pass on the Preview image and click the left mouse button. Or, double click in the color box to open up a full range selector. **Color Tolerance** - A tight tolerance (lower number) allows only colors that are very close to the selected color. A loose tolerance (higher number) allows many colors to pass. **Saturation Tolerance** - A lower number allows only colors that are close in saturation level to the chosen color. A loose tolerance allows a wider range of color saturation to pass. **Reverse** - Check box to invert the image, making the previously passed (colored) areas black, and the previous black areas show through the mask. Repeat slider adjustments and press the Show Effect button until you're able to separate the regions of your image. Unwanted areas may not be removed if color values are within the tolerance levels set.

Filter	What it Does	Parameters for Adjustment
Border/Shadow	Use Border and Shadow effects following the Page Effect, Picture-in-Picture, VSA, Advanced VSA or Transparency Assignment (using keying).	***Outer and Inner Border Controls*** **Thickness** - At the minimum of 0 no borders are created. At the max value of 100, the border is wide. **Softness** - Controls how "fuzzy" a generated border is. Near Min, the borders generated have sharp distinct edges. As this control is adjusted toward the Max value of 100, the border has a less defined soft edge. **Color** - Select the color of the inner and outer border, using the Pick Color buttons to change the cursor to an eyedropper color selector. Move the eyedropper to the color you want to pass and left click. Alternately, double clicking the color box will open up a color palette for color selection. ***Shadow Controls*** **Transparency** - Towards Min shadows are solid and towards Max they are transparent. **Offset** - How the shadow is placed relative to the border. Adjusting the X offset slider to the right (towards "+") moves the shadow to the right. Adjusting the X offset slider to the left (towards "-") moves the shadow to the left. Moving the Y offset towards the "+" moves the shadow up, while adjusting the Y offset towards "-" moves the shadow downward.

Chapter 20
Video Screen Animation



Video Screen Animation allows movement of a video clip along a specified curved path over time.Video Screen Animation (VSA) produces visual effects such as flying windows, flying 3D objects with video mapped surfaces, overlay of animated objects, picture in picture and custom made transitions. Using VSA allows the addition of animation effects to video as well as still images. The VSA function uses Bezier curves to shape motion paths as well as video screen edges.

Note: If you are using a dual monitor VGA card system, you may want to send Velocity to windowed mode (click on the Maximize button with the application in maximized screen mode) before opening the VSA interface. This way, it will appear in one monitor or the other, rather than inconveniently spreading itself across both.

Velocity provides you with 2D Video Screen Animation and 3D Video Screen Animation. The Advanced VSA functions allow you to use multiple motion paths and objects in a single animation.

VSA effects are rendered effects which must be processed before they may be played from the timeline or made into a movie.

Many of the effects you can do with Video Screen Animation can also be done in Fusion/DFX+. See Chapter 22 for information on Fusion integration. As the VSA interface is very different from that of Velocity, if you have more than a passing familiarity with Fusion, you may have an easier time getting acceptable results using that program.

How to Start a Video Screen Animation

In a Video Screen Animation, usually two or more clips are used on the timeline. The clip on the lower-numbered track serves as a background while other clips, on higher numbered tracks (V3, V4, V5...), are animated and distorted. The animated clip moves across the background clip on a path over time.

To start a video screen animation:

1 Select the clip to be animated (e.g., highlight a clip on track V3 or higher by left-clicking the mouse button on it) and then select the FX toolbar button, or right click on the selected clip and choose Video Effects. Alternatively, select Effects > Video Effects from the menu.

2 The Apply Effects window opens. Select the Effects Filters category and choose VSA from the Available Filters list.

3 The Video Screen Animation window opens.

4 Set the parameters in the Video Screen Animation window as described in the rest of this chapter. They include:

- Create a motion path (using nodes and keyframes).
- Determine the speed of the movement (using keyframes and the percent time bar).
- Shape the animated video (2D or 3D).
- Scale and/or rotate the animated shape at each keyframe.
- Apply other specialized animation effects (such as color keying, shadows, borders, etc.).

To create multiple layered animations this process can be repeated on other clips on higher tracks. For multiple animations the animated clips can be positioned over the background clip on tracks V3, V4, V5, etc. When all of the animations are completed, render the finished timeline.

5 When you are satisfied with the results, press OK. You will be returned to the timeline where the highlighted clip will contain the animation.

To save render time, render the timeline segment when all the animations and layers are completed.

Motion Paths

In Video Screen Animation, clips are moved around the screen following motion paths. A motion path is a line with nodes on it. A node is a spot where a change of direction takes place. A Video Screen Animation applied to a clip initially launches with two nodes, one at the start and another at the end of the clip. Nodes are connected by curved or straight lines.

Node Style

Each node has two handles to allow you to change the curve connecting the nodes. There are four node styles available:

Line - Nodes are connected by straight lines with sharp corners.

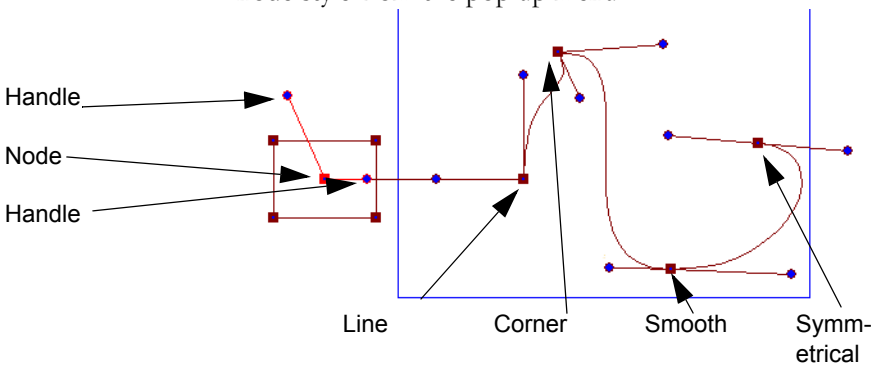
Corner - Handles are totally independent, allowing sharp changes in direction or smooth curves.

Smooth - Handles are linked, so that smooth curves are created between the nodes, with the angle of the curve controlled by the length and angle of the handles.

Symmetrical - The same as smooth, but both handles are the same length and angle for a more symmetrical motion path.

To change the node style for the entire motion path, select **Edit > Node Style** from the main menu. Choose the node style you want from the submenu.

To change an individual node's style, right click on that node and select the node style from the pop up menu.



To add a node to a motion path, move the cursor over the motion path until it changes shape to a four headed arrow. Right click on the motion path. Click on “Add node”.

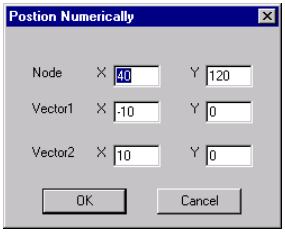
Moving Individual Nodes

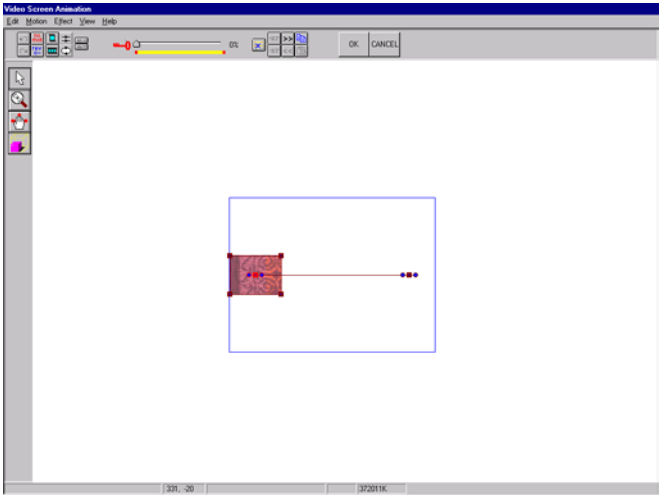
Drag the handles coming from a node to adjust the curve that connects it to the adjacent (before and after) nodes in the motion path. To move a node, left click and hold the mouse pointer on a node and then drag the mouse.

To make the line between the current node and the nodes preceding and following it absolutely straight, right click on a node and choose **Set Curve Handle**. Choose Zero length. Use the shift key to pull out zero length vectors when on the node. Or right click again and choose **Set Curve Handle > Non-Zero**.

To position a node directly in line with a surrounding node, right click on that node and choose **Align > Vertical** or **Horizontal**. This places the selected node in the same horizontal position as the previous node or the same vertical position as the next node.

You can also precisely determine spots for a node and its handles by right clicking on it and choosing **Position Numerically**. The X and Y values you enter may be greater or less (you can use negative numbers) than the blue production screen’s limits, to allow you to move objects outside the visible area. Vector 1 and Vector 2 refer to the coordinates of the end points of the node handles relative to the node.





Making Changes to the Motion Path as a Whole

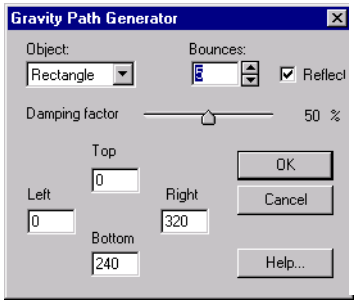
To move the entire motion path as a unit, move the cursor over the motion path until it changes shape to a four headed arrow. Left click and drag the path to a new position.

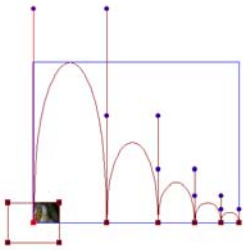
If you wish to invert the motion path along the X or Y axis, choose **Effect > Flip> Horizontal** or **Vertical** from the main menu.

To change the direction of motion along the entire motion path, choose **Motion > Reverse Motion** from the main menu. If you had a motion path where the video transforms from a square to a circle while traveling left to right, reversing the motion would make the screen transform from a circle to a square while traveling right to left.

There are several predefined Motion Paths. They can be found by selecting **Motion > Motion Path** from the main menu.

Gravity Motion - Creates a motion path that simulates a ball bouncing repeatedly, with a lower and lower rebound each time.





Object - The shape applied to the video screen. Note: once you are done with the Gravity Path Generator or any other pre-defined motion path, you can change the object at any key point, add additional nodes, etc.

Bounces - Number of times the video screen deflects off the bottom boundary.

Reflection - When checked, the video screen bounces off the bottom boundary. When unchecked, the screen passes through the bottom boundary and then falls upwards.

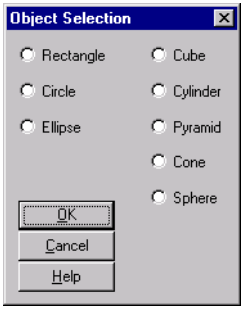
Damping Factor - The relative height of each consecutive bounce. When the dampening factor is set to 50%, the screen will bounce 1/2 the height of the previous bounce.

Boundaries - Defines the left, right, top and bottom boundaries of the gravitational path. The left boundary determines the starting point of the path while the right boundary determines the ending point. The top bound-

ary determines the height the original bounce will reach, and the bottom boundary determines where the video screen will bounce from.

Cube to Sphere - Starts the object as a cube that fills the whole screen. This cube morphs to a sphere and flies away.

Default - This is the motion path that is shown when you first start VSA, a straight path with just two nodes. You may choose which 2D or 3D object to use on the default path.



Other Motion Path Settings

You can adjust the way your objects change shape as they move along the motion path. From the main menu, choose **Motion > Smoothness > Continuous** or **Discontinuous**. The default setting is Continuous, which makes the object gradually change shape as it moves along the path. If you choose discontinuous motion, the object snaps to the new shape when it reaches the next keyframe.

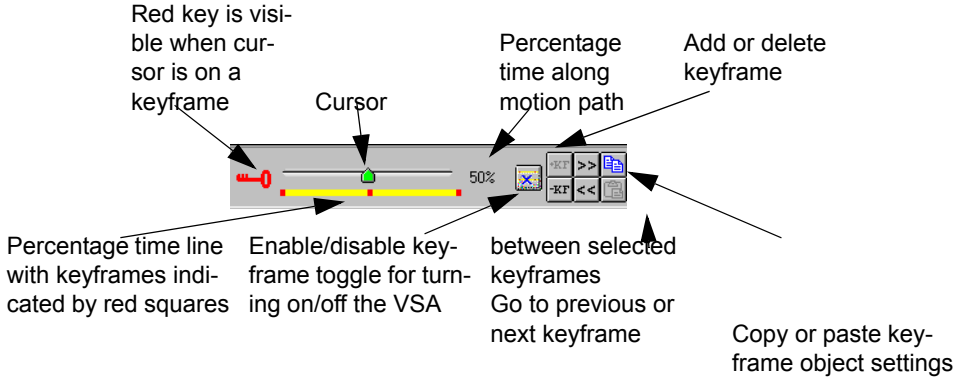
You can also save motion paths for future use. Choose **Motion > Motion File > Save** from the main menu. The motion path and all the objects that reside on that path are saved in a file with a SA extension.

To reload a saved motion path, choose **Motion > Motion File > Load** from the main menu. Loading a motion path file completely replaces the current motion path and all of the current objects in the video screen animation.

Keyframes and Speed of Motion

Located in the middle of the keyframe toolbar, the ruler shows the position of keyframes in time within the clip. Keyframes allow you to adjust the rate and timing of movement, while the motion path remains the same. The total time of the Percentage Ruler equals the total duration of the clip to which VSA is applied.

Keyframes and nodes are always created together, with each keyframe having an associated node.Each time you create a new node on the motion path, you also create an associated new keyframe on the scrub bar, and each time you create a new keyframe you create an associated new node. While nodes are used strictly to define the position of the motion path, keyframes may be used to define the time it takes to get to each node and the object transformations that take place at each keyframe.

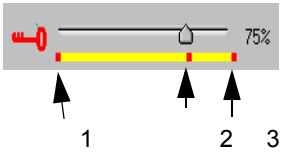


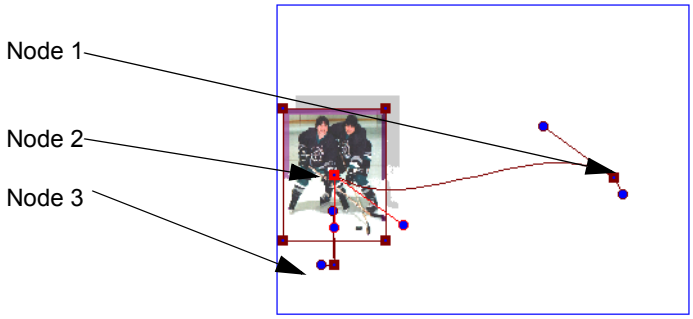
To create a keyframe, drag the keyframe cursor to the correct position and press the add keyframe button. A new keyframe will appear on the time line and a new node will appear on the motion path.

Reposition a keyframe on the Percentage Ruler by dragging it between its two adjacent keyframes. While this changes the time between the two nodes, it does not alter the shape of the path. Instead, it alters the rate at which the object moves along the motion path.

To create static portions in a motion path where the object does not move at all, from the main menu, choose **Motion > No Motion**, or press the No Mot button in the upper toolbar. This places the current node and the node that follows it on top of each other. The object at the next keyframe is identical to the object at the currently selected keyframe. You can alter the shape or properties of the object at one keyframe without affecting the object at the other keyframe. Use the keyframe ruler to move to the different keyframes and change your object's settings.

Keyframes:





Choosing the Surface and Attaching Video

By default, the animated video clip will start as a small 2D rectangle. This object shape may be changed to other 2D or 3D shapes, and the object may rotate and/or spin as well as following a motion path.

By default, the animated video clip you selected from the timeline when you started the VSA effect will be used to map all 2D and 3D object surfaces. Any of these surfaces can be re-mapped with any other clip or any other color.

Choosing and Modifying the Surface

You can choose a 2D surface by selecting **Edit > 2D Shape** from the menu. You may select a rectangle (the default shape), circle or ellipse. You can choose a 3D shape by selecting **Edit > 3D Shape** from the menu. You may select a cube, sphere, cylinder, cone or pyramid.

Object Tools

The fourth button on the control panel along the left side of the work area can be one of four tools (2 tools for 3D shapes) that are used to modify objects. Choose an object tool by holding down the button and then selecting one of the four buttons that appear next to it. Select from resize, rotate, slant and distort. If you select rotate or resize, two buttons appear below the object tool button. These buttons represent dimensions in 2D or 3D space. Click one of the buttons to adjust the shape along that axis, or both buttons to adjust the shape along both.

You can also access these tools in the Effect menu.

Altering a 2D Shape

When the shape and size of an object are different at different nodes on the motion path, the shape morphs between these two nodes. If you rotate it in 3D space, the object will spin as it moves from node to node.

2D shapes may be altered by dragging the nodes that are created with the shape or by using the Distort tools or menu commands.

You may also add additional nodes to 2D objects to allow you to further customize the shape of the object. To add a node right click on the object outline and select Add Node from the pop up menu.

To make the current video screen object centered, with the same shape and size as the screen, select **Effect > Fit to Screen > Full Screen** from the main menu. The screen can be set to a quarter or half of the actual output screen size.

If you are trying to create an object with 90-degree, right angle corners, select **Edit > Snap Corner** from the main menu. If the currently selected object corner comes close to a 90 or 180 angle with another corner, it snaps into that relationship to the other corner point.

The Distort tools allow you to resize the 2D object in the x and y directions, rotate the object in 3D space, distort the object as a parallelogram, or distort the object as a trapezoid.

To distort a 2D object as a parallelogram use the slant tool or select **Effect > Slant** from the menu. Selecting the slant effect will create a green rectangle around the current object with a control point on each edge and on each corner. Move the control points on the edge to slant the object left, right, up, or down.Move the cursor over the highlighted nodes to change the cursor shape to two parallel arrows and slide the cursor back and forth to the desired slanted shape.

To distort a 2D object as a trapezoid use the distort tool or select **Effect > Distort** from the menu. Distort creates a green rectangle around the current object with control points on each edge and on each corner. The control points on the edges narrow or widen parts of the object in a wedge shape. freely deforming the object. Move the cursor over the highlighted nodes to change the cursor shape to two parallel arrows and slide the cursor up and down to the desired wedge shape.

There are two ways to resize an object: freely or by percentage.

Resizing freely will allow use of the mouse to visually resize the object in real time. To resize 2D objects visually according to your cursor moves you may use the Resize tool from the toolbar on the left or select **Effect > 3D Resize > Freely** from the menu. While resizing freely, two buttons will appear on the side control bar that represent movement along the x and y planes. Select one or both of these when resizing. For example, to increase

the size of an object while maintaining all of its dimensional proportions, select both buttons.

If you want to resize the object by a precise percentage, select **Effect > 3D Resize > Percentage** from the menu. The number you would set using the slider is a percentage of the original object size along each axis.

To resize across both the X and Y planes equally, choose **Edit > Keep Aspect** from the main menu. When checked, this option locks the resize function so that when the X and Y are pressed, the object scales evenly in both the X and Y directions at the same time. When not activated, objects scale independently based on mouse movement, so a diagonal move may increase the size in one direction more than in another.

Rotation can also be done freely or by degrees.

To rotate 2D objects visually according to your cursor moves, use the Rotate tool from the toolbar on the left or select **Effect > 3D Rotate > Freely** from the menu. Three buttons appear at the left side of the screen. These buttons represent the X, Y and Z axis. Press a button to rotate along that axis, or press more than one button if you want to rotate in more than one direction at a time. When rotating freely, three buttons, one representing each axis, appear on the side control bar. It is possible to select one or more of these buttons at a time, however it is less confusing if you have one axis selected at a time. Keep in mind that when rotating freely, the video screen animation does keep track of rotational turns. While rotating freely, it is less confusing you simply rotate the object to the desired position, then use the rotate by degrees command to set the number of turns.

To rotate the object by a precise number of turns or degrees select **Effect > 3D Rotate > Percentage** from the menu. Rotating by degrees gives the highest precision and also can specify up to 10 rotational turns (each of which is equivalent to a 360 degree rotation).

To remove any rotation or resizing you've done to a clip, choose **Effect > Clear 3D Transformation** from the main menu. This only affects the currently selected object and will not remove distortion or slanting.

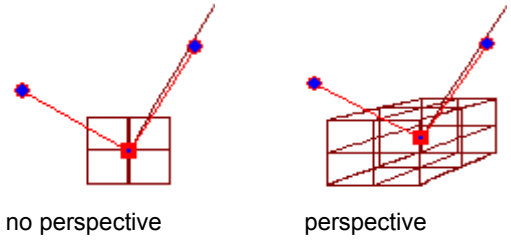
Altering a 3D Shape

3D shapes are not created with nodes that can be dragged, however you can change their size and rotate them and they will deform as they morph from one shape to another.

When you resize 3D objects visually according to your cursor moves, three buttons appear instead of two, representing the x, y and z axis. When you resize the object by percentages (**Effect > 3D Resize > Percentage**), a third slider appears as well. If you choose Keep Aspect (in the Edit menu under Keep Aspect), 3D shapes will have their aspect ratio locked on all three planes.

3D objects rotate the same way that 2D objects do.

You can give your 3D objects perspective by choosing Effect > 3D Effect Option. This makes the Z-dimension lines converge to a vanishing point (so that the objects appear to get smaller in the distance).



Save a Shape File

If you change a shape and you would like to save it for re-use, move to the keyframe with the new shape and select **Edit > Shape File > Save** from the menu. If you would like to save a shape that has been formed between keyframes you will have to mark a new keyframe where the object is in the shape you want to save. You can then move to the new keyframe and select **Edit > Shape File > Save** from the menu.

Object files are given the file extension OA by default. To load an object, select any keyframe along the path and select **Edit > Shape File > Load** from the main menu. Select the (OA) file you wish to load and it will replace the object on the selected keyframe.

Morphing

If you have different shapes at different keyframes, either because you chose different shapes from the Edit menu, or because you moved the corners on a shape at different nodes/keyframes on the motion path, the shape will morph between keyframes.

You may have objects change into other objects while they are standing still or you may have them moving as they transform. The only restriction is that you cannot use 2D and 3D objects on the same motion path.

There is one built in 3D shape transformation included in the VSA, a cube that fills the screen, morphs into a sphere, and flies up and right off the screen. To select this, from the main menu choose **Motion > Motion Path > Cube to Sphere**. You can easily create your own 3D shapes that change into other shapes, grow, shrink, rotate, and move. Simply use your nodes to define the motion path and your keyframes to set the shapes of objects at the different keyframes.

To simulate a two dimensional shape in 3D mode, resize an object along the Z axis to 0. This will allow effects such as the extrusion of a flat square screen into a cube. You won't be able to apply Slant or Distort effects to these pseudo-2D shapes.

Normally your objects will change shape smoothly from one keyframe to another. If you would like your objects to change shape suddenly, when they reach the next keyframe, you may select **Motion > Smoothness > Discontinuous** from the menu. To switch it back to the default mode select **Motion > Smoothness > Continuous** from the menu.

If you have a motion path with at least three keyframes and many shape changes, you can smooth out the shape transformation by selecting **Edit > Re-Interpolate** from the main menu. It creates a smooth shape transition from the first keyframe to the last keyframe. Any keyframes in between take on tan intermediate shape in the transformation. Any shapes that were previously set on intermediate keyframes are lost.

Your Object's Surface

There are three types of surface characteristic an object can have in Video Screen Animation. They are found under Effect in the main menu.

Flying Video - Maps the video clip onto the video screen animation over a background image. This is the default. Adjust the opacity of the clip using the transparency slider on this screen.

Flying Color - Uses two different colors for the front and back of the video screen animation instead of the selected video clip.

Flying Transparency (2D Objects Only) - Instead of mapping the video clip onto the animated object, the object acts as a transparent or semi-transparent hole that only reveals the part of the clip inside the object.

Flying Transparency

Rather than mapping the image onto the object in Flying Transparency, the clip to which VSA is applied fills the entire screen, and the created VSA object acts as a window onto it. You could also use Flying transparency to create a window effect, where reflections of something else lie faintly over portions of your image.You could also place a clip on V2 and align the same clip on V3, and use flying transparency to highlight an area of the screen.

Or for another example, you could place a clip showing a prison wall at night as your background clip, and then place a clip showing a prisoner climbing over the same wall in bright light as your animated clip. By using the Flying

Transparency function you could set your object to a circle which scans over the dark wall and finds the prisoner in a bright circle of light.

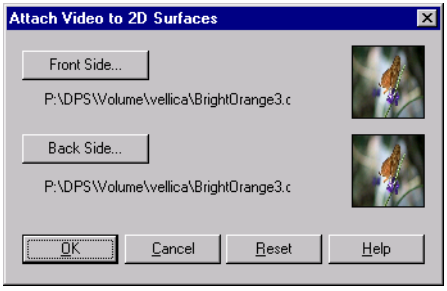
Surfaces of Flying Video

By default, Velocity's Video Screen Animation maps all of an object's surfaces with the selected timeline clip. Any of these surfaces can be remapped with any other clip or color. This function is available for both 2D (front side and back side of the object) and optional 3D objects.

In the main menu under **Effects > Flying Video**, there is a Transparency setting. The range is from 0-100% transparent.

You may attach any clip to the surfaces of a VSA object by selecting **Edit >Attach video to surface** from the main menu.

The screen to attach images to a 3D object is conceptually the same, just including more sides.



All 2D objects have two sides (front and back). Cubes and cylinders have 6 surfaces (a top, bottom, and 4 sides), cones and pyramids have 5 surfaces (a bottom and 4 sides) and spheres have 4 surfaces (4 sides).

You may also determine how the clip is wrapped around your 3D surfaces using the **Effect > 3D Texture Map Option**. There are three options.

No Wrap Around (default) - Maps each surface of the object with 100% of the clip, giving you up to six repetitions of the image (one for each surface).

Wrap Around Mapping - Uses one clip to map all 4 sides of the surface, while continuing to map the top and/or bottom surfaces with additional copies of the image. A sphere, which has 4 side surfaces and no top or bottom surface, would show just one image with a seam at the back. A cube has 6 surfaces: 4 sides and a top and bottom. With wrap-around mapping, a single image would wrap around the 4 sides and copies of the image would appear on the top and bottom surfaces, for a total of three images.

Wrap by Percentage - Sets a wrap value of between 100% and 400%. A value of 100% is the same as the No Wrap Around option, while a value of 400% is the same as the Wrap Around Mapping. For example, for a sphere

setting the value to 200% would result in a sphere with two images shown on its surface.

If you are having problems with mirror imaging when your object is rotated, select **Effect > Force Front-side Mapping** from the main menu. This forces the object to use the image assigned to the front surface for all surfaces.

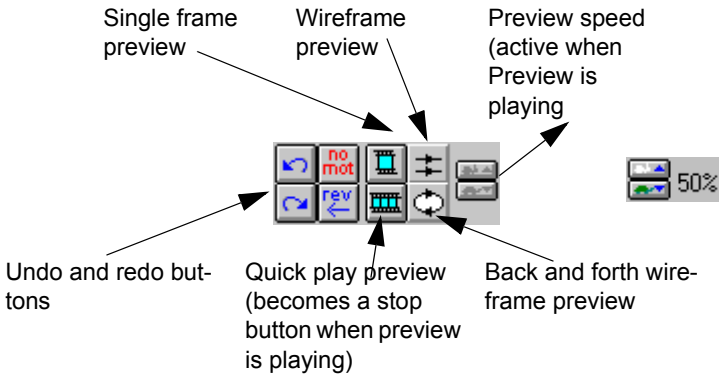
You can also crop non-timeline clips that are attached to surfaces of your 2D or 3D shape. From the main menu, select **Edit > Crop Parameters**. The original timeline clip is not affected by this setting but is cropped based on the main Preferences window.

For optimum video quality when rendering out of Video Screen Animation, choose **Effect > Antialiasing** from the main menu. Antialiases the edges of created objects. Requires additional rendering time.

Previewing Animated Effects

The default view shows your animated object as a wireframe shape. This shape moves and deforms as you drag the percentage time cursor found at the top of the screen. When you release the mouse button the object is drawn at the nearest keyframe with the surface mapped onto it. This gives you a rough idea of what your animated effect will look like.

You can also use the Preview buttons to preview your effect.



To see what the effect looks like between keyframes, drag the percent time cursor to the position you want to preview and use the Single Frame Preview button or choose **View > Show Effect** from the main menu.

To see a Quick Play Preview of your effect at a low frame rate, click on the Preview button, or choose **View > Quick Play** from the main menu. You can change the number of frames shown by selecting **View > View Effect**

Option > Quick Play Steps. A red status bar displays the render's progress, and then the effect plays in a loop until you click the red stop button.

To see your object's animation as a wireframe (a quick preview method) use the wireframe preview buttons. The top wireframe preview button plays in a loop. The bottom wireframe preview button moves the object back and forth along the motion path.

While any preview is playing, its button changes to a red stop button to allow you to stop the preview.

The speed up and slow down buttons (labeled with pictures of a rabbit and a turtle) allow you to change the preview speed.

Other options for previewing your work appear in the View portion of the main menu.

Show Wireframe - Shows or hides the wireframe outline of your VSA objects.

Show Trailing - Doesn't refresh the screen during preview. This allows you to simulate how a trailing effect will look with the animation when rendered out.

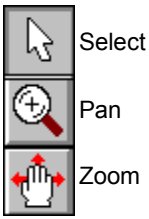
Instant Feedback - When selected, your view will display the object with the surface map at the nearest keyframe after any modifications.

View Resolution - Determines the resolution output for instant feedback, show effect, and quick play. Choose from 80x60, 160x120, or 320x240.

View Curve Option - Offers five different views of the motion curve, its nodes and control handles.

View 3D Wireframe Option (3D Objects only) - Controls the density of the nodes, to give the 3D object more lines in the wireframe model for previewing. It also controls whether or not the wireframe lines that would be hidden by a surface in the rendered version will be shown, resulting in a less confusing wireframe object being shown during preview.

View Effect Option - Controls the number of frames shown during a Quick Play preview. It also has a show or hide background option.



Use the **View > Actual Size**, **Zoom In** and **Zoom Out** options in the main menu to magnify or de-magnify the working area. The Zoom in and out options each have seven levels of magnification. You can also zoom in (left mouse button and out (right mouse button) using the magnifying glass on the toolbar at the left side of the screen.

If in the process of zooming in you lose track of your image, use the Pan tool in the toolbar to center it again.

Tool Tip - Enables or disables tool tips (the text boxes that pop up when the cursor is over a toolbar button).

Toolbar - Toggles whether the toolbar is displayed or hidden.

Status Bar - Toggles whether the status bar is displayed or hidden.

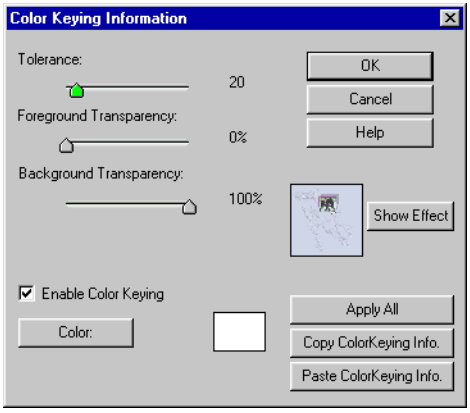
Other Animation Effects

Color Keying

You can use color keying within a Video Screen Animation for simple compositing. For example, you may have a shot of a dog walking on snow. By selecting the white snow as your key color you can make the snow transparent. If the background clip is a shot of a log precariously balanced over a waterfall you can set your motion path and have your dog walking on a log over a roaring waterfall.

Note that when you use the color keying effect on one keyframe it will be turned on for all keyframes on that motion path. If you don't want to see the effect at selected keyframes, set the transparency for both the foreground and background to 0% at those keyframes.

Select **Effect > Color Keying** from the menu. This will open the color keying window.



Tolerance - How close the color on the screen has to be to the selected key color (0-225).

Foreground Transparency - 0% means the foreground is not transparent, 100% means the foreground is completely transparent (invisible).

Background Transparency - 0% means the background is not transparent, 100% means the background is completely transparent (invisible).

Color button - Click this button to change the cursor to an eyedropper to allow you to select a color shown on the screen.

Key Color square - This shows the background color you have selected for keying. You may double click the square to open a color palette and change the color.

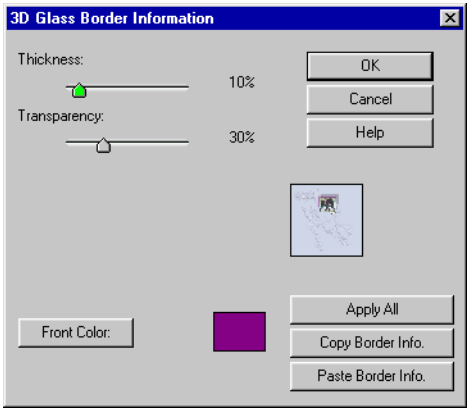
Enable - Check here to turn on the color keying function.

Apply All - Click on this button to apply your color keying choices to all the keyframes on the motion path. Unless you use this button. the color keying defaults will be used for all other keyframes (black key color, Tolerance 0, Foreground Transparency = 0%, Background Transparency = 100%).

Copy button - Copies the color keying properties to the clipboard.

Paste button - Pastes the color keying properties that you have placed on the clipboard.

You can add a border to the surfaces within animated objects. Select **Effect > Border**. There are three options.



Color border - Adds a one color solid edge to each surface.

3D Color border - Adds a shaded edge of the chosen color to give a 3D effect to a 2D object.

3D Glass border - Adds a 3D color edge with a transparency setting on a 2D object.

Adjust the width of the border with the thickness slider. Choose a color by double clicking on the color panel or by clicking on the Front Color button

to change the cursor to an eyedropper which is used to select a color that is currently on your screen.

When you use the Border effect on one keyframe it will be turned on for all keyframes on that motion path. Use the Apply All button to apply the same border to all keyframes, or move to individual keyframes to apply different borders to different keyframes.

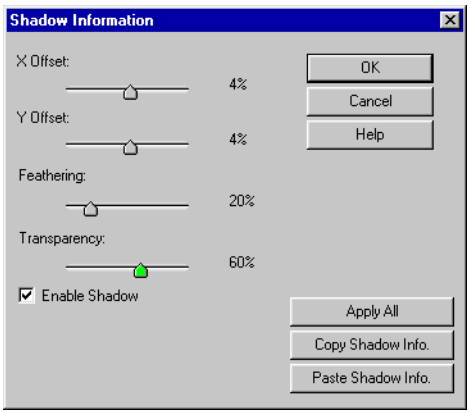
Feathering

Use the Feathering function to soften the border of a Video Screen Animation. Increasing the feathering affects the transparency of the edges of the borders you have added to your object.

The inner edge of the border will be darkest and will get lighter as it approaches the outer edge of the border. Check on the enable box to turn on the feathering option.

Shadows

Select **Effect > Shadow**. A shadow adds a semi-transparent reflection behind an animated object. This enhances the sense of 3D space, giving your animated clip the appearance of floating above the background.



X and Y offset - These sliders change the position of the shadow in relation to the casting object.

Feathering - Makes the shadow less dense towards the edges.

Transparency - Makes the shadow show more or less of the background through it.

Click on the enable check box to turn on the shadow option.

Advanced VSA (AVSA)

Advanced Video Screen Animation is based on Video Screen Animation. Before you try adding the concepts of AVSA, familiarize yourself with the terms and concepts of the simpler VSA.

A lot of the effects you can do with AVSA might also be done using Fusion. If you are already familiar with the DF/DFX+ interface, try doing your effect there.

The Advanced Video Screen Animation function works with multiple 2D objects on motion paths. With AVSA, you can take a video clip and break it like a piece of glass, moving each fragment independently.

If you use a motion path that uses a 3D object in AVSA, you will not be able to assign a Source area to the 3D surface map. The original clip will be used to map all surfaces of your 3D object. If you want to layer 2D and 3D effects in the same movie, create multiple single-layer VSA objects on multiple layers on the timeline.

If you do choose to work with 3D paths using AVSA you may get some unpredictable results if you use the **Edit > Attach Video to Surface** when there is more than one object present. We recommend that you use VSA for 3D objects.

When you are using the AVSA effect the view is not instantly refreshed. Move to another keyframe or activate an object by clicking on a motion path node to redraw the screen.

Simple AVSA

If you are creating an effect where you want each AVSA object to be a full-screen image, the steps to create an AVSA are simple.

To create an AVSA:

1 Select the clip, right click on it and choose Apply Effects.

2 From the Filters categories drop-down menu, choose Effects Filters. Choose Advanced Video Screen Animation from the Filters list.

3 Ensure that the Destination screen is selected (click the DE button at the top of the screen).

4 Arrange your first motion path as if you are using Video Screen Animation.

5 Add additional motion paths.

6 Adjust those paths and the shapes on them.

7 Save and render.

Multiple Motion paths

A motion path always has a start and an end keyframe position. Like VSA, you can add other keyframes in advanced VSA, and you can alter the shape at that point, add No Motion, etc.

Add a New Motion Path

To add a new path with a new object, select **Motion > Motion Path > Default** from the menu. The new object may be a 2D or 3D object, regardless of the type of object on the existing motion path, but if you add a 3D object you will not be able to use the Surface Mapping functions available with the 2D objects.

To duplicate an existing motion path, right click on it and choose "Copy Path" from the menu that appears. Right click on a blank area of the screen and click on "Paste Path". The new motion path that appears can be moved by dragging and dropping it.

You can also replace or delete a motion path using this menu.

Manipulate Individual Paths

When motion paths overlap one another, selecting the motion path you are working on can be difficult. Pay close attention to which objects and paths are highlighted.

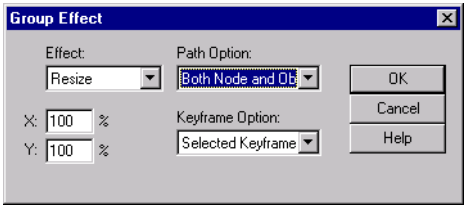
Right click on a path and choose Motion Path Options. The last item on the menu is a status line that tells you which position the selected motion path is in currently. This can show Back Most Curve, Front Most Curve or Position: # from top.

The Next Path and Pre Path (Previous Path) buttons allow you to change which object and motion path you are editing. Each object and motion path must be modified over time individually - none of the keyframes created for one object has any effect on the other objects. When you switch to a new path the keyframes you have just created will not be shown. However, they will still be there when you return to the old path.

If you need to change which path is above or below another one, right click on the path you wish to move and choose Path Order: Options are **Forward One**, **Back One**, **To Front**, **To Back** and **Reverse Order**.

Apply the Same Effect to Multiple Motion Paths

If you want to edit all the objects at the same time choose **Tools > Motion > Group Effects** from the main menu. A window opens.



The commands available are Resize, Reposition (numerically), Flip Horizontal, Flip Vertical and Reverse Motion. A Group effect can modify a node, an object or both simultaneously. It can modify one keyframe or all keyframes.

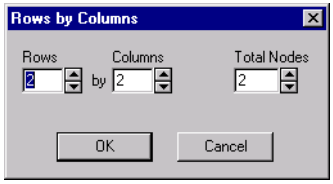
From the main menu, choose **Tools > Apply to Other Motion Paths**. When this option is checked moving one motion path moves all motion paths by the same amount, moving one node moves the same numbered node on all motion paths, and adding a node or keyframe adds a node or keyframe at the same percent time on all motion paths. If you change one motion path without changing the others and then check the Apply to Other Motion Paths option, some movements may not affect the unique motion path.

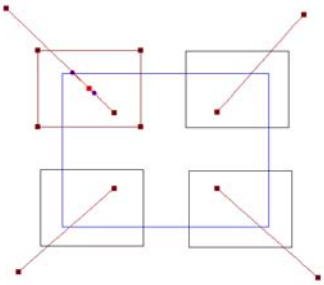
Saving or loading a motion path (**Motion > Motion File > Load** or **Save**) while in Advanced VSA will save or load all the motion paths that were present. While you are in AVSA you may also copy and paste a single additional motion path to your animation by first right clicking on the path you want to copy and selecting **Copy**, and then right clicking on a blank area of the motion path screen and selecting **Paste Path**.

Premade Patterns

To understand how multiple motion paths can be used you may want to first work through the pre-made patterns found in the main menu under **Tools > Motion Tools**.

Row X Column





Divides the screen into rectangles. Multiply the number of rows by the number of columns to know how many boxes there are.

Rows - Divides the screen horizontally.

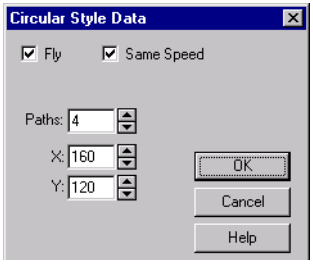
Columns - Divides the screen vertically.

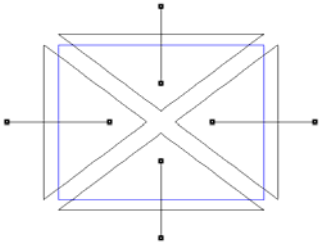
Total Nodes - Determines how many keyframe settings there are per object. The default of two is the minimum, and creates keyframes at the start and end of the clip.

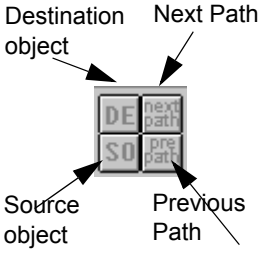
In this option, the motion paths are created with “no motion” set to on.

Circular Style

Divides the screen into triangles from a center point, arranged in a circular pattern like rays.







Paths - The number of triangles used to make up the circle. This may only be an even number.

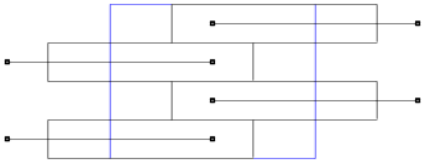
X and Y - The coordinates of the center point. The top left of the screen is 0,0 and the bottom right is 320, 240.

Fly - when checked, each triangle will be created with a motion path that moves directly away from the center point.

Same Speed - when checked, all pieces fly apart at the same speed. If this box isn't checked the speeds will vary so all pieces will leave the screen on the same frame.

ZigZag Style

Divides the screen into ribbons which fly away in alternating directions.



Paths - The number of rectangular ribbons that will be created.

Style - How the ribbons will be sliced from the video - horizontal, vertical, diagonal left, or diagonal right.

Fly - when checked, each ribbon will be created with a motion path that moves directly away from the center point.

Same Speed - when checked, all pieces fly apart at the same speed. If this box isn't checked, the speeds will vary so all pieces will leave the screen on the same frame.

Changing the Background Surface

By default, AVSA uses the clip above the animated clip (i.e., the clip on V1 if AVSA is applied to a clip on V3) as a background.

AVSA allows you to use any clip for your background, covering the clip that is shown on the timeline. Select **Edit > Attach Background Surface** from the main menu. In the window that opens, use the Background button to browse for a any clip to use as a background.

Check the "Enabled" box or your new background will not be used in your AVSA effect.

Partial Image Mapping

To break a single source image into various pieces and move those around the screen on motion paths, AVSA uses a Source screen and Destination

screen. If you use these tools, you can create effects such as text flying one word at a time, or your screen shattering like a window and falling away.

Source Object

The source screen determines how the clip you are starting with will be used. The default when you start AVSA is a rectangular object that contains your clip. This is why you can work with multiple motion paths where each object contains the entire clip image without having to ever look at the source object.

The Source screen is used to define how the clip's image is to be divided up into different areas, using 2D shapes. Each area is given an association number.

To create an effect where your video clip flies apart or together, you should not apply any motion to your source object. All the motion happens to the destination object.

Whether you are in the source or destination screen, the background of the working area always displays the AVSA destination screen's video output.

Destination Object

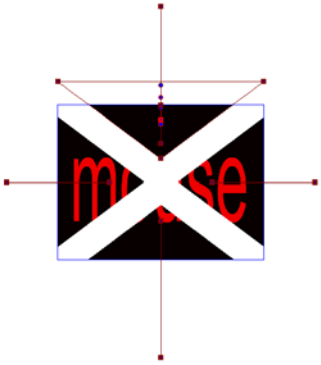
Once you understand the relationship between the source and destination screens, you can fly pieces of your image around, etc., aligning them at some point when they are outside position, etc.

The Destination screen is used to create objects and motion paths, as with VSA. Each 2D object in the Destination screen may use the entire clip as a surface map, as in VSA, or it may be associated with just one of the areas you defined in the Source screen. If you do assign areas from the Source screen to the Destination screen you can create effects such as a clip that appears to fly apart, or titles where each word flies in independently.

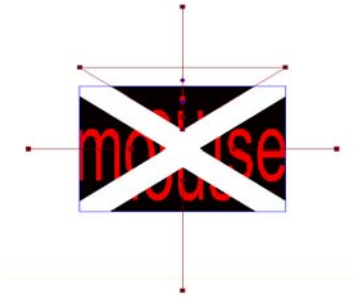
Different effects can be achieved by setting the same shape of source and destination screens the same or differently with respect to motion.

If the source and destination screens are differently shaped from each other, the image from the source screen will be stretched or pinched to fit the destination object.

No motion on destination object, but inward motion on the source object, so the image content disappears into the middle of the screen.



No motion on source object, But inward motion on Destination object, so content stays the same within the divisions of the screen as they move.



Motion on source object matches motion on destination object, so the content of start image does not move, the pieces move over it.

Associate

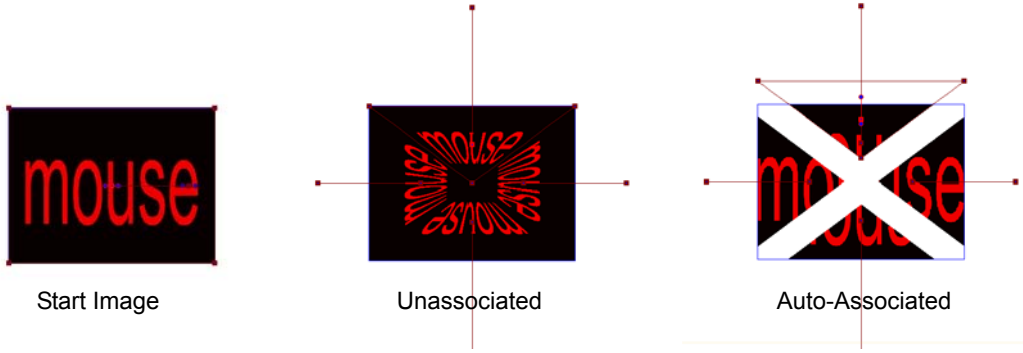
Initially objects on the source and destination screens are not associated with each other. Each shape uses the entire area (the entire clip) as a surface map.

Auto Associate

When you use Auto Associate, the content of the source objects is moved around by the corresponding Destination objects. The simplest example is if you have used one of the preset shapes (found under **Tools > Motion tool**) at the default setting. The original image is split into 4 independently moveable and/or deformable areas. Each area has been mapped onto its own object, with its own motion path its own nodes and keyframes.

While you are in the destination screen, choose **Tools > Auto Associate** from the main menu. This associates each of the objects in the Source screen with an object in the Destination screen.

If you have less objects in the source screen than in the destination screen, then the destination objects for which there is no object to map will have the full screen mapped to them.



If you have more objects in the source screen than in the destination screen, the extra source objects will be ignored.

If a motion path on the source screen goes outside the "Picture area", the area that is off-screen becomes transparent in the destination objects.

If a motion path on the Destination screen goes outside the "Picture area", you will see no object on the screen.

To undo the effect, ensure you are in the Destination screen and choose **Tools > Auto Unassociate** from the main menu This sets all Destination object associations to 0 (Associate with nothing).

Manual Control Over Association

If you right click on the motion path of each object (the small square at the center of each object) you will see a pop up menu.

To check the association of a particular object, right click on its path and choose Associate. In the Source screen this tells you which Associate Id number has been assigned to each object. Numbers are assigned as the objects are created and cannot be changed. In the Destination screen this tells you which Source object the Destination object is associated with.

Clicking on the **Associate with #** menu item opens a window. Here you can assign any of the existing association numbers. Assigning 0 sets the association to nothing (i.e., the Destination object will not use a Source object for surface mapping).

From the bottom of the menu select **Motion Path Options**. Near the bottom will be Associate with 1, where the number tells you which destination object this numbered source area is associated with. If you switch to the Source screen, right click the motion path of an object and select **Motion Path Options** to see a similar menu.

Tip: When you are working in the Destination screen, nodes and objects are outlined in brown and motion paths are black.

When you are working in the Source screen, nodes and objects are outlined in pink and motion paths are pink.

Making Your Own AVSA effects

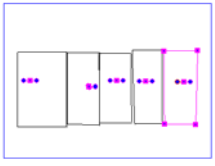
Effects far more complicated than the three pre-made motion paths are possible.

Example: Fly Individual Letters Onto the Screen

Begin with a simple title file on the timeline. Right click on it and choose Apply Effects from the menu.

In the Effects window, choose Effects Filters from the drop-down menu at the top of the screen, and then select Advanced VSA from the Rendered Filters menu.

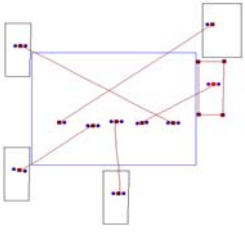
The AVSA screen opens.



Source screen

In the Destination screen, select **Effect > Fit to Screen > Full Screen** from the main menu. This will insure that the whole image is shown on the Source screen, making it easier to define your areas on the Source screen.

Switch to the Source screen by clicking on the SO button found in the top tool bar. There will be a default motion path shown on the Source screen. Make sure you are on the first keyframe on the percent time line.



Destination screen at the first keyframe

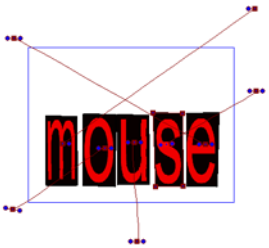
Move the first node, change the object shape, resize it and re-position it to the area you want to define. Click on the No Mot button in the top toolbar to place the second node on top of the first node and to use all the object settings (size, shape) for both nodes.The first created area is assigned Association ID 1.

Create similar paths with No Motion turned on for each of the other letters on the screen.

So, in the Source screen, click on the first object and select Copy.

Switch to the Destination screen (press the DO button). Delete the only path there. Paste the object.

Make sure you are on the first keyframe in the Destination screen, grab the motion path with the mouse and move the object outside the blue box (view area). The last keyframe remains where it was, meaning that now, over time the object will fly into the screen.



Destination screen at the last keyframe

Copy and paste the rest of the letters from the source screen to the destination screen and move their first keyframes to outside the viewable area.

In the Destination screen, choose **Motion > Auto Associate** from the main menu.

Preview the effect.

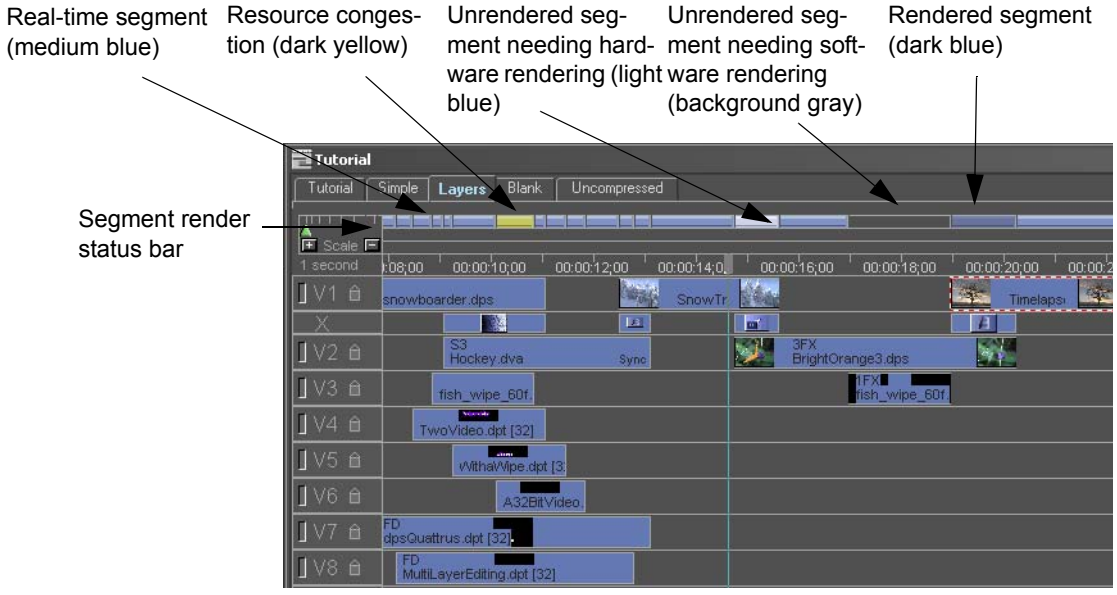
You could also apply Color Keying for each letter so you can fly them in over a background without the black boxes.

Chapter 21
Resourcing and Rendering

As you create a complex timeline, replete with layered clips, titles, transitions and effects, you should keep an eye on the render status bar at the top of the timeline. This line can give you valuable information about how ready your timeline is for playback.

On the render status bar, the timeline is divided into segments. A segment is a portion of the timeline that uses a specific set of resources. Any time those resources change, a new segment begins. This would include adding or removing a title, starting or ending a transition, cutting to a new clip or razoring a clip (if you want to apply an effect to a portion of a clip, but don't want to render the entire duration).

There are five types of segments on the render status bar.

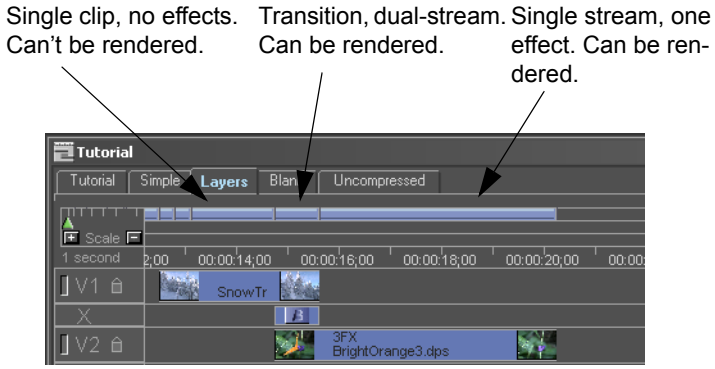


Render Bank remembers the exact stack of clips each render refers to so if you move the whole stack you don't lose any renderings, and if you remove a clip in the stack and then place it back in exactly the same place, the rendering isn't lost (you don't have to render it again).

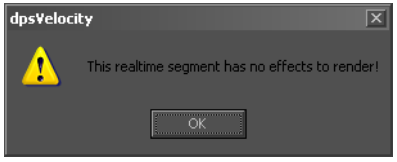
Real-Time Segments

Sections that do not need to be rendered are medium blue in the rendering bar.

There are two types of real-time segments: ones that can't be rendered and ones that can.



You cannot render a segment that is a raw video (DPS/LTV) clip with no real-time effects applied to it. If you double click on an unrenderable portion of the Render Status bar, this message will appear:



Real time effects segments and transitions do not need rendering, but can be rendered nevertheless.

There are reasons you might choose to render timeline segments that do not require it. If you render a real-time segment before it reaches the point where it requires rendering, this allows you to apply the next layer of real-time effects while viewing feedback in real-time. The file resulting from rendering an already-real time segment of a timeline processes all the real-time transitions and effects in that segment to a single file, so it only uses one video stream to play back. This leaves more video streams free, allowing you to play back additional layers of video and titles, and use more DVE effects.

You may also want to render real-time segments if you are going to be outputting your project to a file. Rendering to some file formats places additional resource requirements on the system. To ensure smooth playback, render down more complex portions of the timeline.

When rendering real-time segments of a project, Velocity always uses hardware rendering (Play/cord or Scrub rendering).

Real-Time Video Resource Usage

Quattrus's hardware video resources are:

Video - Four streams of compressed or uncompressed video. A 32-bit clip (video with alpha channel) counts as two streams of video for Quattrus's purposes.

Transition - To play a 32-bit video file in a transition in real time, you need to turn off its alpha channel (apply video effects "DVE keys borders masks" and click the Alpha Channel button. You can now play it in transition without rendering. Otherwise, it has to be rendered.

Title/Image File - You can have six image files (including still, rolling and crawling titles) on the timeline without having to render.

DVEs - A single DVE can be used to do multiple effects on the same clip -- a stack of real-time effects including a pixel effect, a key, a perspective and a trail, for example. You have the choice of using 0, 2 or 4 DVEs on your Quattrus board.

Altitude's hardware video resources are:

Video - Two streams of uncompressed or compressed HD video and multiple streams of SD video.

Title/Image File - Altitude can support up to two dynamic graphics streams in HD. You can have six dynamic graphics streams (including still, rolling and crawling titles) on the timeline without having to render in SD mode.

DVE - Altitude can support one DVE for multiple effects in HD mode, and four DVEs in SD mode.

A blur effect requires two DVEs with the Quattrus hardware. It is the only effect that does so. If you use the blur effect to apply a series of filters to a clip, but do not actually use the Blur tab, it will still use two DVEs to do the effect. A blur effect only used one DVE with Altitude.

When you exceed any of the real-time video resources, you may need to render.

Resource Congestion

In areas of hardware congestion, the Render status bar turns yellow instead of blue. This indicates that the combination of clips and effects in that seg-

ment cause that portion of the timeline to not play back in real time. This usually involves title or graphic image files or extensive use of DVE effects (hardware resources). If you offset one or more of the clips involved by a frame, or in some cases several frames, rendering may not be required.

However, if you do not wish to move any clips by a frame or two, or if this does not help, yellow resource congestion segments can be rendered. The render is a multipass hardware render.

Unrendered Sections that Require Hardware Rendering

Segments that require hardware assisted rendering are light blue on the rendering bar.

Hardware assisted rendering is required where enough real-time effects have been layered so that Velocity must process the effect in order to play it back. It is considerably faster than software rendering, because the hardware can assist in the distillation process of compiling the clips.

Typically, depending on your hardware, a portion of the timeline that requires hardware rendering is one where more than four video streams are used in real-time, or more than six titles (or both), or where still images (titles) are placed close together on the timeline.

There are two types of hardware-assisted rendering:

Play/cord render -Plays the footage and effects and records them at the same time as a DPS/LTV file. This is a real time render. If you press escape, the render stops immediately. If you wish to do this type of rendering, it must be enabled. From the main menu, choose **File > Preferences** and click on the Render Options tab. In the Real Time Video Play / Record section of the window, place a check mark beside Enable. (For more information on the render settings on this window, refer to Chapter 26.)

If you need to render a real-time portion of a project, occasionally it will require multi-pass rendering. In this case, Velocity provides a message saying what pass it is on, and how many passes there will be in total.

Scrub render - If a Play/cord render is not possible, or not successful, Velocity does a scrub render. This is relatively slower than a Play/cord render, but still faster than a software render. In a scrub render, Velocity first renders a frame and then saves it, rather than doing them simultaneously, as a Play/cord render does. Trails cannot be rendered in a scrub render. If you press escape, the render stops at the end of the pass.

Unrendered Sections that Require Software Rendering

Sections that need to be software rendered are gray (the same color as the background of the timeline) in the rendering bar.

Software rendering is always needed when non-real-time transitions or effects are applied to a clip.

Note: For best results, don't mix software and hardware effects. Rather, put a series of real-time effects on a clip, then render it down using hardware rendering (fast). Then apply software effects and render again. Then, if you need to, apply more real-time effects.

Rendered Segments

Segments that have already been rendered are dark blue in the rendering bar.

If you put another real-time clip or effect on top of a rendered section of your timeline, that section of the timeline's render bar will turn medium blue to indicate that it does not require rendering and will play back in real-time. Rendered sections before and after this section will still appear as rendered -- dark blue. If you add enough clips or effects so that the segment again needs to be rendered, rendering will be very fast, since just the layers that haven't been rendered before will be rendered together.

If you move a clip from part of a rendered segment, the rendering for that section disappears and the render bar turns either medium blue, light blue or gray, indicating that rendering is required. If you put the moved clip back in the exact same position as before, the render is "remembered" so that section of the timeline does not need to be rendered again.

If you move a portion of the timeline that has a rendered clip in it with the gap tool, the render is remembered.

Render files on your system

After Velocity renders a segment, that segment is saved wherever you save your DPS/LTV video files (normally the P drive, but can also be a system drive. You can find this out by going to **File > Preferences** in the main menu. Select the Project Management tab, and below that, choose Default I/O Folders. Look at **Location of Captured or Output Media Files**).

Render file names begin with MLT, followed by a string of numbers. Extra MLT files that are no longer required after repeated renderings are normally deleted upon closure of Velocity. However, if Velocity shuts down unexpectedly, you may develop an excess of these files. A folder can contain a maximum of 2048 files.

Rendering a Portion of your Timeline

You can start by selecting a clip or clips to render. You can do this by double clicking a renderable timeline segment to open the Segment Rendering Options window, or hold down the Shift key and double click on timeline segments to select more than one.

Un-mark a marked segment by double clicking on it with the Shift key held down.

Select all the renderable segments by holding down the CTRL key and double clicking a renderable segment in the render bar.

You cannot select a segment that cannot be rendered.

Release the Shift key and double-click on a previously selected segment to open the **Segment Rendering Options** window. Once this window is open, you have many more options.

Render - Renders the segment you have clicked on only. Even if you have selected multiple timeline segments, only the one double-clicked on will be rendered.

Unrender - If a segment has been rendered, this button becomes enabled. It deletes the last render from this clip.

Mark Segment - Places a marquee around the selected segment and closes the Segment Rendering Options window.

Render Marked Segments - Renders all selected timeline segments.

Render All - Renders all timeline segments that must be rendered, but will skip all timeline segments that can potentially be hardware rendered but do not require rendering.

Unrender Marked Segments - Deletes the rendering operations from selected timeline segments.

Unrender All - Unrenders all rendered timeline segments.

Render All Segments in the Movie Range - Renders all segments that Require rendering that are over the Movie Range (the blue marker two rows below the Render Status bar at the top of the timeline. Doesn't render clips that can be rendered but do not require it.

Unrender All Segments in the Movie Range - Unrenders all segments that have been rendered over the Movie Range.

Note: If you click on the render bar at the end of your timeline (after the last clip), you can't render, because there is no finite end to the render segment. If you need to create a clip longer than the end of your project, extend the Make Movie range past the end and render that, or place a blank BMP at the

end of your timeline, extended to fill out the entire duration of your project. This is not necessary if you are printing or outputting to tape, as blank areas of the timeline play back as black.

Rendering to a System Drive

If you wish to be able to render DPS/LTV files to a system drive, in the main menu, select **File > Preferences** and click on the Playback/Output tab. Select **Allow creating DPS files on a system drive**.

Render Errors

When doing multiple renders, you may receive an error message because there are too many files in the render folder.

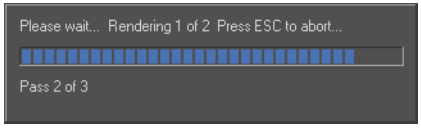
If you receive an error to this effect, go to the video render folder. Delete the oldest MLT and SNG files and try the render again.

Viewing a Render in Progress

During real-time rendering, the video preview window on your VGA monitor (the trim window on the Velocity interface) is turned off. To view the frames as they render, you must have a video monitor hooked up to your Velocity breakout box.

However, during software rendering, the render preview window on the Velocity interface updates frame by frame.

A progress bar launches to indicate how far along in the render your computer is.



The blue meter indicates an approximate percentage of the completeness of the render. The top indicator reflects which segment is rendering (and how many segments there are in total). The Pass indicator lets you know how many passes will be required in a multi-pass render, and which one is in progress.

Make Movie

If you want to go further and replace an entire stack of effects with a single clip (for example to make a transition between two series of stacked effects, Make Movie is a way to render a timeline range into a single DPS/LTV file. See Chapter 23 for more information.

Chapter 22
Fusion Integration

DFX+ is a limited feature set of Fusion. DFX+ comes with substantial documentation, including a manual, a get started guide for DFCG, help files, a training tape and extensive tutorials. (Open the help files by selecting **Help > Help!** from the main Fusion menu.) The DFX+ manual and help files include sections on the different groups of tools.

To access the Fusion tutorials, open Fusion Help and select **Tutorials** from the main screen. There are also many tutorials, tips and tricks on the eyeon website at www.eyeonline.com.

After you have completed the tutorials using the footage provided on the CDs, try them again, using your own footage. It's a good way to find out what footage works and what doesn't, and to try using the effects without having optimum values for tools, controls and parameters set out for you.

Use the manual and tutorials as a jumping off point for your own creativity. The best way to learn Fusion is to play with the software and come up with your own effects.

DFX+, the additional modules, and the full version of Fusion are equally optimized to work with Velocity. This chapter describes how to use Velocity's integration tools to work with Fusion.

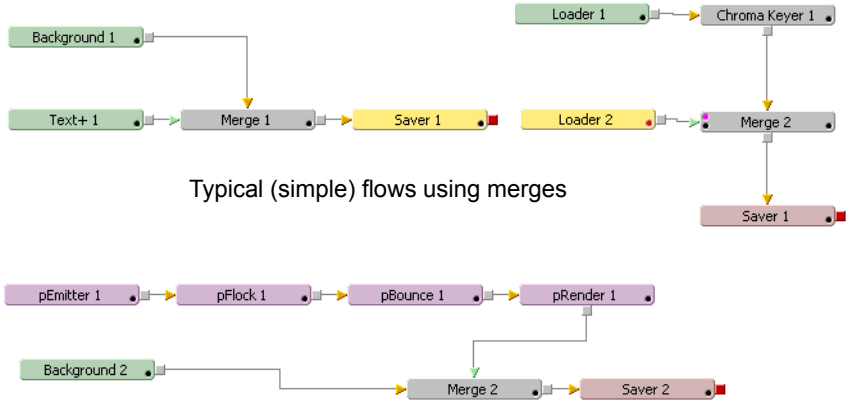
All effects you create in Fusion must be rendered.

What Can You Do With Fusion?

Whenever you exceed the real-time abilities of Velocity, you should consider using DFX+.Integration between the two programs lets you transfer a clip, transition or stretch of the Velocity timeline into DFX+ for compositing.

DFX+ takes your Velocity footage and places it in Loaders, which are combined into Flows. Tools in a flow can be viewed on your Velocity video

monitor or in Views on the computer desktop. Clips can also be viewed as a timeline or a series of Splines.



Typical (simple) flows using merges

You can mix in Loaders and other basic elements such as backgrounds and Text tools. Join these base elements two by two via Merges or Dissolves, layering them as foregrounds and backgrounds.

Anywhere in a flow, you can add effects tools to manipulate different layers of an image (red, green, blue, alpha, etc.), to create mattes from the tools or to warp or color adjust them in different ways. You can mask areas of an image or an effect, and you can animate almost every tool in DFX+ over time.

At any point in a Flow where you wish to export an image or a series of images to Velocity, place a Saver. Savers determine the name, format and destination of output clips.

Plug-ins

DFX+ can use Adobe After Effects third-party plug-ins as well as plug-ins made for Fusion. See the eyeon website at www.eyeonline.com for a complete list.

Upgrading to the Full Version or Purchasing Modules

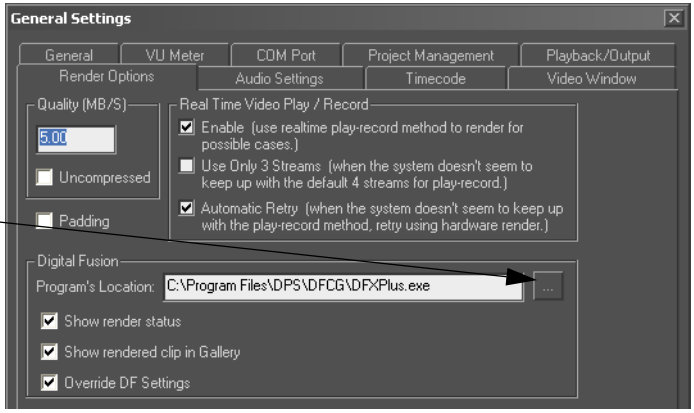
The most efficient way to enhance your DFX+ may be to purchase the modules that will allow you to do what you need. Information on the various modules of Fusion DFX+ appears throughout your DFX+ manual.

See the Eyeon website at *www.eyeonline.com* for upgrade information.

Velocity Settings

If you have more than one version of Fusion installed on the Velocity computer, you may need to redirect Velocity to the correct version. Choose **File > Preferences** from the main menu and click on the Render tab.

Click the Browse button to locate the correct DFX-Plus.exe file.

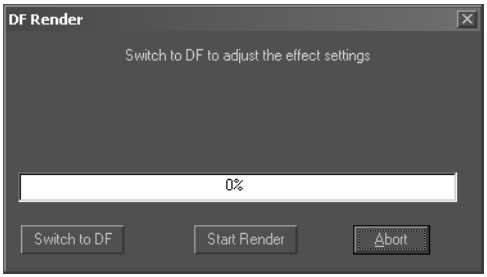


Show Rendered Clip in Gallery - When this option is selected and you send a clip to DFX+ from the timeline, after rendering, that clip is replaced on the timeline, and the newly rendered clip is added to the active gallery. When this is not selected, the clip is only replaced on the timeline, but not placed in the gallery.

Override DF Settings - When this is selected, flows created by Velocity override the Loader Process Mode (PAL/NTSC, fields, frames or reversed), Loader aspect, Pixel aspect, legal VType and compression setting. When this is not checked, loaders may be processed incorrectly by DFX+.

Show Render Status - When this is selected, Velocity and DFX+ will be in constant communication whenever a clip/transition/region is sent to DFX+. Practically speaking, it means that more of the overall process is automated. After the flow is created and your render is complete, DFX+ automatically saves the flow, closes it, and replaces the clip on the Velocity timeline with the new rendered media.

If the Show Render Status button is checked, when DFX+ launches from Velocity, a window opens.



When this window is open, you cannot edit your Velocity timeline. If you wish to use the DFX+ integration tools without interrupting your editing work in Velocity, leave the Show Render Status box unchecked in Render Settings, and in the other screens where it appears.

There are three buttons on the Render Status screen.

Switch to DF - Minimizes Velocity and makes Fusion the active program.

Start Render - Begins the render process on the current (newly created) Flow.

Abort - Closes the newly created Flow, but leaves DFX+ open in the background. Closes the DF Render window. You can continue editing in Velocity.

Fusion Settings

To make DFX+ launch maximized (so it uses the entire VGA screen), from the main menu choose **File > Preferences > Layout**. Under Globals and New Flow Defaults, select Layout and choose Maximized from the "Run" mode drop-down menu.

Under I/O, select Altitude or Quattrus (depending on which hardware you have installed in your computer) if you wish to adjust default saver settings If you do not alter the settings here, Savers have the same compression settings as the Velocity project that generated them.

Sending Footage from Velocity to DFX+

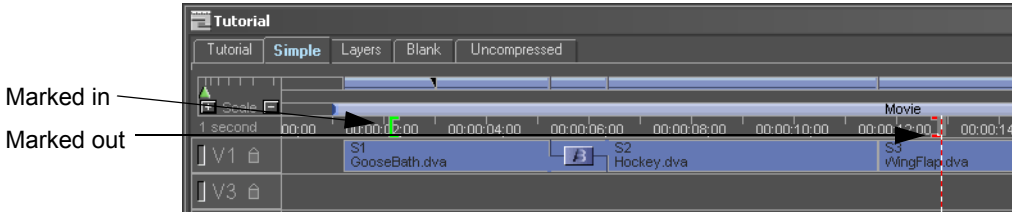
You can apply a Fusion effect to a clip, a transition, or to the area between Velocity timeline in and out markers. You can send a segment to Fusion and continue working in Velocity, or you can work on it in Fusion immediately.

You can re-render an effect or edit a flow, whether that flow is stored in a gallery or placed on a timeline.

Send Timeline Range to DF

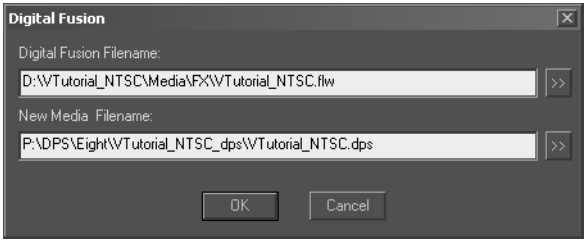
You can send all clips in a timeline range to Fusion. It is meant to be used when the effect you are working on will be created in Fusion on the same system that contains your Altitude or Quattrus hardware.

Mark an In and Out point on your timeline. The marked area will be replaced by a single rendered clip, no matter how many clips are on the timeline. By default, clips on all video tracks are affected. However, if you wish to send only specific portions of the timeline to Fusion, select Solo on the tracks you wish to send.



Right click on a blank space on the timeline and choose **Send I/O Range to DF**. A window with two fields for file names opens. In the first field is the default file name for a new Flow. In the second field is the default name for a new DPS file.

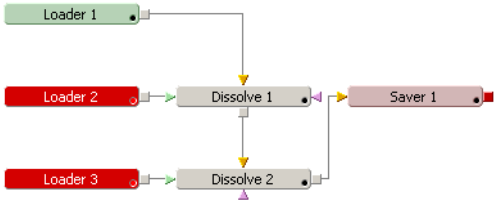
(An error message will appear if any of the affected clips contains a real-time effect. The effect must be removed before the clip can be sent to DFX+.)



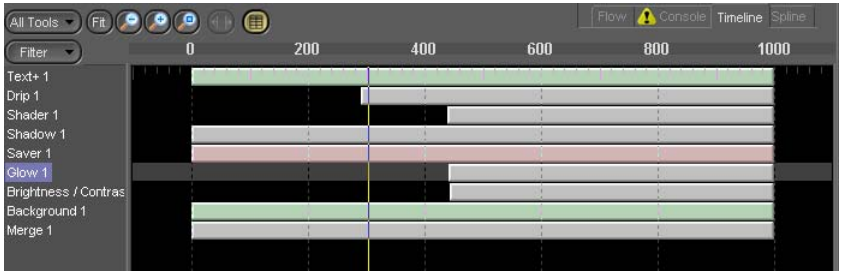
When you click OK, Fusion launches and the clips between the In and Out markers appear in the flow in the contents of Loaders.

This flow contains one Loader for every clip between the In and Out markers on the timeline. In the DF flow that is created, all your clips appear in their relative positions as Loaders, whether they are on the Overlay, Alpha or Background track. The file you specified as the output file appears as a

Saver. When you render the saver, it will fit the spot left in the Velocity timeline, unless you alter its duration. The render range (duration) corresponds to the In and Out points marked on the timeline in Velocity.



The relationship between the flow and the Velocity timeline may be easier to see if you look at the Timeline view.

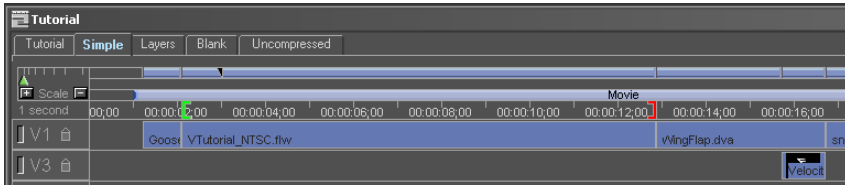


Assign any effects you wish to create. If you assign them before the dissolve(s), effects are applied to individual clips. If you assign an effect after a dissolve but before the Saver, effects are applied to all the clips. There is more information on how to assign and animate effects later on in this chapter and in your DFX+ documentation.

When you are done, click Render at the bottom of the screen. This renders to the pre-created Saver and the file name that is the same as the DPS/LTV file that replaced all the other clips between the In and Out markers on the timeline.

If you abort the render or cancel the Send to Fusion action at any time, the Velocity timeline retains the original clips.

When the render is complete, the In-to-Out range on the Velocity timeline is replaced by the new effect clip.



Note: When a graphic file is imported from Velocity to Fusion, it is handled differently from a video clip. Graphic files are imported at their full resolution, so you can perform such moves as pans and zooms on the image while taking advantage of the full resolution.

Other Options for Using Multiple Clips in DFX+

- Use the Velocity Unify function (Output Movie with Unify checked) then right click on the single unified clip and select Apply DF Effects. A flow with a Loader and Saver is created. (How this works is described on p. 391.)
- Other options involve launching DFX+ as a stand-alone application. You will need to set up your Loader and Saver settings yourself and manually replace the resultant clip in Velocity.
- Import the clips individually into separate Loaders. This allows you to overlap the starts and ends of clips for transitions and effects.
- Import multiple clips into a single DFX+ Loader (on the Loader's Playlist tab). You can't overlap the clips in a single loader.

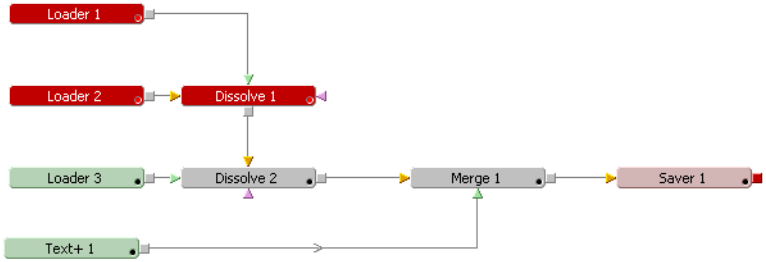
Example: Titles Over Video

Complicated titles are possible with Fusion, combining text with video, logos, backgrounds and mattes as graphic elements, and you can apply complex motions, including Character Level Styling (accessed by right clicking in the Text tab's text field, selecting the letters, and altering them on the Modifiers tab).

To place a complex title across a series of clips, place your in point and out point on the Velocity timeline where you would like the title to enter and leave the screen. Give it a few frames extra for ease, but don't give it too many extra frames, as it will only add to your render time.

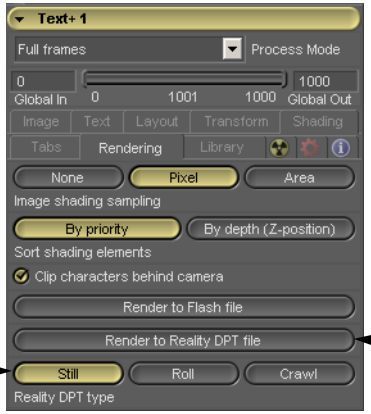
Choose Send I/O Range to DF. A Fusion flow will open. There will be Loaders for each clip between the Velocity timeline markers, and dissolves to join these clips together. This all will be followed by a Saver.

Select the last Dissolve tool before the Saver and add a Text+ tool. The Text+ tool is automatically joined in front of the Saver via a Merge tool.



Now you can create and edit your text in the Text+ tool, render and return to Velocity.

To create a simple still, rolling or crawling title, you may find it faster to create a DPT file to export to Velocity, and apply that to your timeline.



Choose which type of DPT file to export.

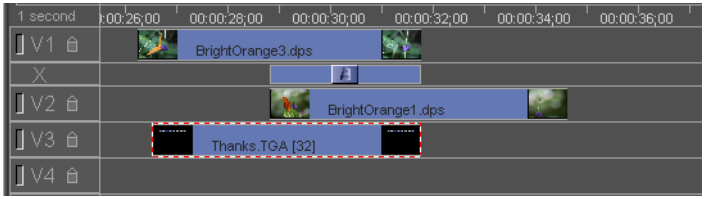
Click to open a Save As...window. Your DPT file is rendered without requiring a Saver in the Flow.

There are significant limitations as to what you can do with a DPT file. A DPT still, roll or crawl can be faded in or out, but DPT files are essentially still files. The roll and crawls just have a specific motion applied to them, up or down in the case of a roll, and left or right in the case of a crawl.

DPT titles can be applied across a section of timeline, not just a single clip.

Send Transition to DF

Select a transition in the X track of the Velocity timeline, right click on it and choose **Send Transition to DF** from the menu.

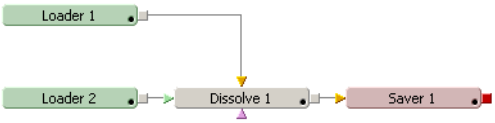


Any rendered or real-time transitions or effects that you have applied to the transition are ignored.

A window with two fields for file names opens. Designate the name and save destination of your Flow in the first field, and the name and save destination of your DPS file (the file that the Saver will render to) in the second.

Click OK.

Fusion launches creates a Flow with two loaders. The two loaders are connected to a dissolve, and the Dissolve connects to a Saver.



The Dissolve has a Bezier Spline applied, which moves from the background to the foreground across the duration of the Transition. You can see the spline's shape if you click on the Spline tab in the lower left side of the screen.

You can apply effects to one clip, both clips or the dissolve between them.

When you render your Saver a new clip replaces the marked transition on the timeline. If you want to use a Velocity real-time transition at this position on the timeline, either undo the Send Transition to Fusion action in Velocity, or delete the new clip or move it to a gallery for safe-keeping and extend the preceding and following clips to recreate a transitional overlap between them.

Example: Create a Gradient Wipe

Once you have set up your transition for rendering in Fusion as above, switch to Fusion.

Connect the Loader or Background tool containing your gradient to the third (mauve) input on the Dissolve tool, and set the Dissolve's operation to Gradient Wipe.

As a gradient, you can use a background tool, or use an image sequence or create a more complicated image in a raster editing program. You cannot use the WFX files that Velocity uses, as Fusion does not recognize them.

Render to the pre-created Saver and return to Velocity.

Apply a DFX+ Effect to a Velocity Clip

The Apply DF Effect tool is meant to be used to apply an effect to a single clip. The flow that is created contains a Loader with your clip loaded into it, followed by one or as many effects as you wish to add and a Saver. You can, of course, add other effects later. You can also adjust the settings on the effects you pre-select, animate them, and so on.

If a clip already has an effect on it, real-time or otherwise, you cannot send it to Fusion, even if that region of the timeline has been rendered. To apply a Fusion effect, first remove Velocity effects from the clip. Velocity effects can be applied again after rendering in DFX+.

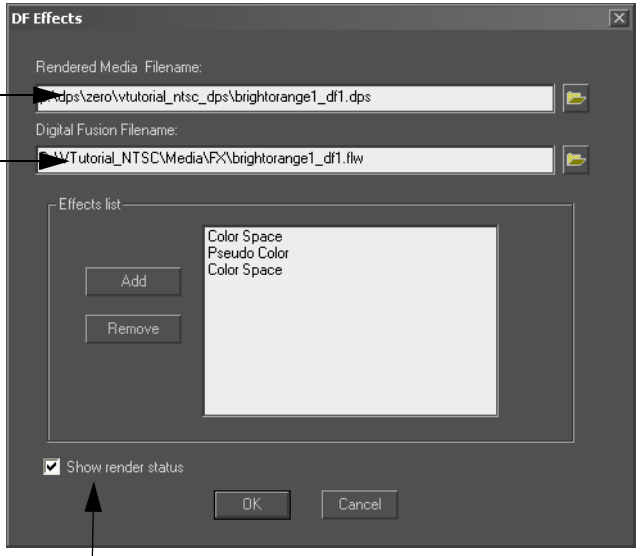
Right click on a video clip or graphic file on a timeline or in a gallery. (If there are In and Out markers on the timeline, they will be ignored.) Select **Apply DF Effects**.

A window opens.

Name and location of rendered DPS/LTV file.

Name and location of the Flow file (the sequence of clips and effects that is rendered to create the final video clip).

These file names are incremental -- if you have created a Flow starting with this clip before, the file number automatically goes up by one (the last digit) so that you will not overwrite a previous clip or Flow.



If Render Status is turned on, you must render the Fusion file or abort the "Apply DF Effects" before returning to Velocity. If this box is unchecked, the flow launches in DFX+ but you can continue to work on your Velocity timeline.

If you wish you can press one or both of the browse buttons to change the names or save locations of the files.

Click the Add button. This opens a menu. Choose the effects you would like to add to the clip. The integrated tools in Fusion are divided into six groups. Click on a group and a second menu, consisting of the integrated tools in that group, opens. Click on the tool you wish to add. It appears in the effects list. Click on OK to launch the flow, or the Add button to add another effect to the list.

If you have the full version of Fusion, all tools, not just the DFX+ ones, appear in the drop-down menu.

You do not have to add any effects. If you do not add any effects, the flow that opens contains just a Loader and a Saver. You can also add the same effect more than once.

Click OK. Fusion DFX+ launches and a Flow is created. The effect(s) you have chosen appear in the Flow in the order they appeared in the Add list, and the Flow ends with a Saver.

You can now add more tools to your flow, and adjust and animate the effects. When you are ready to render, press Render in DFX+ (at the bottom of the screen, in the Time Controls section) or press Start Render on the DF Render window in Velocity. (This is only available if "Show Render Status" was checked initially before creating the flow.)

If you choose to press Render in DFX+ and then abort the rendering, the Fusion render statistics window will announce that the Render did not complete. Click OK to continue working in DFX+. When rendering is complete, the chosen clip is replaced on the Velocity timeline or gallery. Fusion DFX+ is left open in the background.

If you've chosen to show render status, the flow is closed when rendering is finished, though DFX+ remains open. All changes you have made to the flow are saved. Reopen the flow in DFX+ by choosing **File > Recent Files** from the main menu. The file you just worked on is at the top of the list.

If you have not chosen to show render status, the flow remains open. DFX+ remains in the foreground. You can view the output file in Velocity in context, or you can view it in DFX+, alter the Flow and re-render it.

Flow files in the gallery have a purple outline.

Save Your Flow

A flow is a record of the entire effect. Save regularly as you work. Always save before rendering your project. When you finish a project, archive your flow. You never know when you may need to make changes to it, or do a similar effect in the future.

Choose **File > Save As** from the main menu. A window opens allowing you to choose a name and save location for your file. Click Save.

Flow files end with the file extension .FLW.

In the main DFX+ menu under **File > Preferences**, choose the General tab. You can turn on Auto Save. When enabled, Fusion automatically saves your work to a back up file at the rate defined. If your system crashes or you experience a power failure, when you relaunch Fusion, a backup file may be detected. Fusion offers the choice of loading the backup or the original. If you select the backup, it will open and you can continue where you left off. If you save the backup file, it will overwrite the original file and start the auto-saving process again. If you abort the backup file, it will be deleted, but will not touch the original file.

Fusion enters the current file you are working on into the list of Recently Opened Files. Access them by selecting **File > Recent files** from the main menu, or press ALT+F, then use the arrow keys to select the file you want.

Loader and Creator Tools

Loader and creator tools allow you to import images. There are specific things you will want to do when creating files for ultimate use with Velocity.

Loader Tools

Loaders contain clips and image files. If your Flow was created by Velocity, you have at least one Loader, containing the originally selected clip or image. You can add other loaders to merge images, key one clip over another, etc.

You cannot connect a Loader to the Output of another tool. Loaders can only act as inputs.

To add another clip, add a loader to the flow and open its controls in the lower right hand corner of the screen. Click on the browse button to find the file you wish to open.

The control header's label changes to the clip name you selected. The Clip Length defaults to equal the number of frames in the sequence.

The **Video** import options include AVIs, QuickTime files and DPS/LTV clips from Velocity. If a clip is synced to a DVA clip on the Velocity timeline, that relationship is maintained when the clip is replaced by the newly rendered DFX+ file. But the audio is not imported into Fusion.

A **Still Image** cannot be an ICG or DPT file. ICG and DPT files are not supported by DFX+. By default, image files have a duration of one frame. Extend the duration using the Extend First Frame or Extend Last Frame controls, or by checking Loop. When you export an image from Velocity, DFX+ uses the original image, not the 720x486/576 image created for use in Velocity, meaning your output images will be of higher quality.

You can load an **Image Sequence** from the VTFS, or from a system drive. To load an image sequence into a Loader, choose one frame from the sequence. DFX+ loads all the files that are in a sequence as long as they are stored in the same folder.

If the image you import (be it video, still or Image sequence) has an **alpha channel**, DFX+ uses it to create Matte and transparency effects where images are merged or overlaid on each other. Darker portions of the Alpha channel are translated into transparent areas while lighter or white regions are more opaque.

If an image file does not have an alpha channel (e.g. JPG, YUV and some DPS images), DFX+ adds a white (opaque) Alpha channel to that image.

The **Clip Time Start/End** slider sets how many frames to use from the currently selected clip's entire length. Trim the clip by moving the ends of the range slider to set the start and end points of the clip. The Global In/Out slider increases or decreases in size as you alter the Clip Time Start/End. To position the Global In you need to click and drag on the slider itself. Note, if you adjust the duration of your clip, that it can adversely affect the output of the Saver in the Flow. Maintain a constant duration for your Flow's output or your render may fail.

Multiple sequences can be loaded by a single Loader back to back, much like a playlist. They are listed on the Clip List tab and the control header reads "Multiple Clips". To add a clip to the clip list, advance the Time Control to a frame where there are no clips in the Loader and use the Browse button on the File tab to select a clip. The new clip starts the frame after the end of previous clip. Stills in a clip list each have a default duration of one frame.

Creator Tools

Backgrounds and text tools often stand on their own as elements. Perlins, Mandelbrots and Plasma effects are more useful as secondary inputs to enhance the effects of other tools. Creator tools are commonly combined as secondary inputs to accentuate effects.

Like the Loader tool, creator tools do not accept an input. Creator tools can be masked. However, unlike most tools, the unmasked area's color and alpha are black.

Background - Generates general-purpose gradient color gradations. You could use a black and white gradient, for example, as a secondary input to a shadow tool to give it some perspective tilt. Or you could animate all four colors on a four corner gradient to create a psychedelic background for text.

Mandelbrot, Plasma and **Perlin** tools create images that can be animated and that are suitable as more active, moving backgrounds and secondary inputs for things like shadows and Fog tools.

Text Tool - A simple character generator. You can input text, choose True Type fonts and animate properties over time to create animated, moved, rotated, scaled and sized titles. Dissolve the title in and out using the alpha channel and animate the color. When compositing a Text tool over a background image, set the Merge tool to Additive. Otherwise, the semi transparent areas in the edges will not be merged correctly, and you may see jagged edges or dark lines surrounding the text.

Text + - Move text on a spline path or in a circle. Control kerning, rendering style and finish. Apply and animate text styles on individual characters or groups. The Text+ tool is fully integrated with the other tools of DFX+, so without hassle you can apply other tools and effects to it within the flow.

Spin a title, use perspective to fly it away, add a shadow or a Glow tool to make it stand out. Scramble type-on-text. Rotate or transform your text by size and shear. Create multiple fill, outline and text borders with shading, softness, glow and image texture mapping.

Apply and animate text styles on individual characters or selections. Use full international character sets, style library and basic 3D transformations.

To paste text from another application, use Control-V.

Keeping Controls Tidy

In a complex flow, it can be irritating to keep scrolling through the control window looking for specific tools. Under **File > Preferences** in the main menu choose the General tab. There are a couple of check boxes that might help you out.

Auto Control Close minimizes the control windows for all tools that are not active, allowing only one tool to be open at a time.

Auto Control Hide only shows one tool in the Tool Control window at a time. To open another tool's control, click on that tool in the flow and it opens as the only tool in the Tool Controls pane.

Color Correcting

If your monitor isn't calibrated correctly, you may not get satisfactory results.

When an image is incorrectly exposed, it may have loss of detail in shadows or highlights. So, when ever you are color correcting, you need to start by fixing these areas. Make sure the whites are white, but don't let things that are supposed to be light gray be white. Our eyes are naturally drawn to the lightest part of an image, and if it has a color cast, the rest of the image looks wrong.

Next you need to set the blacks so they are black. Do not let them take over too much of the image, or you will lose detail. And then make the grays neutral. Gray is a close numeric relationship between red, green and blue (i.e., red=30, green=29, blue=29).

Now correct for overall color problems -- inappropriate white balancing of video, or the wrong film stock for a lighting situation. Images with poor lighting can be misleading regarding which color to match. Change the entire image to correct the offensive color and not just the white and black points. Check from scene to scene as lighting changes, and between locations.

If you need to, you can adjust individual items in the scene. Make skin tones believable and pleasant. Samples or color-corrected photos of items in a scene can help match clothing and/or product colors. When color correcting between scenes, match recurring objects.

Rendering and Sending Files back to Velocity

If you are outputting video or a still image, but not a DPT, your Flow should end with a Saver. You can also place Savers at mid-points in a flow. Savers have an Input and an Output. They can fit anywhere in the Flow and pass images on to the next tool.

Savers can do more than just render out a DPS/LTV file of your composite. You can set up a Saver to create AVI and QuickTime movies, convert image files from one format to another (i.e., convert QuickTime to DPS) and resize images to different resolutions and aspect ratios. By adding more than one Saver to a Flow, you can save to multiple image formats, resolutions and hardware simultaneously.

Note, your saver doesn't output audio. If you are using a flow created via Velocity integration, it already ends in a Saver. The Saver contains the DPS file. The render duration is equal to the duration of the trimmed clip you sent to Fusion. Its output compression ratio should also match that of your Velocity timeline.

A Saver determines where output files are rendered to. If you have not created your flow using Velocity, you can save rendered images to a disk or video I/O, as a series of sequential files like TGAs or image streams like AVI or PVR files.

To isolate or remove illegal colors before being saved, go to the Saver's Legal tab and choose Adjust to Legal from the Actions menu.

If you have a long render planned, render out something small first as a test to check your settings, rather than waste hours on a render you can't use.

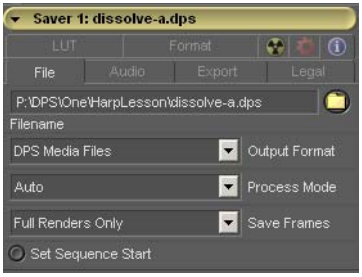
If your output medium is a simple DPT still, roll or crawl title file for use in Velocity, you do not need to use a Saver. Instead, on the Text+ Render tab, choose Render to DPS/LTV DPT file.

Set Up a Saver

If you are using a flow created from Velocity, you are probably better off leaving the Saver's settings alone. If you have created your flow from scratch, you will need to set up the Saver yourself.

To set up a saver:

1 Place a Saver in your flow, open its controls and choose the File tab.



2 From the Output File Format drop-down menu, choose your output type. This can be a DPS Media File, an AVI or QuickTime file or an image file format (IFF, BMP, TGA, TIF, etc.).

3 Use the Browse button to choose a save location. If you are rendering a DPS file, choose a folder in the DPS directory of your P:\ drive (choose a folder in LTV directory if using a LTV file). If you are rendering another type of file to the Virtual Tape File System (VTFS), choose the appropriate file format directory of your P:\ drive.

If the file type you want to render is not listed, you will need to render to a system drive. Note that you can only play back your resulting clip in real time from Velocity if you have rendered it as a DPS file or image sequence to the VTFS.

4 Enter a name for your new file. Press OK to close the Browse window.

5 If you are outputting a DPS file, set the Saver Process Mode to Auto.

File Names

When using .avi or .dps type files, one name represents the entire clip. The clip's format is [base name].[three letter extension]. [base name] can have both letters and numbers in it, and [extension] is one of the valid image stream file types. There is no numeric suffix. Fusion saves out a single file. If you save to a DPS/LTV file to the P drive, other file types are dynamically generated by the Virtual Tape File System.

Image sequence output files follow a similar format. [base name] can have numbers if followed by an under score "_" or an additional period ".". [numeric suffix] is the amount of digits required to pad the frame numbers. [extension] is one of the valid file types used in Fusion.

If there is no underscore or additional period, Fusion uses the standard four digit numbering system. E.g., clip0000.tga, clip0001.tga, clip0002.tga, etc.

If a number in the base name is followed by a "_" (underscore), Fusion includes the number in the base name. If you use the name "clip1_.tif, Fusion saves clip1_0000.tif, clip1_0001.tif, clip1_0002.tif etc.

If there is a numeric suffix, Fusion uses as many digits as specified in the file name until it needs to add a digit. If you use the name "file_8.pic", Fusion saves file_0.pic, file_1.pic, file_2.pic. . . file_10.pic, file_11.pic etc.

If there is a number in the base name followed by the "_" character and a numeric suffix, the same rules apply. If you use the name "clip_14_456.iff", Fusion saves clip_14_000.iff, clip_14_001.iff, clip_14_002.iff, . . . clip_14_999.iff, clip_14_1000.iff etc.

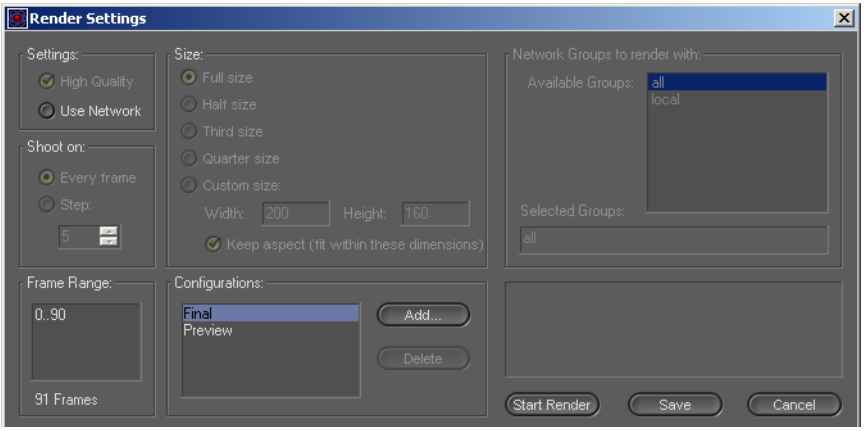
Render Quality

To maintain consistency between clips that are rendered and clips that are captured, the Saver Velocity puts at the end of your flow has the same data rate (set on the Format tab) as that set in the Velocity Render Settings preferences screen. On DFX+'s Format tab, render quality is measured in KB/s, whereas in Velocity it is measured in MB/s. 1 MB is equal to 1024 KB.

To render out alpha channel as well, click on the arrow next to Alpha and check-mark Save Alpha.

Rendering Your DFX+ File

Press Render in the Time Controls (the bottom section of the screen just above the Info bar), to open the Render Settings window. Check the info here and then press Start Render on this screen.



When the Render is complete, Rendering statistics appear on the Status Bar at the bottom of the screen or on a pop-up window.

Deselect and reselect the Saver tool to open the Transport Controls in the bottom right of the screen. Use these controls to view your rendered file.

Note, if you press Start Render in the DF Render screen in Velocity, the Render Settings window doesn't open.

The chosen clip is automatically replaced on the timeline.

Improving Render Quality

Fusion uses sub-pixel positioning to achieve smooth movement in transformations by moving images by less than one pixel's distance. Unfortunately, this can also soften the images and cause shimmer.

To see why shimmer happens, imagine a source image which is 3 pixels wide by 3 pixels high. All the pixels are black except for a white middle pixel. We need to move this image so the white pixel starts at the top left and moves to the bottom right over a duration of five frames.

On frame 2, the white pixel needs to be between the top left and middle pixel positions. To fool our eyes into thinking the white pixel moved part of the way down and right, the combined brightness of the four top left pixels adds up to the brightness of the original one pixel. The shimmer comes from pixels changing from white to gray to white, depending on their position (frames 1 - 2 and 2 -3).

A Sharpen tool may help get rid of the shimmer, or it may enhance it. Fine detail suffers most from softening, so try adding detail like film grain late in the flow. Also, use a color corrector to ensure that the dark areas are dark (black) and the bright areas are bright (white).

Another option is to use source material that is much larger than your delivery medium, (e.g. 2K vs. video output). If your effect takes place in the large image format, the softening will be almost undetectable in the reduction from large to small images at the end of the process.

Integration with the Timeline

Once your Flow is rendered in Fusion, return to Velocity to integrate that clip with the rest of the timeline.

If you have chosen to use the Render Status window, DFX+ and Velocity are in constant communication. When render is complete, the file is replaced automatically with the updated rendered version.

Otherwise, right click on the red virtual clip. Choose **Fusion > Update Flow** from the menu. The FLW file links to the DPS file from the Saver. You can now play back the clip, apply transitions and effects to it, trim it, etc.

Once your Flow is Back in Velocity

You can import flows to a gallery or send them from a timeline to a gallery, just like any other clip. Once a flow is in a gallery or timeline, you can right click on it and select Fusion. There are four options.

Edit Flow - Relaunches the Flow so you can alter it and re-render.

Render Flow - Renders whatever is in the saver.

Update Flow - If you have re-rendered the Flow in Fusion, select this option to open the new DPS file. changed the saver path in Fusion, select this to update the clip on the timeline so it points to the correct output file. If the duration of the saver has been altered, the duration of the clip is updated.

Remove Flow - Once a clip has been sent to Fusion, you can right click on it and choose Remove Flow. This returns you to the original clip with no effects. This only works on clip flows that were created from the Velocity interface.

Place a Flow on the Timeline

Just like any other clip, Flow files can be placed on the timeline. Flows placed on the timeline appear as virtual clips unless the Saver in the Flow has been rendered, in which case the Flow name appears but the DPS file plays back.

If you copy such a rendered flow to a gallery, the DPS file, not the Flow file, is added to the gallery.

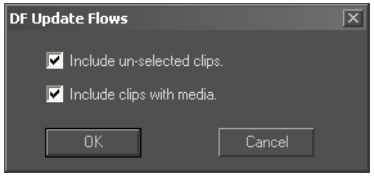
Once a flow is on the timeline, you can right click on it and select Fusion, and the same three options appear as if the Flow was in the gallery.

If you right click on a blank area of the timeline, there are additional options.

Update Multiple Flows - Checks the savers of flows from the Velocity timeline and adjusts them so the clip on the timeline is the clip in the Saver.

Render Multiple Flows - Relaunches all the flows and renders them again.

With either of these two options, This window opens:



If you wish to include all flows on the timeline, including those that are not currently selected, check "Include Un-selected clips."

If you wish to include only clips that have not been rendered before, so there is no clip that follows the link from the Saver, uncheck "Include clips with media."

When you return to Velocity after rendering in DFX+ or Fusion, your video displays should reflect Velocity again. If they do not, select **View > Refresh** from the main menu to update the video output.

Working From Scratch in Fusion

There are also occasions when, rather than exporting from Velocity, you may wish to create a flow from beginning to end in Fusion.

A flow must have at least a Loader/Creator tool and a Saver to create footage for use with Velocity (or be intended to output a DPT file).

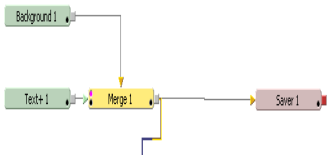
Creating a Credit Roll

A very simple example of creating a file from scratch without working initially from Velocity is making a credit roll for the end of a project.

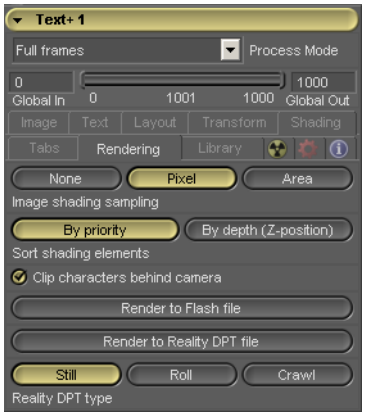
To create a credit roll:

1 First, you will want a background image over which to place your title. Background images come from Loader and Creator tools. The background tool sets the resolution of your final output, so if you are outputting to Velocity, set it to 720 x 486.

2 With the Loader or Creator tool active in the Flow, click on the Text or Text+ tool. Text tool appears in your flow merged over the Loader/Creator tool.



3 Pick a color, font and size that will show up against your background. These tools are found on the Text+ tool's tabs in the bottom right corner of the screen. You can also add other effects to the text before or after merging it with the background.



4 If you want to just output the contents of the Text+ tool, select the rendering tab, choose Still, Roll or Crawl and then press Render to a DPS DPT file. In the window that opens, choose an appropriate project location to save your file and OK, and the file is rendered. Return to Velocity and load the DPT file into a gallery.

When creating a DPT roll, on the Text+ Image tab, set your height to 720 and your width to at least twice your raster height (for example, 486 x 2 is 972, the minimum for NTSC).

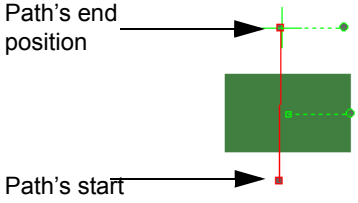
When creating a DPT crawl, on the Text+ Image tab, set your height to a minimum of 720 and a maximum of 512.

5 Otherwise, you can add other effects.

- Copy the text tool, apply slightly different (or madly different) settings to it and then merging them together.
- Follow the Text+ tool with a blur tool and fading it in.
- Alter the Text+ tool's color with a keyed bezier spline.

6 View the merge tool on either the large or small view. Right click in that view and select Merge 1: Path. You might want to zoom out if you've got the merge viewing at 100% so you can see the edges of the screen. Zoom out by pressing the (minus) key on the number pad.

7 Position the start of the path. This may involve dragging all the text off the bottom of the screen if you're creating a credit roll.



8 Set the render duration. This determines how long your credit roll is going to take. One of the good things about Fusion in this regard is you can set it up so it takes just the right amount of time.

9 Set the display marker to the last frame of your title roll. Drag the end position of the Path. If you are creating a title roll, this will involve dragging the text so the bottom of the text will be positioned just above the video box on the viewing area.

10 Preview your work.

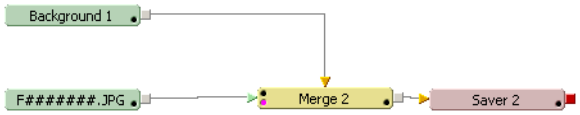
11 Add a Saver to your flow after the text tool. Give it a File name and a save location (You will be able to use it in Velocity efficiently if you use a DPS file type, and you can check Alpha in the Format tab to create a 32-bit clip).

You don't strictly have to render out a rolling title to which you have not applied any effects after the Text+ tool. Instead, render just a DPT file from the Rendering tab.

Panning Across a Still Image

When you use a non-standard sized picture (not 720 x 486 in NTSC or 720 x 576 in PAL) in a Loader, merge it as a foreground over a standard-sized background tool. Oversized pictures in the foreground of the Merge tool

can move over the standard-sized background, and you can zoom in and out and rotate over time. If you want to pan across a still image, you would set up a flow something like this.

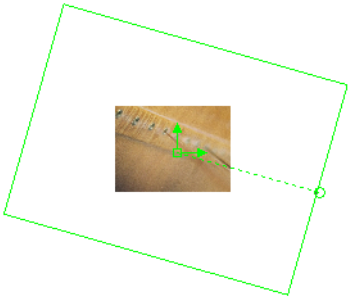


First, to place a Background tool in the flow, click the BG button. Then click the LD button to create a loader. A Merge appears automatically.

Use the Browse button in the Loader to open the still image. If you start with a fairly large picture (larger than 720x486/576), the final render will appear sharper.

Check the Loader's Loop button so that you have media for the entire duration of the clip that you plan to render.

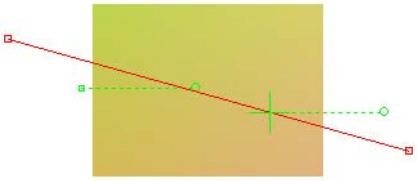
View the Merge on the Large or Small view. You can rotate the image here, and resize it using the Merge tool's Size slider. Right click in the crosshair in the centre of the Large view. **Select Merge 1: Center > Path**.



Place the time marker at the start of your timeline and drag the Path marker to the position where you see the image as you would like it to start.

Place the marker at the end of your timeline and drag the Path marker to the position you would like to view at the end of your rendering. You can place

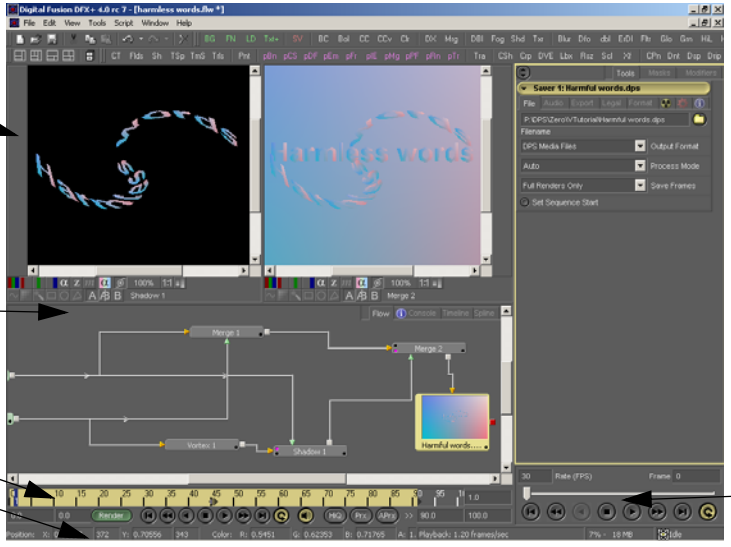
other points along the line as you see fit, and you can make the line curved or straight between points.



Set up your savers, render and collect the clip into a Velocity gallery for use in a project. Or collect the Flow into the gallery, and if you decide to re-edit it later, it will be at hand for launch.

The Fusion Interface

The Fusion screen is made up of several different working areas. Each area of the screen can be resized. Click on a gray separating line between areas and drag it up or down to move it. The buttons in the toolbar can be used to choose between various screen layout presets.

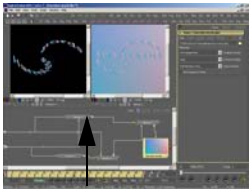


Each tool, mask, path and modifier in your flow has settings in the Controls area. To see a tool's settings, select it in the flow. No matter what the mode of the window is set to, the selected tool will appear under the Tools tab. If there is a mask associated with that tool, it appears in the Masks tab. Paths and other functions applied to that tool appear under the Modifiers tab.

Right click a area of the interface to open a context menu. The flow, image views, tools, masks and path controls all have Context Menus. There are also keyboard Hotkeys for most of the Context Menu options. Options allow you to view, preview and edit tools.

Fusion allows you to place tools in complicated, interconnected sequences. The Flow view gives you an overview of the process. Rearrange the tools and connecting pipes to combine effects in any order and view the output of any tool at any stage, even while editing a tool earlier in the flow.

Working in the Flow View



The Flow tab is under the views.

The Flow Layout area is where you place sequences of tools to create effects. When you create a Fusion effect from Velocity, it is here that you will see a flow-chart like representation of what you are creating.

The flow is free-floating and has collapsible and expandable tool grouping (twisties), multiple selection for cut, copy and paste, snap to grid for easy organizational layout, hierarchical tree view and control, and a cache system to optimize flow components for better interactive performance. You can collapse flow segments and cache for later.

A tool in a flow may have one or more inputs (loaders and creator tools don't have any) and one output. The inputs appear as arrowheads pointing into the tool. The green primary input is for the foreground image, while the brass secondary input is for the background. The output appears as a block. When the output of the tool is not connected, it is colored red. When a tool's output is connected its color changes to gray.

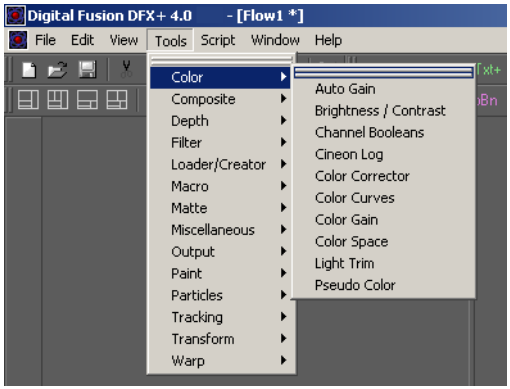
To add a tool to a flow:

1 Click with the mouse on a tool in the Flow. Click the button for the tool you would like to add from the toolbar. The new tool is added directly following the selected tool. If there were other tools following that tool, the new tool precedes them.

OR:

2 Select a tool in the Flow. With the mouse, choose Tools from the main menu. The tool groups list opens. Choose the group you wish to select from. The group's tool list opens. Choose the tool you would like to add. Select the tool you would

like to add from the menu at the top of the screen. The new tool is added between the highlit tool and any other tools that follow it in the Flow.

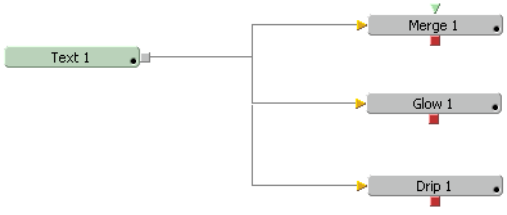


OR:

3 View a tool on the left (Hotkey 1) or right (Hotkey 2) view. Or drag the tool to the view you would like to see it displayed in. Or right click on the tool and choose view on, and then the view from the submenu. Now, click the toolbar button for the tool to add and drag this tool into the view. The tool is added to the flow, and you can see its effect on the view.

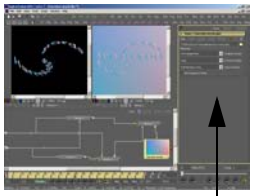
OR:

4 With nothing in the flow selected, choose the tool you wish to add to the flow. It is added as an unconnected tool. Now, drag the out point of the tool you wish to flow into this tool to the input of the tool, and/or drag the output of whatever tool you wish to follow this tool. This method works best when you are adding things like Loaders and Creator tools, which cannot accept an input. You can drag outputs from one tool to as many tool inputs as necessary.



Note: If you attempt to add a Loader or creator tool into the middle of a flow, it will be connected with the previously selected tool via a merge.

Adjusting Tool Settings



Custom tool settings are always in the right side of the screen.

Each tool has controls for each of the parameters or functions that potentially alter the image passed through it. These are contained in a Control Header for each tool in the bottom right quadrant of the screen. Click on the arrow in the top left corner of the Control Header to open it.

Right click on a tool's Control header to view various options. Under Settings, the Load and Save As... options allow you to create a library of presaved effects.

To keep files associated with a particular project together, save your Fusion tool settings files within the Default folders of your Velocity project management scheme. Favorite settings files that are used in a wide range of projects can be stored in the Default System folder.

Animating a Tool

If the controls are not open, click on the arrow to open them.

Each control on most tools can be animated individually.

To animate any tool parameter, right click on the slider, drop-down menu, screw control, etc. and select bezier spline, or Animate, or Set Key Creating Spline. Now you can move the Time Control Slider and adjust that parameter, move the slider and adjust it again, and you can see your effect alter and update in the views.

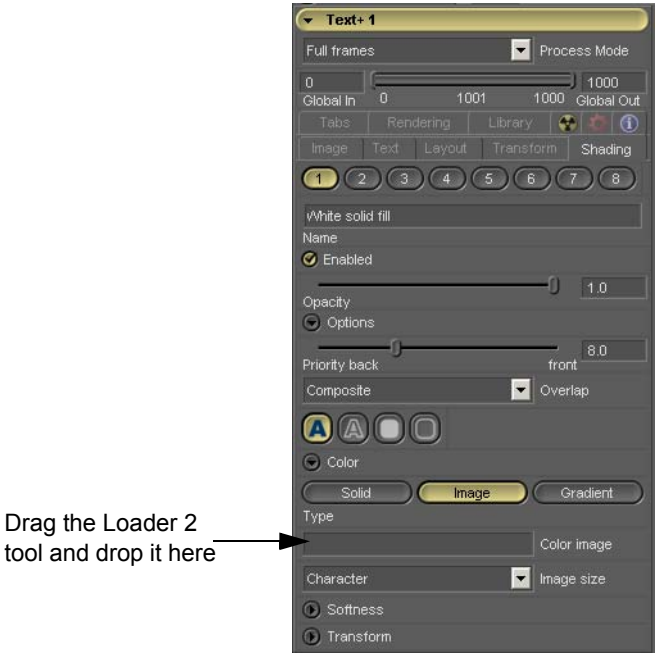
Drag and Drop Tools

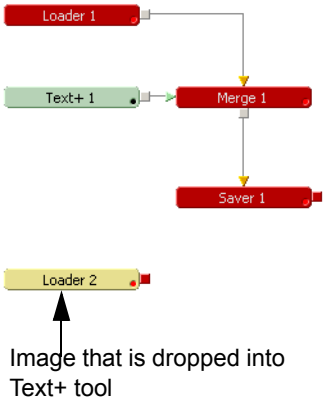
There are occasionally tools in Fusion that accept an input without that input being connected to it in the Flow. An example of this can be found on the Text+ tool.

Choose the Shading tab. Press the Color button. In the Type drop-down menu, choose Image.

The interface changes slightly to make room for a box labeled Color Image.

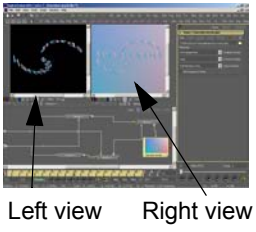
If you wish your text to be filled with video, add an independent (unconnected) Loader to the Flow. Or, to color that text with a gradient, create a Background tool Drag that tool to the Color Image box.





Views

Any point of the Flow process can be viewed independently of what is being currently edited or controlled. You can display different parts of the Flow process on an unlimited number of view areas if you wish.

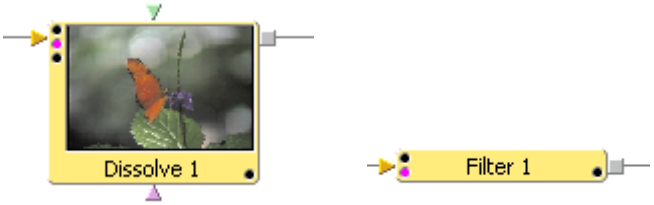


You can view a Merge tool and edit a Chroma Key tool on the Right View. At the same time you can edit a motion path, for overlaying an image further down the Flow, on the Left View, and display the original image on a floating view (accessed by selecting **Window > New View** from the main menu). View the results of the entire Flow on a video monitor attached to a video output on your Velocity. All four views are continuously updated.

Tool View buttons appear on the left side of tools in the Flow when pointed to or when they are being viewed. The top one represents the Left view, the second one represents the Right view and so on. A red button indicates that a tool is being viewed on the pertinent view, while a black button indicates that it isn't.

To view the output image of any tool in the flow:

- Right click on the desired tool and select View On and choose any of the views from the context menu.



This tool is being displayed in the right view.

This tool is being displayed in the right view.

- Drag a tool from the flow or the control area into a view.
- Click on the tiny view buttons at the left edge of a tool in the flow.
- With a tool selected in the Flow, use the numeric keyboard (1 = Left, 2 = Right, 3 = Altitude or Quattrus etc.) Hotkeys.

The Left, Right and Floating views each have A and B options. This allows you to direct two different tools to the same view and toggle between them by double clicking the A or B button, or glimpse the non-dominant view by holding the left mouse button down over the A or B button.

To send a tool to the B of a View, first make B the active view by double clicking on it. Now, it will appear when you click on the tool, and tools can be dragged to it, etc.

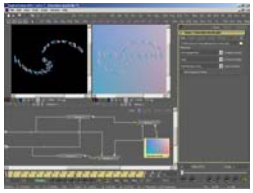
The Left, Right and floating views have context menus. Right click to call up a list of options to zoom the image in and out, see different color (RGB), alpha and mask channels independently and overlay safe title and monitor guides. The toolbars at the bottoms of the views provide the same options.

Pixel Aspect Ratio

Video does not have a square pixel aspect, but your computer monitor does. Fusion performs a slight aspect correction to ensure that the image you see in your Left and Right views matches what you see in the monitor output from your breakout box. Otherwise your circles would appear to be ovals. This can cause the appearance of jagged edges where none exist.

Time Control

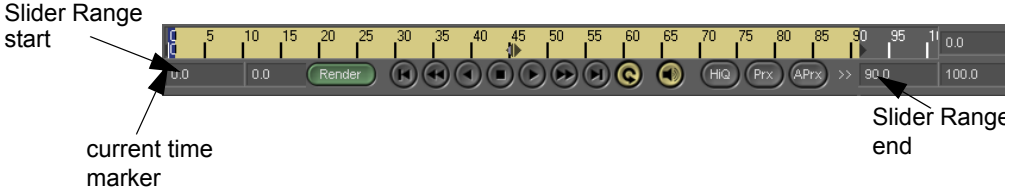
The left end of the Time Control slider represents the Global Start of your project. The right end represents the Global End of your project. If you



The Time control is at the bottom of the screen.

change the numbers in the Global Start/End boxes, the position of the current frame in your project is updated to reflect its position relative to the rest of the project.

By default, Fusion displays in fields on the Time Control window. A whole number indicates the first field of the frame and a half number is the frame's second field. If you would prefer to work in Time code, Select **View > Show Time codes** from the main menu at the top of the screen.



Current Frame - Drag the gray Current Frame marker on the Flow Time Range to change this value, or move the Current Time Indicator on the Spline or Timeline View.

Render Start and End - The info in these fields determines the render range. Render Start and End display the starting and ending frames in the range of frames to render. To set a render range, type values in the input boxes. OR press the Enter Current Frame buttons (the arrow to the right of render Start and the arrow to the left of Render End). OR right click on a Loader/Creator tool and select Set Render Range from the context menu. OR drag the desired tool on top of the Time Control Slider. OR drag the start/end markers or the center marker on the Time Control.

The Render Range is displayed on the Time Control in yellow.

Identical values in the Render Start and Render End input boxes result in a single frame being rendered.

Render - Initiates or aborts the render sequence. If you press it during a render, you are warned that the specified render range has not been completed and statistics about the completed portion of the render are displayed.

Activity Light - A green LED next to the Render button indicates that a tool in the flow is currently active. When the light goes out, all computations are complete and the image you are viewing is up to date. Fusion tools each have a tiny LED that may be green or yellow. Green refers to general processing. Yellow means that the tool's mask is being processed.

Preview

Previews offer a quick playback of a project in progress. You may render previews to either an AVI file or to the real time flipbook player at any resolution. Previews can be rendered using proxy scaling, which creates proximity images based on the ratio of the frame format size selected and the preview size defined.

To create a preview, you do not have to add a Saver to your effect. You can create a preview on any tool. In fact, if you want to see the effect of a tool earlier in the Flow, it's faster to preview that tool, as later tools do not need to be processed.

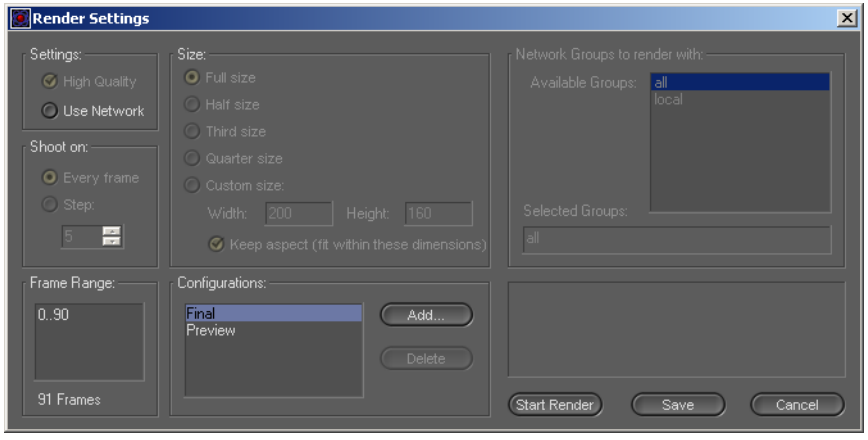
To create a preview:

1 Check the **File > Preferences** from the main menu and click Frame Format to check the color depth. Click Preview to choose AVI or Flipbook.

2 Define a render range by entering the desired values in the Render Start and Render End value boxes, (or simply drag the tool you wish to preview to the Time Slider) at the bottom of the interface.

3 Right-click on a tool and select Create Preview On to preview that tool. If you have already previewed to the desired view with this tool, you must uncheck it and then reselect Create Preview On and select the appropriate view.

The Render Settings window opens.



Make sure Preview is selected under Configurations, unless you want to see your render on video monitors connected to your Velocity system.

If you want to see a fast preview to get a general idea of your effect, turn off high quality and set the image size smaller. You can also reduce the frame rate. Or, for a high quality preview, select High Quality under Settings and

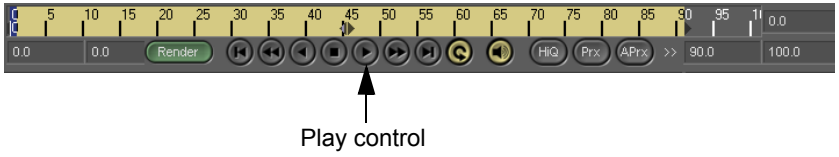
render every frame. To see fine details, create your render at full size. This will make the render take longer.

4 Press the Start Render button. A quick render begins. When the render is complete, use the VTR-style buttons in the bottom right corner of the screen to view your preview.

Since Fusion always anti-aliases the final render, check the High Quality check box if you want to see a representative preview. This ensures that your interactive render is done EXACTLY as it will be when you perform the final render. When this check box is NOT checked, DFX+ does very little anti-aliasing, no sub-pixel motion, and optimizes to improve speed and interactivity.

Dynamic Preview

On the Time Controls next to the Render button is a play button. You can push this button to play the output of the tools that are visible on your views.



Take care when animating parameters with this type of playback going, because the results can be surprising.

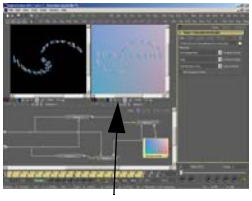
Masks and Paths

Paths and Masks share interchangeable information. A path's information can generate a polygon mask and vice versa. Additionally, just like numbers and points, they can be animated and offset. To access these features, right click on the PolyLine control at the bottom of the mask or path controls to display a context menu of options.

Limiting an Effect's Affect

One of the key things about compositing is limiting an effect so that it looks "realistic". Depending on the tool that you are using, you may be able to limit the effect to a single color channel or just a single color or alpha channel, or by applying effects to a tool before it is merged with other tools. Another way to limit a tool's effect is by using a mask.

Effect Masking



Mask and path controls are located at the bottom of each view.

Effect Masks allow you to limit an effect to only specific regions of an image. On most masks, this happens as a secondary stage: you apply an effect to the entire image and then selectively mask certain areas of the effect. The DVE and Hilight tools can also be pre-masked. This allows you to mask the image before the effect is applied, limiting the input to the tool, rather than limiting the effect of the tool. Pre-masking allows you to do such effects as glints or cutting an image from a page.

You can use Effect Masking to create garbage mattes or do rotoscoping in conjunction with the Matte Control tool. Effect masking is not active on Savers, Resize or Crop, which manipulate full raster images and dimensions.

To create an Effect Mask, view the tool you wish to mask on the Left or Right view. Right click anywhere on the image, then select Effect Mask from the context menu. There are six types of mask to choose from: ellipse, rectangle, triangle, polygon, bitmap, wand and mask paint.

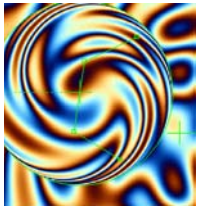
When a tool is active, effect mask Control Headers appear automatically in the effect mask tab of the Tools area. To remove an effect mask, right-click its Control Header and select Delete from the Context menu.

The Mask Channel is a black and white image. View it by itself by pressing the **Display Mask** button.

Use the Level Slider to blend an effect with the original image. This changes the amount the effect is blended with the original image.

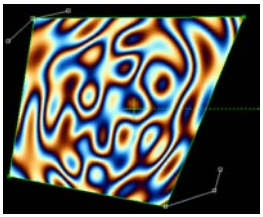
Motion Paths

Motion Paths allow you to move layers and effects over time. Points on a spline define the shape. You can use spline handles on the points or add new points to reshape the path, and you can control the timing of the motion over the path in the Spline Editor, using both independently splined time control points and key frame (locked) points.

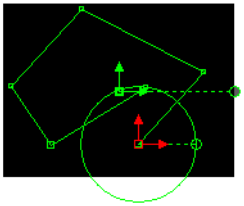


A Drip can have its Center follow a Path.

A Corner Positioner can have a path added to each of its corners.



Add a Motion Path



To add a motion path to any tool or mask that displays an on-screen crosshair or point control for movement, right click on it and select the name of the tool followed by Center (i.e. Vortex 1: Center).

From the submenu that opens, select Path. On the view, the added motion path is indicated by a tiny (red by default) square around the center point. Right click on the center point, choose Path1. This opens the Path's options, which include adding or deleting key points and applying or removing smoothing. Select Click Append. Click multiple times in the window to make a path.

Hold down the CTRL key, left-click and drag a bounding box to select multiple points.

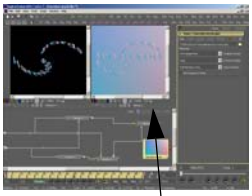
To delete the Path, right click on its control header in the Path and Mask Controls section of the screen and select Delete.

When making a motion path, make sure you are applying the path to the object you want to move, not an object you want to remain stationary. Hover the mouse over a point on a view to see a pop-up that tells you what the object is.

Every DFX+ Path has a defined center represented by two arrows. This allows paths to be connected to other controls and behave in a hierarchical manner. You might use this, for example, on the path of a bee in flight. It may fly a constant figure eight pattern while buzzing around a flower bed. This would require two paths. The bee would be connected to a first path, which would be a figure eight. This path's center would be connected to another path defining the flight around the flower bed.

The Spline Editor

The Spline Editor is where you view and adjust animation. Here you can view the key frames on effects and see their numeric relationships. You can add and remove key-points, change the duration of a segment and change the shape of spline curves. A Bezier spline has control handles at every



The spline editor is the third tab in the Edit area.

point, allowing you to shape the curve. Changes to one segment in the spline will not effect another.

Two types of splines appear in the Spline Editor: splines for motion paths and splines for animated tool parameters.

Displacement Splines for Motion Paths

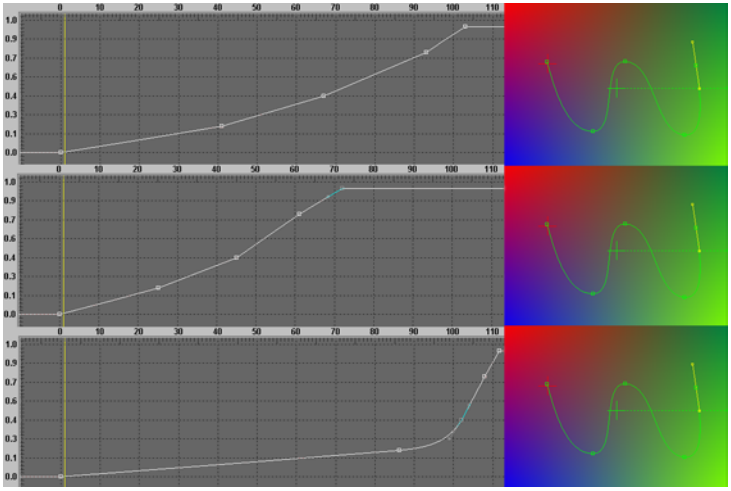
Every motion path has a displacement spline which represents its rate of motion. The position of a control on the path is directly related to the current vertical height of its associated displacement spline curve. You can slow down, speed up or reverse the motion by adjusting the displacement spline using points and control vertices. The two curves are otherwise independent and can be edited individually.

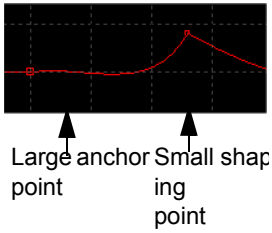
There are two different kinds of points on a motion path: Anchoring points and shaping points.

1 - Gradually travel along w-shaped path.

2 - Move quickly along the path, then hold for a long time at the end.

3 - Move slowly at the start and then suddenly complete the path.

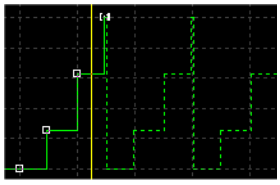




Large Anchor points lock points on the motion path and time spline together, so they work similarly to traditional key frames. The start and end of a motion path may be locked anchor points. A locked point specifies where action will arrive at a particular time and position on the screen. When moving locked points in the Spline Editor, only the time changes. The amount of displacement along the path remains the same. That point can also be moved to another position on the motion path without affecting its time position on the Displacement Spline.

Small Shaping points only control the path and do not specify distinct locations at specific times. A point or group of points can be modified from Shaping points to an Anchor points by being Locked. To Lock or unlock a point, select the point, right click on it, and choose Path > Lock Points.

Applying Effects to a Group of Points



Step in and loop

Group select points by dragging around them and there are several functions you can apply.

Step In and Step Out allow you to make an effect jump from one point to the next -- useful for masks you want to jerk from position to position, for example. Select all the points you wish to step between and apply the tool.

And to create a repeated action -- for example, the ongoing figure eight of a bee exploring a garden, use the loop function do you don't have to keep repeating the figure eight manually.

Animated tool parameters

Animating within the Fusion context means changing the value or position of a parameter over the duration of a render. Your parameter will not be animated unless you change the time slider and adjust the setting of that parameter.

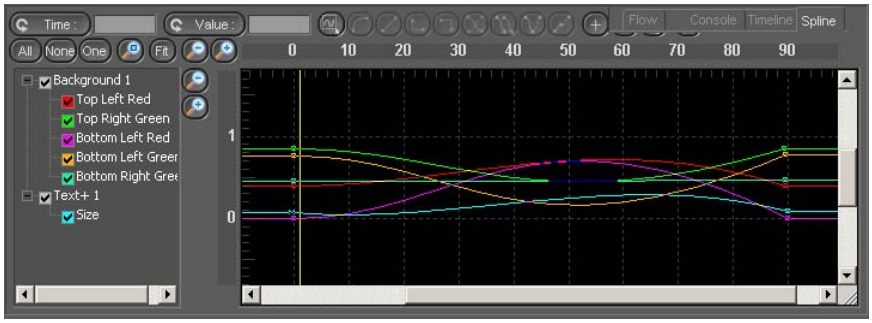
Most parameters of most tools can be animated. Sliders, range controls, check boxes, drop-down lists and input boxes can all have splines added to them. To find out if a tool parameter can be animated, right click on it. Depending on the tool, there will be an option called animate, Set Key Creating Bezier Spline, or just Bezier Spline. Choose this option. If there is a number box for that parameter, it turns blue to indicate that it is animated.

Adding a motion path to a mask or the center or control point or handle of a tool also allows you to animate it.

You cannot animate clip start and end times, the Loader range control and the Saver's field mode.

Only the tool parameter that you right clicked on is animated. All other sliders and tool parameters in that tool and in every other tool are not animated simultaneously. If you wish to animate those other function controls, you must animate them individually as well.

All animated tools appear in the Spline Editor. View and edit tools by selecting them from the list at the left of the Spline Editor. The colored checkbox beside each entry in the list corresponds to the color of the spline curve for that animated effect. The vertical yellow line represents the Current Frame and can be dragged left or right to move backward or forward in time.



A spline curve in the Spline Editor defines the animated control's value at every frame in the composition. The spline curve follows the adjustments made to the control. Until you change the Current time and alter the control's setting, the tool's spline is a flat line. Each Bezier Spline's key-point has a set of handles that can be used to adjust the spline.

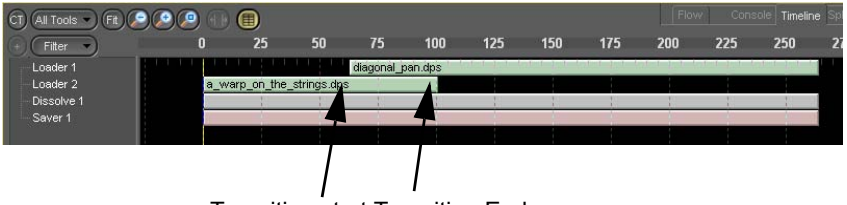
Key frames are frames with set values chosen to define positional movement or animated controls' values. Once set, DFX+ calculates frames in between the key frames and thus creates fluid motion for the entire sequence.

Add a point on a spline by either clicking on the spline and dragging to position the key point wherever you want. Or right click and choose Set Key. This places a key point at the temporal position of the mouse, but without altering the curve of the spline.

When you save Settings of a Tool, (Tool header, Settings > Save As...) animated settings are saved as part of the Settings file. You can copy and paste Settings from one tool to another. However, when you Load the Settings file into another Tool, only parameters that are relevant to the new tool will be used. All other Settings will be ignored.

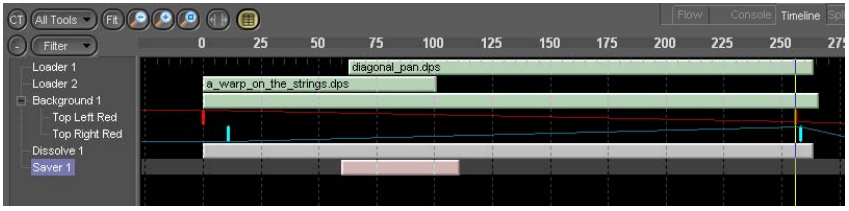
Editing Clips in the Timeline Layout

Every tool in a Flow has an associated bar that appears in the Timeline Layout. Tools are displayed in a linear, stacked format so you can see where things begin and end in relation to each other. Time moves from left to right and the flow tools are listed vertically.

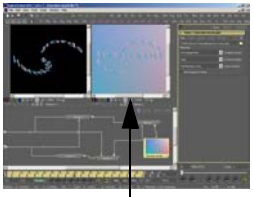


Transition start Transition End

Each tool with animated parameters has a button next to its title. Press the button to expand or contract all the animation splines associated with that effect. The colors of splines and key frames correspond to the splines in the Spline Editor. Align individual or multiple key frames from different animated parameters by selecting them and dragging them left or right.



Drag the entire bar to move a clip's position (click on the center of the bar), or drag the start of end of a Timeline bar to extend or shorten effects. When you make a change, it is reflected interactively on the views and tool controls. Changes to individual animation parameters are reflected in the Spline Editor.



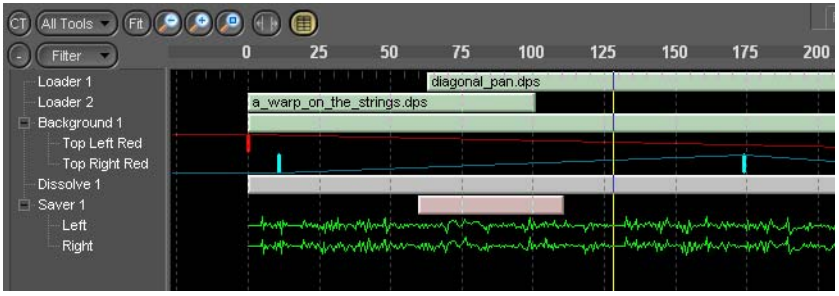
The timeline layout is one of the tabbed windows in the flow section of the screen.

The Timeline view allows you to use guides to align key frames. Create guides by right clicking near the top of the Timeline area. Select Create Guide. The guide appears as a vertical line at the mouse's position.

To change a bar's Global In and Out values (its start and end points, irrespective of the render start and end of the project), drag the center of the bar in. Dragging it right will cause the clip to start and end later. Dragging it left will cause it to start and end earlier. Dragging the edge of a bar outward extends the first or last frame of that clip. Dragging the edge of a bar inward trims its In or Out point, shortening the clip.

Audio (in the Timeline Layout)

Though Fusion does not output files with audio, the Saver does have an audio tab. An audio WAV or DVA/LTA file specified on this screen can be used as a scratch track, which lets you synchronize visual effects to audio cues. Audio is not imported when you load a sync clip (such as a DVA/LTA file).



When you load a mono audio scratch track, one track loads, labeled "mono". If you load a stereo clip, a pair of wave graphs appear in the Timeline Editor, labeled "left" and "right". To make the line size larger to enhance the peaks and valleys, right click on the desired line and select Line Size from the context menu.

Scrub the audio by dragging the pointer over the desired track if you have the Altitude or Quattrus System WAV driver installed. To create global offsets for the audio tracks, move the screw control in the Audio tab the desired amount. Scrubbing audio allows you to time your effects. Audio will not play back during preview. Audio is not rendered as part of your final output clip.

When you use an audio file in DFX+, it is completely loaded into RAM. So, to avoid slowing your system unnecessarily, don't use large audio files. If you have a large file, use an application such as the Windows Sound Recorder to convert the file to a smaller size.

You cannot render audio files in DF. When you output via a Saver, you cannot output audio. If a DPS/LTV file is synced to a DVA/LTA file when it is sent to Fusion, that link is maintained by the replacement clip that is rendered by Fusion.

Chapter 23
Output to File

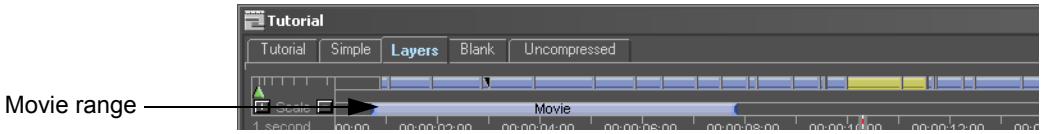
At various times in the editing process, you may need to export video from Velocity to some other format. This can be for production stills, client approvals, or final broadcast. You may also want to preserve a file or archive copy of your project. Your options are:

- Make an output file. Output formats include MPEG, RealMedia, AVI, QuickTime and Windows Media™ (WMV/WMA), as well as the DPS/LTV format.
- Make an EDL (Edit Decision List).
- Before you begin output, you should ensure that all segments of your movie are ready.
- Render any segments that require rendering. To ensure smooth playback, you may also want to render segments that use multiple streams of video or layers of titles, whether they require rendering or not.
- If you have used low resolution clips, you may want to batch recapture them at high resolution. See Chapter 8 for a complete explanation of the batch recapture process.
- If you have used virtual clips, you may want to create, recapture or replace them with appropriate media.
- If you have used DPS/LTV clips across a network, use the Localize feature to bring the required media to your local system. This helps ensure that video output video is as smooth and high quality as possible.

Modifying a Movie's Range

The output movie range is a light blue bar at the top of the timeline. When you output to a file, all video, audio and special effects under this range are included. A movie range can be used to designate clips to render (see Chap-

ter 21). When you use the file output options, the movie range determines the start and end of the file.



To adjust the In time, move the cursor to the left side of the Movie Range and drag the In triangle. A hair line is displayed for alignment.

To adjust the Movie Out time, move the cursor to the right side of the Movie Range and drag the Out triangle. A hair line is displayed for alignment.

To move the movie range bar while keeping the duration the same, move the cursor to the Movie Range. Click and drag the area between the In and the Out triangle. Two hair lines are displayed for alignment.

You can also double click anywhere on the movie range bar to open a window that allows you to numerically enter values.

Movie Start, Movie End and Duration - Set two of these three fields to automatically define the third setting and define at what hour, minute, second, and frame the file starts and ends.

All Clips - Sets the movie bar to encompass all the clips in your timeline.

In View - Places the movie bar over almost the entire range of the screen, no matter what the view scale is.

All Selected clips - If only one clip is selected, the movie range equals the in and out timeline timecode of that clip. If you have selected a multiple clips while holding down the Shift key, the movie range starts with the In time of the first clip and ends with the Out time of the last clip. If you select individual clips while holding down the CTRL key, all unselected clips that fall between the In of the first clip and the Out of the last clip are included in the movie range.

Markers - Sets the movie range to the same duration as the In/Out markers.

Output a Video File

After editing, you may process the clips and produce a single movie output file using the Movie Output. You may output your final product as a DVA file, an AVI file, a QuickTime MOV file, a Real Media RM file, Windows

Media, a MPEG movie, a single image frame, an image sequence or a WAV file.

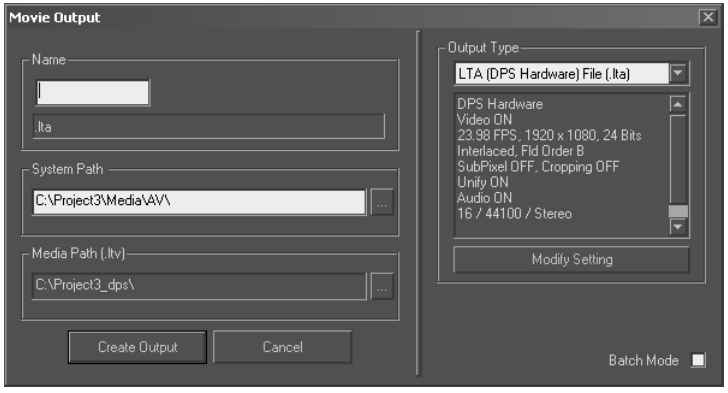
You can also select one or more clips in the gallery, right click and select the Movie Output menu item to render these clips using your selected movie type.

Movie Output

Movie Output button

1 Place the Movie bar over the area you wish to output.

2 Select **Output > Movie Output** and select the type of movie you would like to output from the menu. Or, press the Hotkey SHIFT D or the Movie Output button (shown at left). A window opens:



3 Type a file name for your file (the name of the timeline is used as the default).

4 Use the Path box and the browser to select a directory for your file.

5 In the Output Type section of the screen, use the drop-down box to change the file type to render if it is different from the type you want to output.

6 Click the Modify Settings button to adjust output parameters. The Settings screen for each output file type allows you to adjust the output quality, as well as loading and saving your settings. When you are done adjusting your settings, press Okay or Cancel to return to the Movie Output screen.

Make sure the Batch Mode check box is not selected.

7 Press Create Output.

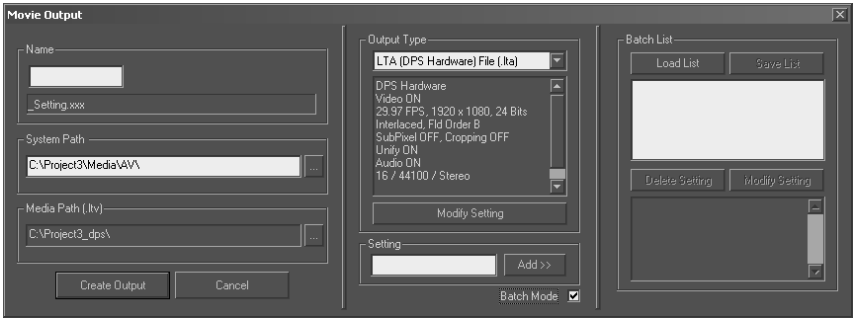
8 Your movie is rendered.

Batch Output

The Batch Output function allows you to output a single timeline range to multiple output formats, each using its own settings.

To create a batch output:

1 With a movie range selected and the Movie Output window open, check the Batch mode box. The Movie Output window opens an extra portion to the right and a Settings box at the bottom centre and an “Add>>” button appear above the Batch Mode box.



2 Type Name for your files. All the files you output will use the same root name.

3 Use the browser at the end of the System Path box to select a directory location where this render session’s files will all be saved.

4 Select the first type you wish to output using the Output Type drop-down menu at the center of the window.

5 Click the Modify Settings button and adjust the output parameters. The Settings window for each output file type allows you to adjust the output quality, as well as loading and saving your settings. When you are done adjusting your settings, press Okay to return to the Movie Output screen.

6 Type a name in the Settings field. This may be a client, for whom you output the same types of files regularly. Or it may be a connection speed or image size, for example 58K Modem or 160x120.

7 Click the Add>> button. In the batch list at the right of the screen, a Settings file is created. This file has the name of your settings file and the extension of the file type it will create.

Create as many settings files as you need for this particular job by repeating steps four, five and six. If you have various settings of the same file type you must give them different settings names.

8 Use the Delete Setting button to remove a setting file from the list. Use the Modify Setting button to reopen the Settings window. When the batch list is com-

plete, you can use the Save List button to save it for when you work with that client or that output type in the future.

9 Press the Create Output button.

Your output movies are saved in the directory location you have specified. Each output file has the same root name, followed by an underscore and the settings file and file extension that identify it. For example:

Robyn_58K Modem.rm
Robyn_CableModem.rm
Robyn_160x120.mov

You can load a previously created batch list by clicking the Load List button, or to save your batch list for future output, press Save List. The batch list file format is OSTBAT.

Hardware Accelerate Options

Hardware Acceleration Options are available if you are outputting an AVI, MPEG, QuickTime, Real Media or Windows Media Video file. To get to these options, click on the Modify Setting button in the Movie Output window. On top of the file settings window that appears, in the Hardware Acceleration section, make sure the Enable option is checked and click on the Options button.

Video - Adjusts the contrast of the images across a range from 0 to 127.

Black - Adjusts the brightness of the image from 0 - 255. Near the bottom it is almost completely black.

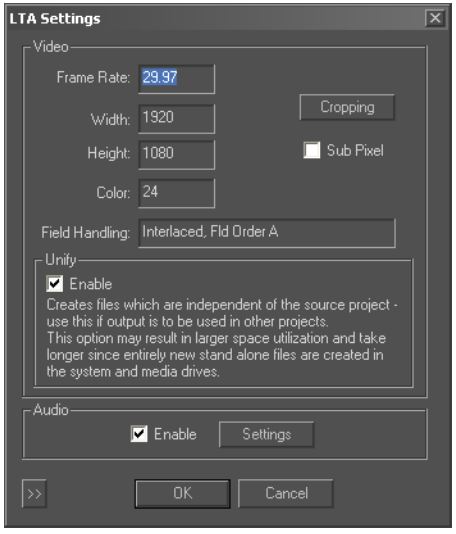
Chroma - Increases or decreases the color saturation level, which can be adjusted from 0 - 127.

Cropping - The X and Y sliders determine the number of pixels to remove. The remainder of your image fills the scaled region of the final exported file.

Draft mode - When checked, your file will come out exactly the same size and image quality as if you did not check draft mode, assuming no errors occur when the export is executed. If you do not check Draft mode, and errors are detected during processing, they will be corrected before the render is complete, so rendering your file may take longer.

DVA/LTA Movie Settings

A DVA/LTA movie is a good way to archive your project, or to render it down to a single file for importing into a larger project.



Frame rate, Height, Width and Color (bits) - These are pre-set for your hardware and the settings you have made for your timeline, depending on whether you are outputting PAL or NTSC video. You cannot change the settings in this section of the screen. It is here for informational purposes only.

Field Handling - If you are using Quattrus, for normal output to NTSC, this should be set to Field Order B. For PAL, the setting is normally Field Order A. you may wish to not have interlaced fields at all, for example, if you are outputting frames for use in an animation package. If you do not wish interlaced fields, change this setting to Frame. If you are using HD video clips with Altitude, this setting is normally Field Order A.

Sub Pixel - Renders certain types of images much more smoothly (circles, for example, but not vertical lines). Turning Sub-pixel rendering on increases render times by a factor of about four.

Unify - If you turn on this function, your DVA/LTA file will have a single associated DPS/LTV file. Essentially, the Unify function copies frames from existing DPS/LTV video files into a single new file on your P drive. Velocity copies the frames from the existing DPS/LTV files in the proper proportion to recreate speed changes and effects. If you choose to Make a DVA/LTA file and do not Unify, the DVA/LTA will refer to several DPS/LTV files.

Cropping - These two sliders allow you to remove pixels from the X axis of the image (left and right sides of the screen) or the Y axis (top and bottom). The image is stretched to fit the screen. This is a rendered effect.

Enable Audio - check here to include audio in your DVA/LTV file. The Settings window next to the Enable Audio button allows you to choose Sample Size, Sample Rate and audio channels.

The movie file that is created will comprise all the clips and effects that are under the blue Movie Range bar at the top of the timeline. The final DVA/LTA file will contain the audio mixed down to a single stereo pair and a pointer to the DPS/LTV file (or DPS/LTV files if you did not select Unify). When your final DVA/LTA file is being created, sections of the timeline which use multiple streams of video playback or DVE channels will be rendered to single-stream DPS/LTV files. The final DVA/LTA file will point to the rendered DPS/LTV files. That way, the final DVA/LTA file will point to a DPS/LTV file that only uses a single stream for video output.

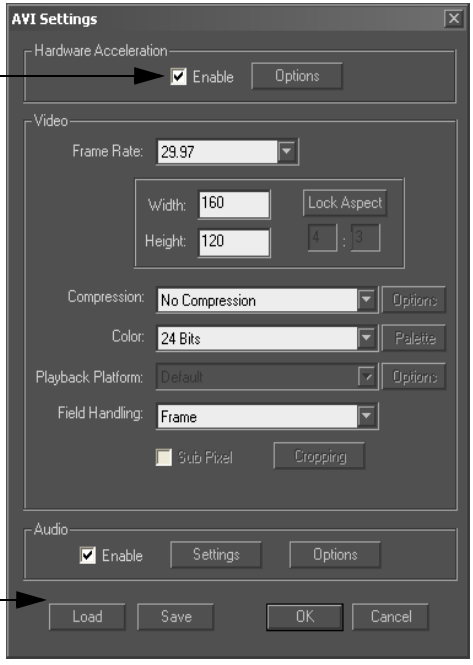
If you do not use Unify, the DPS/LTV clips that have had a speed change applied will still need to have the speed change applied on the timeline. I.e., the DPS/LTV clip will still play at its original speed. To create a file that retains speed changes, you must unify your clip into a single DPS/LTV file.

AVI Settings

AVI files are video/audio files commonly used on PCs.

More settings (such as frame rate and playback and sub-pixel rendering) become available if you disable Hardware Acceleration. However, all rendering will be done in software, which is considerably slower.

The Load and Save buttons allow you to create and reopen AVI settings files which end with the .OSTAVI file extension.



Hardware Acceleration - When enabled, the Altitude or Quattrus hardware is used to accelerate scaling and image color processing. Press the settings button to adjust cropping and image processing.

Width/Height - Set the image size. If you wish to maintain an aspect ratio, click the Lock Aspect button. The H and W fields below the button become enabled, allowing you to enter the aspect ratio you would like. Common aspect ratios are 4:3 and 16:9.

Aspect - Computer screens use square pixels, whereas video does not. When outputting for display on a computer, use a perfect 4:3 aspect ratio for video. For example, a DPS file at 720 x 486 (NTSC) should be scaled to 720 x 540. This way circles that you created initially will still look like circles on the video monitor.

Compression - Choose a Codec from the drop-down menu. Some AVI codecs, such as Indeo and Microsoft Video 1, install as part of your operating system. You may have installed others also. If you do use a codec other than the default, No Compression, check that codec's documentation for Options and configuration settings.

Color -Some codecs will have more color options than others. 24 bits will provide the best quality, but may take longer to render and may not be available with all codecs.

Playback Platform - If you leave the compression at the default of No Compression, you have no Playback Platform options. Other codecs may allow you to change the bitrate at which the file plays back.

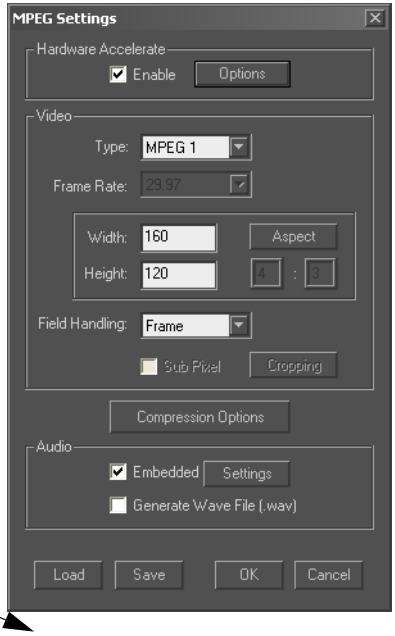
Field Handling - Choose from Frame, Field 1, Field 2, or Interlaced Field order A or B. Choose a setting that matches whatever you will be playing the AVI back on.

Reverse Field Order - PAL DV - This option should always be checked of you are using PAL DV due to the necessary field reverse order.

Audio - Check Enable if you wish sounds to be present and rendered as part of the AVI. Press the Settings button and select the audio depth that is used by your project (44 or 48 kHz, Mono or Stereo).The Options button allows you to set an Interleave rate (how many frames of video are stored per unit of audio).

MPEG Settings

Various format types are created using the MainConcept MPEG encoder.



The Load and Save buttons allow you to create and reopen MPEG profiles which have an extension of OSTMPEG.

Hardware Acceleration - When enabled, the Altitude or Quattrus hardware is used to accelerate scaling and image color processing. Press the settings button to adjust cropping and image processing.

In addition to those settings, the Hardware Acceleration options for MPEG include YUV mode, which gives better results for full-frame (720x486/576) MPEG 2 output.

Type - The video type that you have chosen through the MainConcept compression options will be shown here.

Note: Refer to Appendix G for more information on MainConcept MPEG Options.

Frame Rate - Displays the current chosen data rate which is usually 29.97 (NTSC) or 25 (PAL).

Field Handling - Choose from Frame, Field 1 or Field 2. Choose a setting that matches whatever you will be playing the file back on.

Audio - check Embedded if you wish sounds to be rendered as part of the file. Press the Settings button and select the audio depth that is used by your project (44 or 48 kHz, Mono or Stereo).

Note: When the Embedded checkbox is enabled, a Program Stream will be created. If the Embedded checkbox is disabled, an Elementary Stream will be created. Not all DVD encoding software handle Program Streams, so if you are having difficulties, please disable the Embedded checkbox and use the Generate Wave File option (described below).

Generate Wave File (.wav) - Check this box if you will be creating a separate WAV audio file as well (required for some types of DVD authoring).

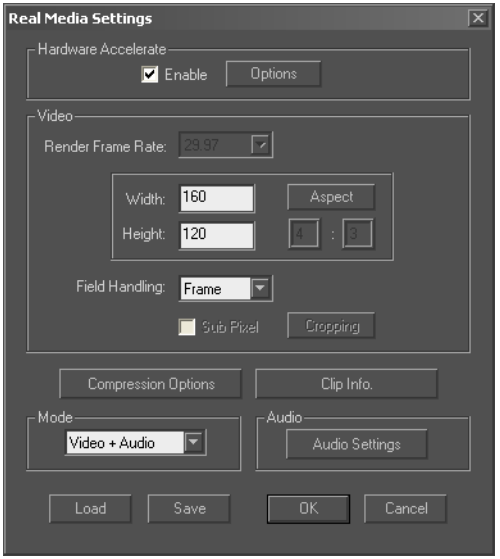
Compression Options

If you click on the Compression Options button on the MPEG Settings window, it will direct you to the MainConcept MPEG Encoder options. For more information on these options, please refer to Appendix G.

Real Media File (RM) Settings

Real Media files are used in Internet Streaming. SureStream (for multiple bitrate handling from a single stream) is available when you use a RealServer.

Real Media files are Cross platform (PC & MAC). RealVideo and RealAudio RM files are created on Velocity using the RealSystem codec.



Hardware Acceleration - When enabled, the Altitude or Quattrus hardware is used to accelerate scaling and image color processing. Press the settings button to adjust cropping and image processing. For instructions on the adjustments available on the Options screen, see p. 425.

Frame Rate - If you disable Hardware Acceleration, you can change the frame rate from the default of 29.97 (NTSC) or 25 (PAL).

Height/Width - Set the image size.

Aspect - Click here to maintain the height/width ratio of your video. The H and W fields below the button become enabled, allowing you to enter the aspect ratio you would like. Common aspect ratios are 4:3 and 16:9.

On a computer screen, with square pixels, a perfect 4:3 aspect ratio is assumed for video. For example, if you create an image at 720 x 540 and you then scale it to 720 x 486 (NTSC), 720 x 576 (PAL), or 1920 x 1280/1280 x 720 (HD) and display the scaled image on a video monitor, the circles that you created initially will still look like circles on the video monitor.

Field Handling - Choose from Frame, Field 1, Field 2, or Interlaced Field order A or B. Choose a setting that matches whatever you will be playing the file back on.

Clip Info - Opens a window which allows you to enter Title, Author and Copyright information to attach to your output file.

Mode - The drop-down list gives options of video and audio, video only and audio only.

Audio Settings - Press the button to open a window and determine the audio depth that is used by your project (44 or 48 kHz, Mono or Stereo).

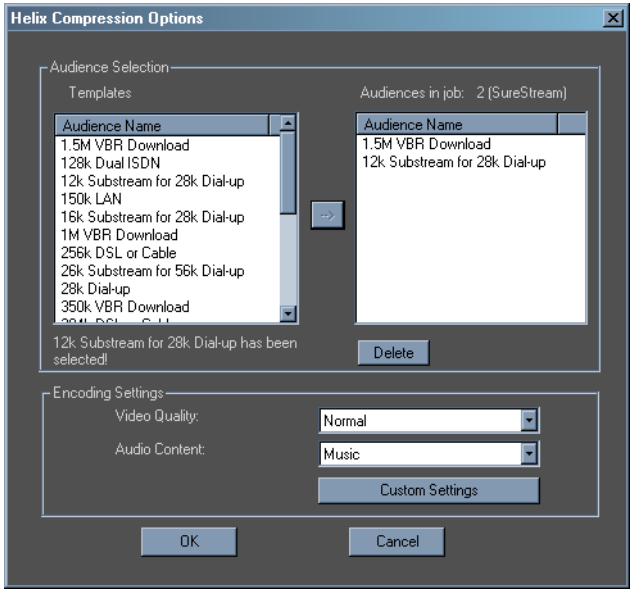
Profiles

Press the **Load** button to choose from a selection of pre-made settings files. The titles are descriptive and tell you the common usage of that type of Real-Media file. There are two items, entitled DVD_Compliant_mpeg_NTSC and DVD_Compliant_mpeg_PAL, which provide defaults for easy DVD authoring.

If you have created a group of settings that you intend to use again, select Press the **Save** button. This allows you to recreate that type of file.

Compression Options

This button opens a window that allows you to adjust the data rate and image quality of your output file.



Depending on the people who you expect to view your output and the system(s) and hardware and internet connection type they will be using, you will want to choose different connection speeds. If you are using a RealServer, the end user indicates what speed their connection is and then the RealServer outputs it at that speed (assuming that you have selected that

speed before exporting the file). If you didn't use that speed, then the file is output at the next closest speed, or in extreme cases may need to be transferred to the local computer before playback.

Select the templates you wish to use by double clicking it in the left pane. Items listed in the right pane will be included in your RealMedia output.

Choose Smoothest Motion or Sharpest Image for your output video quality.

Indicate the Audio Content - Voice or Music.

Custom Settings

For finer control of output options, click the Custom Settings button. This button opens a window with four tabs.

Video Filters - Turn on and off Black-level Correction and adjust the noise filter to Filter Low Noise, Filter High Noise, or turn off the noise filter completely.

Audio Filters - Audio "watchdog" filter and audio limiter pre-filter.

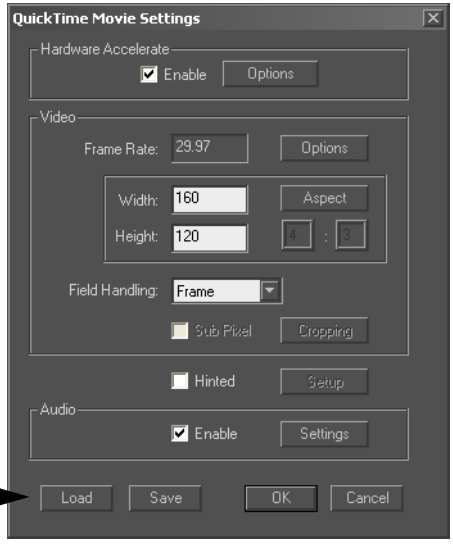
Video Codec - Choose from three codecs (HelixVideo 9.0, RealVideo 8.0 or Realvideo G2 with SVT), enable or disable 2-Pass Encoding and Loss Protection, and choose an encoding type (cbr, vbrBitrate or vbrQuality).

Note, you can only use Helix Universal Server 9 with VBR. When using VBR, you can only have one audience template selected.

Advanced - Adjust VBR Maximum Startup Latency and the Maximum Time Between Keyframes.

QuickTime Movie (MOV File) Settings

MOV files use a variety of codecs. They create cross-platform files that can be played back on PCs and Macs. Note that you must have a Quicktime Player installed in your system or this option will not appear.



Save your QuickTime Export settings or load a pre-defined profile. Those files end with an OSTQTM suffix.

Hardware Acceleration - When enabled, the Quattrus or Altitude hardware is used to accelerate scaling and image color processing. Press the settings button to adjust cropping and image processing. For instructions on the adjustments available on the Options screen, see p. 425.

Frame Rate - If you disable Hardware Acceleration, you can change the frame rate from the default of 29.97 (NTSC) or 25 (PAL).

Height/Width - Set the image size.

Lock Aspect - Check here if you wish to maintain an aspect ratio. The H and W fields below the button become enabled, allowing you to enter the aspect ratio you would like. Common aspect ratios are 4:3 and 16:9.

On a computer screen, with square pixels, a perfect 4:3 aspect ratio is assumed for video. For example, if you create an image at 720 x 540 and you then scale it to 720 x 486 (NTSC) and display the scaled image on a video monitor, the circles that you created initially will still look like circles on the video monitor.

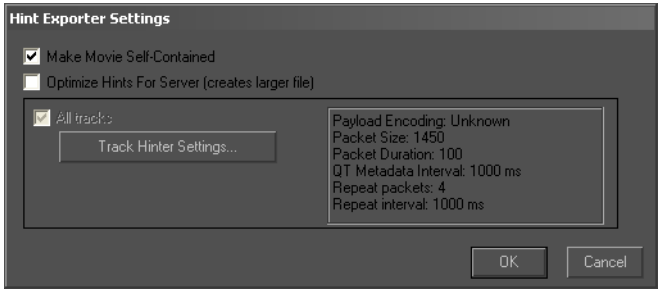
Field Handling - Choose from Frame, Field 1, Field 2, or Interlaced Field order A or B. Choose a setting that matches whatever you will be playing the file back on.

Sub Pixel - This option is available in the Hardware Acceleration settings. If Hardware Acceleration is enabled, it is disabled on the main QuickTime Settings screen. Sub-pixel renders certain types of images much more smoothly (circles, for example, but not vertical lines). Turning Sub-pixel rendering on increases render times by a factor of about four.

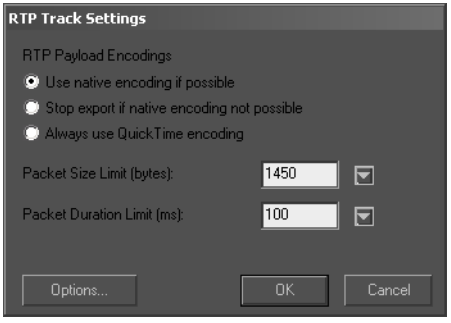
Cropping - This option is available in the Hardware Acceleration settings. If Hardware Acceleration is enabled, it is disabled on the main QuickTime Settings screen. Pressing this button allows you to specify a number of pixels to trim off the top, bottom, left and right of your image before it is rescaled to match the settings for the rendered output file.

Hinted - If you check here, the Options button becomes available. When Hinting is enabled, you can use "True Streaming" when you stream your QuickTime file. Press the Settings button to open the Hint Exporter Settings window.

If you check Optimize Hints For Server, the option to Make Movie Self-Contained is disabled, because all Optimized QuickTime files must be self-contained.



If you press the Track Hinter Settings window, another window opens with more detailed hinting settings.



Include Audio - Check here if you wish sounds to be present and rendered as part of the file. Press the Settings button and select the audio depth that is used by your project (44 or 48 kHz, Mono or Stereo).

Video Options

The Options button in the Video section of the screen opens a window that allows you to adjust the data rate and image quality of your output file.

You may compress your video using any of the codecs installed on your system. There are two types of QuickTime codecs: authoring codecs and delivery codecs. Authoring codecs (such as the M-JPEG codecs) are used during the capture and creation of the video content, and are not normally used for distributing material to viewers. Delivery codecs (such as Sorenson, Cinepak or Indeo) are used to create the video files that are normally distributed to end users.

The drop down box at the top of this window allows you to select the codec. Different codecs will have different options, so different boxes and buttons will be enabled on the Compression Settings window, depending on which codec you select in this drop down box.

Depending on which codec you have selected, the drop-down box directly below the codec box may give you color depth options.

The Quality slider allows you to quickly select a trade-off between the quality of the video and the size of the final video file (and the speed of the encoding).

In the Motion section you can select the frame rate that will be used by the output video. You will normally want to select a multiple of the frame rate used by your video standard (30 fps for NTSC or 25 fps for PAL).

To allow your viewers to scrub through your video you will need to enable the "Key frame every" check box and enter a frame number.

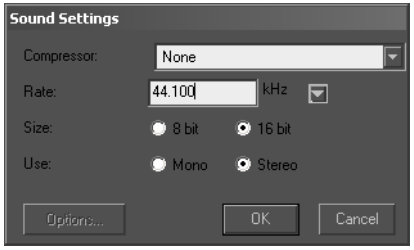
For many codecs you will be able to use the "Limit data rate to" check box, and to specify the maximum KiloBits/second.

For some codecs an extra Option button will appear at the bottom of the window. This button give you access to options that are specific to the codec selected.

When you are done with your codec settings, click OK to return to the Export QuickTime screen.

Compressing QuickTime Audio

Press the Settings button in the Audio section of the screen to set your audio sample size, sampling rate and channels (i.e. Mono 1 channel or Stereo 2 channels). Press the Options button. This window opens:

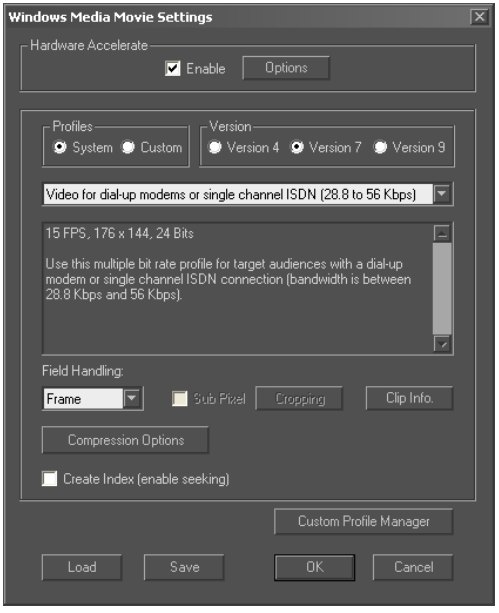


Use the Compressor drop-down menu to select a codec. Available codecs will vary depending on what codecs you have installed on your system.

After you choose a compressor, the Options button may become available and when available, it will open a window allowing you to assign parameters to that particular compressor.

Windows Media™ Movie (WMV) Settings

Microsoft format WMV uses a customized MPEG4 encoder. WMV files are used for Internet Streaming and can create single or multiple bitrate files.



Hardware Acceleration - When enabled, the Quattrus or Altitude hardware is used to accelerate scaling and image color processing. Press the settings button to adjust cropping and image processing.

Select a user Profile, which defines which types of connection you expect your viewers to be using when they play your video. Click the Description button at the end of the Profile box for a description of each profile. The profile will set the size of the video as well as the frame rate used. Unlike the other export functions, there is no Compression Options button. Your compression is set when you select a Profile.

Field Handling - Choose from Frame, Field 1, Field 2, or Interlaced Field order A or B. Choose a setting that matches whatever you will be playing the file back on.

Clip Info - This button opens a window where you can enter a Title, Author, Copyright, Rating and Description of your movie. This information is stored as a part of the output file.

Create Index (enable seeking) - Check here to have a scrub bar in the Windows Media player. The scrub bar allows the user to scrub to a specific position in the video. Without this option selected, a scrub bar will not appear on the Windows Media Player.

Profiles

You may use this to save your Windows Media Movie Export settings or to load a pre-defined profile. Those files end with an OSTWMV suffix.

When creating Windows Media files you have a choice of System or Custom Profiles.

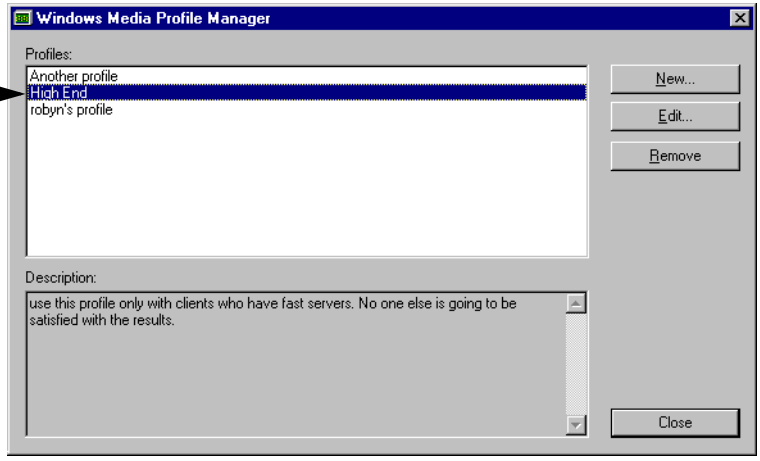
System profiles are available for Windows Media versions 4 and 7. You can also create your own custom profiles to fit the specific needs of your clients and audiences.

The selection in the Drop-down menu below Profiles offers you a selection of profiles depending on the Profiles radio buttons you have pushed.

To Create or Edit a Profile:

1 At the bottom of the **Windows Media > Settings** screen, press the Custom Profile Manager button. Custom profiles allow you to create specific parameters for multiple different audience bandwidths.

Click once on a profile to read a description of it in the gray area at the bottom of the window.



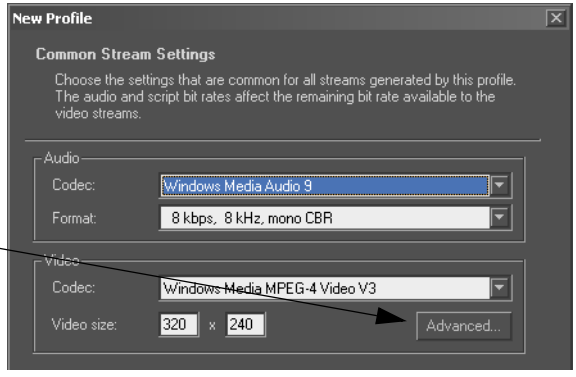
2 Another window opens with a list of profiles that have been created.

3 Click the New button to create a profile. Or, to edit a profile, click on it to highlight it and press the Edit button. A window opens.

4 Enter a name for the profile. You can also write your own description of this profile, though it is not required. If you wish your profile to be based on another profile, press the Import button to choose from a list of all WMV profiles to base your new profile on.

5 Press the Next button to progress to a screen where you can choose your Common Stream Settings.

To select between default and custom buffer sizes, click the Advanced button.



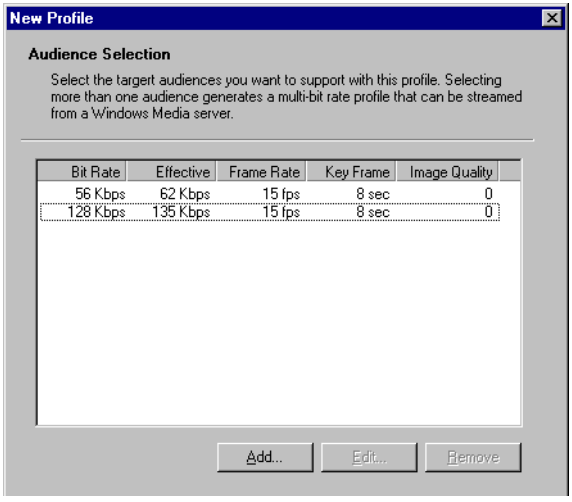
Audio Codec - Either Windows Media audio V7 or ACELP.net.

Audio Format - Choose one of the various combinations of kbps, kHz and mono or stereo).

Video Codec - Commonly includes Windows Media Video MPEG-4 V3, ISO MPEG-4 Video V1, Windows Media Video V7 and Windows Media Screen V7.

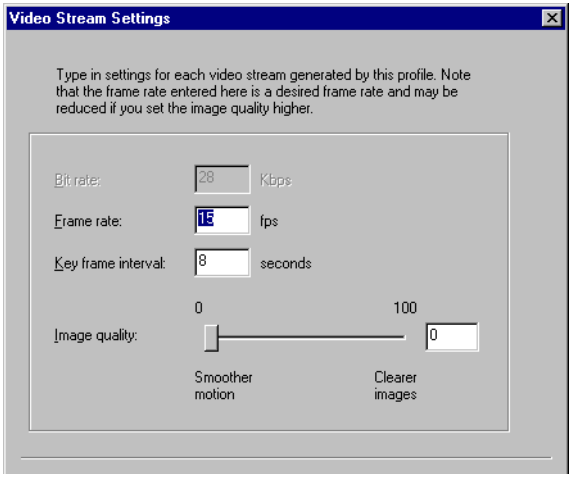
Video Size - Enter X and Y values.

6 When you are satisfied with your settings, click the Next> button. The Audience Selection window opens.



If this is a new profile, there are no items in the white area. If you are editing a profile, this list may contain one or more audience descriptions. Click a line and press the Edit button to alter that Audience Description. Or click the Add button to create a new Audience Description.

The Video Stream Settings window will open over top of the Audience Selection window.



Type a value into the Bitrate field. Once you enter a number and press ENTER, you can enter values into the other fields.

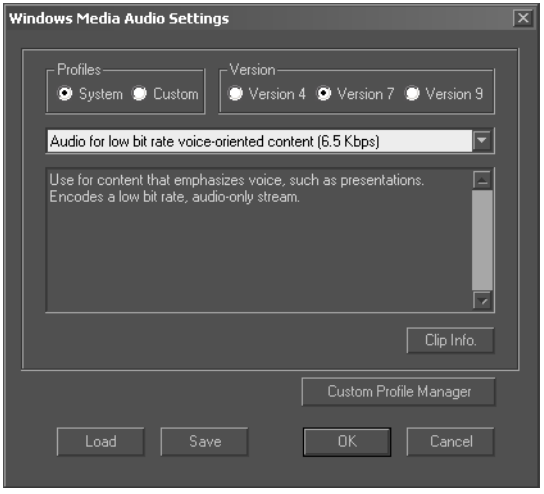
When you are done creating this Audience Profile, click Finish. The profile appears in the Audience Selection screen.

To create another Audience Profile, click the Add button again and repeat the process. When you are done creating and editing profiles, click Finish in the Audience Selection screen.

The profile should now appear in the profiles drop-down menu in the Windows Media Movie Settings screen when you choose Custom Profile.

Windows Media™ Audio (WMA) Settings

Closely related to the WMV format is Microsoft's WMA audio streaming format.



Select a users to be using when they play your video. Click the Description button at the end of the Profile box for a description of each profile. The profile will set the size of the video as well as the frame rate used. Unlike the other export functions, there is no Compression Options button. Your compression is set when you select a Profile.

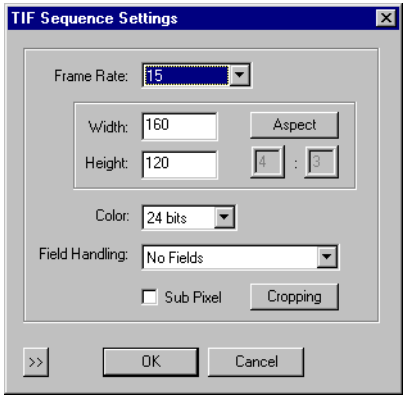
Clip Info - This button opens a window where you can enter a Title, Author, Copyright, Rating and Description of your movie. This information is stored as a part of the output file.

Profiles

You may use this to save your Windows Media™ Audio Export settings or to load a pre-defined profile. Those files end with an OSTWMA suffix.

Image Sequence Settings

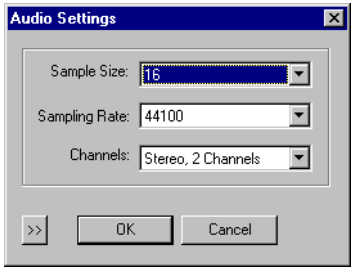
When you create an image sequence, individual frames of video are created. Each image had the name you specify, plus a series of numbers, before the file name extension. Each image is numbered sequentially.



Note that when Velocity creates a DPS/LTV file, the virtual tape file system gives you immediate access to the video as an image sequence. See your hardware User's Guide for more information.

Sound Clip (WAV) Settings

Note that you can edit the audio portion of DVA/LTA files using Sound Forge without saving the movie as a WAV file first. (See Chapter 13 for details.)



On the **Audio Settings** tab in the Preferences, there is a slider marked **Digital Audio File Creation Level**. This adjusts the audio volume of your output files. If you find that your audio is consistently too low, place a check

beside **Boost Digital Audio Level for Windows files**. Experiment with the slider positioning until you achieve the correct level.

Export a Single Image File

You can make a single frame image file of the image currently displayed at your timeline playhead position. Select **Output > Single Frame Output** from the menu, or press the Make Single Frame button on the main toolbar. A window appears. Enter a file name, file type and a location to save the file. Click OK to begin processing.

You can also make a single frame based on the trim window playhead position. This is done via an assignable Hotkey (there isn't a default Hotkey for this function). To assign a Hotkey for this function (called Make Frame - Trimmer) see the User Definable Hotkeys section of Chapter 26.

Note that when Velocity creates a DPS/LTV file, the virtual file system gives you immediate access to the video as an image sequence. This allows you to access individual frames of your DPS/LTV files as BMP, IFF, PIC, RAS, RLA, SGI, TGA, VPB or TIF files. See Chapter 8 for more information.

Make Frame

In the trim window, you can also make a single frame output of the playhead position. This is a Hotkey function which does not have a default assigned (to assign a Hotkey, see Chapter 26).

Gallery Movie Output

While the gallery is highlighted, you can select one or several clips in the gallery, right click and choose "Movie Output". The toolbar's Movie Output button is NOT available when the gallery is active.

The Movie Output window opens. Choose the type of movie you wish to create and give it a name.

Velocity renders a new file for each clip selected and places them in the gallery. Each file contains the name you have assigned followed by an underscore, then the original file name and the new file type extension.

Edit Decision List (EDL)

An EDL is a text file that describes the structure of the edited video. The EDL identifies the timecodes of the segments used on the original source tape. It then synchronizes the video decks to use the original source tapes to produce the high quality finished product.

EDL Limitations

The limitations of EDL export from Velocity are significant when you compare it to the output you can achieve by, for example, saving a timeline and then copying it to another Velocity system. When you transfer data from one Velocity system to another, creating a consolidated copy and then moving it to the second computer is probably a better choice.

If you have a complete project with many layered effects, the best option for moving it from one system to another may be a high quality rendering down to a unified DVA/LTA file, or even a Print to Tape and a high-data rate recapture on the second system, accepting the generational quality loss hit that may result.

However, sometimes when transferring a project from one manufacturer's system to another, an EDL can be the easiest solution.

If you feel that an EDL is the appropriate way to transport your project, ensure that you prepare your timeline for EDL export.

Preparing your Timeline for EDL Export

EDLs are limited to one or two tracks of video (two only if you have transitions) and up to four tracks of audio. If you wish to export your timeline conventionally as an EDL, keep these limitations in mind:

Transitions: You are limited to some very standard wipes and dissolves. You're probably better sticking with just the standard cross-fades and cuts.

Filters/Effects: Normally these won't appear in your EDL.

Titles/overlays: Normally these won't appear in your EDL.

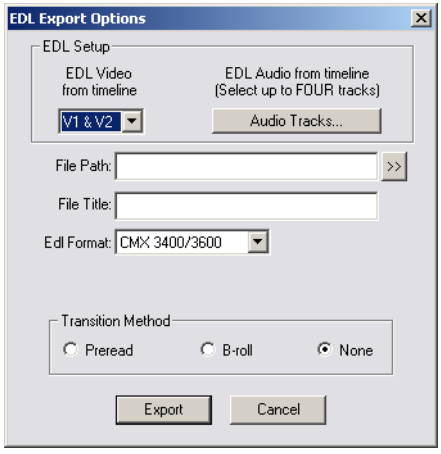
Audio: Two tracks of stereo audio.

Exporting an EDL

Once you have completed a project on your timeline (including effects, transitions and trims) you can have Velocity generate an EDL which uses the CMX 3400/3600 or Sony 9100 format.

Create an EDL From the Timeline

While the timeline is active, select **File > Export > Export EDL** from the main menu. A window opens:



Under EDL Setup, choose what tracks you wish to export:

EDL Video from the Timeline - Select the tracks you would like included in the export, keeping in mind that the video and images on other tracks will be ignored. You can choose either Video1/2, which will produce an A/B roll timeline when re-constituted, or V3 or V4. Or you can choose None, which will export just an Audio EDL (useful for post audio mix-down).

EDL Audio from the Timeline

Press the Audio Tracks button. A window opens.

By default the first four audio tracks are chosen for export.

You can only export four tracks of audio to an EDL. In order to choose other audio tracks, first unselect the audio tracks you do not wish to export, then choose other ones.

All audio tracks on your timeline appear in the Track list.

To export no audio tracks in your EDL, unselect everything in the Export column.

File Path - Use the Browse button to choose a save location for your EDL file. Note that for an EDL file name to be used by an on line system it must be 6 or less Alphanumeric characters long and it must include the .edl file extension.

File Title - The EDL file can contain an optional 16 character title.

EDL format - Choose from CMX 3400/3600 or Sony 9100.

Transition Method

There are three options to choose from.

Preread - The source Output video of V1 of a transition is extended to include the transition duration.

B-Roll - Renames the reel-name of the second clip in a transition to the original name + B.

None - Transitions are ignored.

Click on **OK**.

The EDL file will appear on your screen for viewing. The CMX 3600 EDL file is a simple ASCII file ("text only") that uses a very specific format. The other EDL file formats (GVG, SONY, etc.) are similar, but incompatible. If your EDL will be used by an online system that uses another file format it may be converted using third party EDL software (such as EDLMAX, Turbo Trace Pro or EDL Pro).

The EDL file has several major components.

The header contains the title you gave the file when you saved it. Note that this is not the file name.

The FCM (Frame Count Mode) for NTSC video shows whether your source is using Drop Frame or Non-drop Frame mode.

The EDL contains notes or other information.

Numbered edit lines are your edit decisions. A cut uses a single edit line and an effect (such as a dissolve, wipe, filter) uses two edit lines. Each line consists of:

- Edit number.
- Reel name - the name of the tape containing the clip (Note that on the EDL this must be 8 alphanumeric characters or less, with no more than 7 characters preferred to allow for the added "B" for B-Rolls.)
- Edit Type - Shows audio (AA) and/or video (V) clip.
- Transition type, followed by a duration (in frames) where appropriate

- Source In/ Source Out - The timecode when the clip starts and ends on the source tape.
- Record In/ Record Out - The timecode when the clip starts and ends on the output tape.

Here are some examples of edit lines:

A simple cut: record from the source reel “Animals” to the output tape.

Edit #	Reel Name	Channel	Trans	Dur	Source In	Source Out	Record In	Record Out
002	ANIMALS	AA/V	C		00:00:06:00	00:00:29:00	00:00:04:00	00:00:27:00

A 120 frame dissolve. The final line is an EDL note.

Edit #	Reel Name	Channel	Trans	Dur	Source In	Source Out	Record In	Record Out
003	ANIMALS	AA/V	C		00:00:29:00	00:00:29:00	00:00:27:00	00:00:27:00
003	DOGS	AA/V	D	120	00:00:40:00	00:00:44:00	00:00:27:00	00:00:31:00
EFFECTS NAME IS CROSS DISSOLVE								

Notes applied to clips also appear in an EDL.

Note that you can add or change the reel name and timecode of a video clip. In the gallery right click on the clip and select **Timecode** from the pop-up menu. On the timeline left click the clip (to select it) and then select **Edit > Clip > Timecode Clip** from the main menu.

Also, note that RT-specific effects aren’t translated to and from the CMX EDL.

Importing an EDL

Once you have generated and saved an EDL on any system using the CMX 3400/3600 or Sony 9100 format, Velocity will allow you to import this file and complete your project. This can be a useful tool for restoring old projects for which a timeline is no longer available, or for creating a timeline from an EDL that was created on some other system.

To conform an EDL:

1 Make sure the timeline is selected and select **File> Import > Import EDL** from the main menu with a timeline as the active screen area. The EDL Import Options window opens.

2 Use the Browse button to select the EDL file you wish to load.

3 Specify the type of EDL it is (Sony 9100 or CMX 3400/3600).

4 Place a name in the Clip Name field. This is the name that will be used by all of your DVA clips.

Enter a name for your timeline. If you do not enter a name, the timeline will get a default name of timeline followed by a number.

5 Determine the position for clips on the timeline. If you leave the Insert At option unchecked, clips are placed on the timeline in the timecode of the EDL. If you choose the Insert At option, enter a timecode and the first clip will start at that timecode on the timeline.

6 Click **Import**. Velocity opens the file as a new timeline entirely populated by virtual clips. The title of the new timeline is the file name of the EDL (without the EDL file extension).

You can now create a batch recapture list if you wish to create an exact reproduction of the timeline described by your EDL, or you can alter the clips if the entire timeline is not necessary.

Note: When you create a batch recapture list, a number is appended to each clip name, so each clip name is unique.

OMF/AAF Files

OMF and AAF allow you to interchange between Velocity and other NLE systems. The OMF and AAF files used with Velocity contain video meta data, but no actual video media. The meta data contains the time code and reel names, which allow batch capture of video media after the OMF and AAF have been imported. Both the audio media and audio meta data are included in OMF and AAF files.

So, if an OMF or AAF is imported into Velocity or another NLE system, the video media will appear virtual, but contains the necessary meta data for batch capture. The audio media will be imported as actual audio media. However, the audio meta data is also imported, which means that you can re-batch capture audio if necessary.

Import an OMF/AAF File

Unless you want the OMF or AAF file you are importing to be part of the current project that is open, you should save and open a new project before proceeding with importing the OMF or AAF file.

First, make sure that your chosen timeline to import to is selected, otherwise the import options will not be available in the main menu.

Once the appropriate timeline is selected, go to the main menu and select **File > Import > Import OMF** or **File > Import > Import AAF**.

A browse window opens. Select the AAF or OMF file you wish to open.

Any embedded audio media is placed in the folders designated by the current project's "project management" settings. The file that you are opening is opened as a timeline within that project, as well.

OMF sequences which contain sub-tracks are opened as separate timelines with a stand-in clip representing their duration on the main timeline.

Visual Effects Handling

When you import a file, clip effects and transition key frames are not preserved.

If you have a transition above V1, the clip's timing is converted to Velocity, but all transition information is lost. A clip may be bumped to a higher track to compensate for the overlapping media.

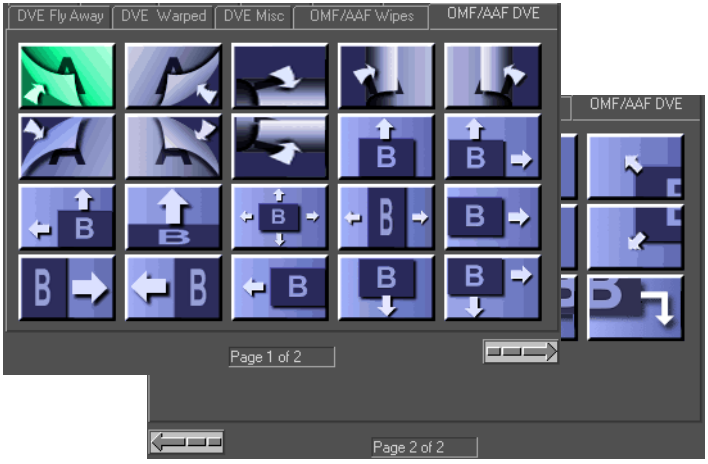
Many OMF/AAF transitions are recognized by Velocity, and upon import, those transitions use ones found in the OMF/AAF Wipes and DVE tabs in the Real-time transition window. Any transitions that are in the imported file that are not recognized by Velocity are replaced by dissolves.

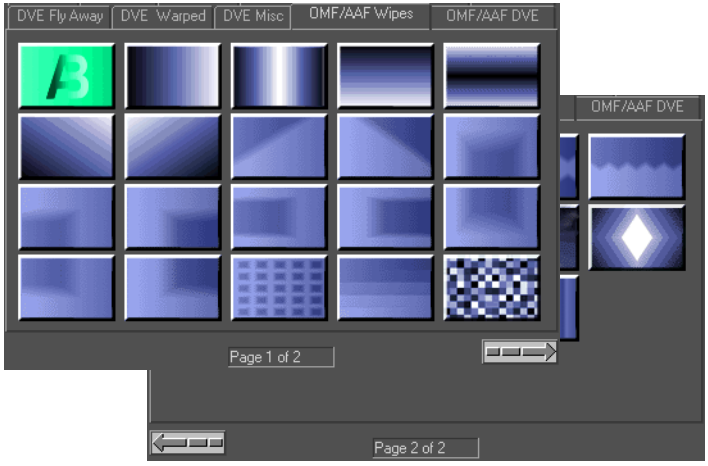
Audio Handling

Velocity does not have transition tracks for audio. So, upon importing an OMF or AAF file, audio clips alternate tracks where a transition would have occurred. On import, sync groups are not preserved.

Export an OMF or AAF File

When you are creating a timeline that will be exported via OMF or AAF, always choose transitions from the OMF/AAF Wipes and OMF/AAF DVE tabs of the real-time transition dialog.





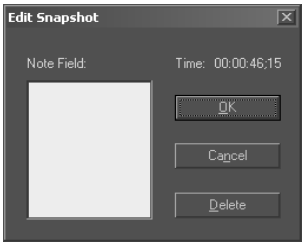
First, make sure that your chosen timeline to export is selected.

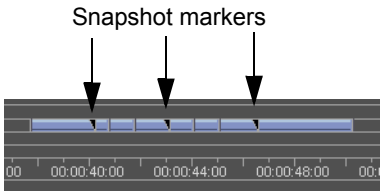
Once the appropriate timelime is selected, go to the main menu and select **File > Export > Export OMF** or **File > Export > Export AAF**.

A browser window opens. Choose a location for the OMF or AAF file. Press Save.

The output file is created as non-drop frame. All the original audio is embedded in the file. The audio must be either 44.1 or 48 khz stereo or mono 16 bit. Sync groups are not preserved.

Creating a Story Board





A story board is a summary sheet of the movie. It shows the first and last frames of a clip and/or the images defined by snapshots of the movie. A Velocity Story Board is saved as a special gallery, with the images displayed as thumbnails. This gallery may also include notes associated with the image clips and their playing time inside the movie.

Before you create a Story Board you may want to mark snapshot positions. A Snapshot defines a frame on the timeline to be placed on the Story Board.

To create a Snapshot, right click an empty area on the render bar above the timeline. The Snapshot Edit window is opened. You may enter any notes that you want to save with the Snapshot. If you click on OK a Snapshot symbol will be created on the timeline. To delete a Snapshot, right click the Snapshot and click Delete. To move a Snapshot, drag the Snapshot to a new position on the render bar.

To create a Story Board:

1 Select **Edit > Story Board Settings** from the menu. The Story Board Options window will appear. You can select capture options of snapshot only, clip edge only or snapshot & clip edge. You can select Time options of movie or entire timeline. If Movie is selected as the Time option, the timecode displayed is relative to the movie range defined by the light blue movie bar above the timeline. If the Entire timeline option is selected it will display timecodes based on the entire timeline.

2 Select **Edit > Convert to Story Board** from the menu.

3 A Save as Gallery File window will appear and ask for a file name. Because a Story Board is a special type of gallery file, it will use the gallery file extension

(.gy). Its contents will include the images as requested in the Story Board Settings window.

4 A percentage completion meter appears while the Story Board is being created.

5 The notes that you entered when you created the Snapshots can be displayed by right clicking in the gallery and selecting "Thumbnail and Note". To edit these comments attached to the Story Board images, right click on a clip and then select Edit Clip Info. An Edit Clip Information window will appear. You can add comments in the Description box.

6 You may Preview the Story Board before it is printed by selecting **File > Print Preview** from the menu. The printed Story Board will consist of the thumbnail images and the timecodes of the images.

7 To print the Story Board, select **File > Print Gallery** from the menu. Select the print options you want and click OK.

Export to Leitch Server

See Appendix F for information on exporting to the Leitch Server.

Chapter 24
Using Print to Tape

Once you have finished your project you may want to record it to video tape. The easiest way to do this is just to play back to tape.

To set up play back to tape:

1 Hook up the outputs from your capture hardware to the inputs of your VCR.

2 (Optional) To monitor the video being recorded to tape, hook up the outputs from your VCR to a video monitor.

3 Press record on your VCR and play back your finished project from the timeline. The signal that is being output by your breakout box will be recorded to video tape.

Recording Using Print to Tape

The Print to Tape function controls an external VTR to record your final project to a video tape with frame accuracy. To use the Print to Tape function with your Quattrus hardware, you must have a DV device and a DV module, or a VTR which is capable of being controlled by the RS-422 protocol, an RS-232/RS-422 converter connected to the computer's RS-232 serial port, and a serial cable connecting the converter to the VTR's RS-422 port. This allows Velocity to control your VTR. For your Altitude hardware, you must have a DV/HDV device and a cable to print to tape via IEEE-1394.

The Print to Tape function has two edit modes: Insert Edit and Assemble Edit. Insert Edit is used to overwrite a video tape with an existing timecode. When using Insert Edit, the Print to Tape function will write video and/or audio to the tape, but will use the existing timecode information on the target tape. Assemble Edit is used to write the video, audio, and timecode information to a tape. Assemble Edit can be used on new tapes that do not yet have timecode information.

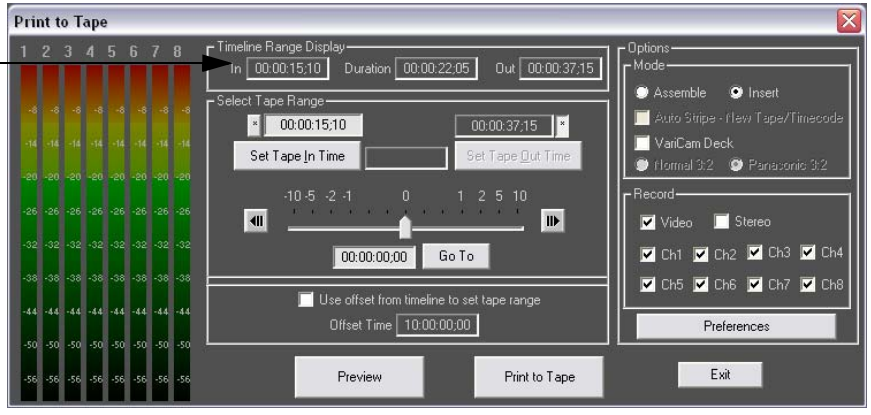
To launch the Print to Tape function:

1 Mark the In point and Out point using the In and Out buttons on the Timeline status bar, or use the Hotkeys I and O with the timeline active.

Print to Tape button

Timeline in, out and duration

2 Launch the Print to Tape window by pressing the Print To Tape button in the Toolbar at the top of the Velocity window, or select **Output > Print to Tape** from the main menu. This window appears:



3 Under Edit Mode, select either Insert or Assemble.

Insert allows you to overwrite a video tape that already has timecode. If you select Insert edit you will be able to select whether you want to record Video and/or Audio 1 and/or Audio 2. The video and/or audio you select from your timeline will replace any existing video and/or audio in the Print IN Time/Print OUT Time timecode range that you select. The target tape's timecode will not be changed.

Assemble prints the video and audio you select from your timeline, and the timecode you specify in the New TC In / New TC Out boxes. Assemble edit can be used to print to a new tape that does not have timecode, to add to a tape that has pre stripe timecode, or to overwrite an existing section of the tape, including its timecode. In order to have Velocity automatically set a timecode on a blank tape, make sure the Assemble option is chosen, and check the **Auto Stripe** box. If you prefer to pre stripe the timecode manually, leave the Auto Stripe box unchecked. If you select Assemble edit, be aware that the tape will play for the pre-roll time set in the Preferences before it starts recording. If you are recording on to a blank tape this will not be an issue. If you want to add additional material on to a tape with existing footage be sure to rewind your tape back by the pre-roll amount before you begin your final recording.

Check the **VariCam Deck** check box is you want to print video using a Panasonic VariCam Deck. Once you check that box, you will then be able to choose whether you want to print **Normal 3:2** video or **Panasonic 3:2** video.

In the Record section of the Print to Tape window, you can choose which audio and video channels you want to use. Enable or disable the **Video**

check box if you do or do not want to print video. If the **Stereo** check box is disabled, you will be able to select up to eight channels of audio you wish to use. If the **Stereo** check box is enabled, you Channels 1 and 2 will automatically be selected and all other channels will be greyed out.

4 In the Select Tape Range section of the screen, Set the target tape's Tape In and Tape Out times.

Use the VTR Slider control on the Print to Tape window to help set the Tape IN and Tape OUT times. Use the scrubber to shuttle back and forth on your tape. Use the arrows to move back and forth by one frame. Use the Set Tape In Time or Set Tape Out Time buttons to use the current tape timecode as the In or Out time. You may also type in an In or Out timecode. If you want to go to a timecode location on your tape, type in the timecode and use the Go To button at the bottom of the window.

The Time Offset function may be used to automatically calculate the target Tape IN Time and Tape OUT Time. The timecode that you want to use as your Tape IN Time on to the target video tape may be different from the Starting Time on your Velocity timeline. The Time Offset will be added to the Start Time to give the Tape IN Time and the Time Offset will be added to the End Time to give the Tape OUT Time.

For example, if you were doing an Insert edit using a project that started on the timeline at 00:00:00:00 and you wanted to overwrite the video tape starting at a Print IN Time of 00:00:05:15, you could check the Time Offset box and enter 00:00:05:15 to automatically calculate both the Print IN Time and the Print OUT Time. When Time Offset is not checked you will need to enter these target times yourself.

You can also check **Use Offset from Timeline to set tape range**. This disables the Tape Range section of the screen and allows you to use the timeline's time settings for print to tape. If you wish to offset your print to tape, enter the amount in the Offset Time field.

5 Use the Preview button to preview your output, including color bars and black areas. When you are previewing an Insert edit, the pre-roll will be played from your source tape so that you can check the insert point.

If you are doing an Assemble edit on a blank tape, you will not normally need to use the Preview function. If doing an Assemble Edit on a tape with some existing footage, the Preview function will play the pre-roll from the tape and then play back the timeline section.

6 Start recording by pressing the Print to Tape button.

Important Note

Before you use Print to Tape for the first time or if you switch to a different model of VTR, you must calibrate the Altitude or Quattrus board set to interface correctly with it.

Due to differences between various manufacturers and models and to ensure frame-accurate results, you may have to consult your VTR's manual for settings information.

Many consumer VCRs have a button for switching between antenna input and line-in. Consult your VCR's manual for instructions on how to switch the input.

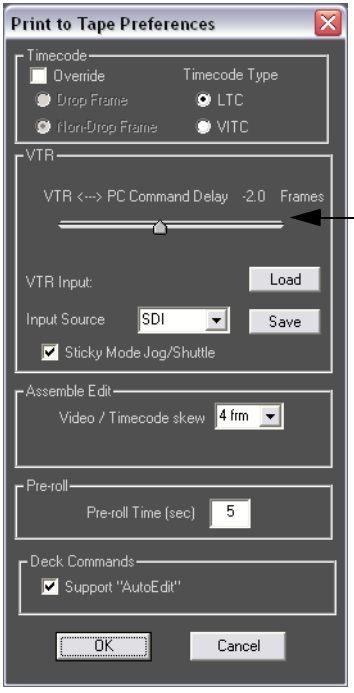
Panasonic® VariCam® Options (Altitude only)

In order for printing to tape from a VariCam deck to occur, the Velocity timeline's playback standard should be set to either "23.976p (with 59p Panasonic Varicam)" or "24p (with 60p Panasonic Varicam)".

After you have set the correct timelina playback standard, you must then go into the print to tape preferences and enable the VariCam check box in order for the hardware drivers will add the active frame flags.

Preferences

Each VTR is slightly different, so you may need to adjust the Print to Tape Preferences to get frame accurate results with your VTR.



This section of the screen has different options when working with DV or HDV.

Timecode

Override - If you are using NTSC tape, Velocity should automatically detect which type of timecode was recorded on to the tape. If you encounter problems with the type of timecode being used, you can check the Override box and select the timecode that will be used. Since DV has only drop frame timecode, you cannot select this option (it appears grayed out) when DV is chosen as your output type.

Time Code Type- Select the type of timecode your VTR requires. As timecode is part of the DV/HDV signal, this option does not appear when a DV/HDV device is selected for video output.

VTR

VTR <-> PC Command Delay - When you are controlling the VTR to print to tape, you may notice that there is a slight delay in the VTR's response. You can use the VTR Delay slider to compensate for this delay. For example, if you set Velocity to print to tape at 1 hour, and the recording actually started at 1 hour 3 frames, you could set a VTR Delay of -3 frames to compensate for the delay. If you are using DV/HDV, this slider is replaced by two settings: DV Record and Stop Delay (frames).

VTR Input - The drop down menu allows you to choose what type of video signal to output to tape. If your current timeline is in HD mode, your options will be SDI or HDV. If your current timeline is in SD mode, your options will be SDI or DV.

Sticky Mode Jog/Shuttle - When this is checked the scrub pointer will remain where it was when you release it. If this is not checked the scrub pointer will snap back to the center (to 0, or stop).

Settings Files

Save - Once you are satisfied with your settings, you may want to save them for future use. Click the Save button and you will be able to give your capture settings file a name.

Load - If you have already saved a settings file that you want to reuse, you can click the Load button to re-set all the settings.

Assemble Edit

Video / Timecode Skew - Some VTRs begin printing video images before they begin printing timecode. If you find this happening on your VTR, adjust this slider until timecode and video match.

Pre-roll - When you record to tape the tape needs to be up to speed before recording begins. This is usually referred to as pre-roll. The default is 5 seconds, but you can set it to any time.

Deck Commands - Check the Support “AutoEdit” check box if you are using a deck that supports AutoEdit.

COM Port

Print to Tape, Batch Capture and Batch Recapture - Choose the COM port that the RS-232/422 converter is connected to. They can all be connected to the same COM port in a case when you have a single VTR hooked up which will perform all these functions (though not simultaneously).

Enable - This box must be checked in order for the VTR to be used with Velocity.

Select the Serial Communications Port used by your VTR from each drop-down list.

DV/HDV Input Options

Note: HDV Print to Tape is not frame accurate.

If you are using a Quattrus system or an Altitude system with a standard definition timeline, you will be able to choose DV as your Input Source in the Print to Tape preferences. If you are using an Altitude system with an high definition timeline, you will be able to choose HDV as your Input Source in the Print to Tape general preferences.

If you are using Soft DV, under DV deck control, choose from DV or RS-422. If you are using the DPS DV module, choose from Sony, Canon or RS-422.

DV/HDV Deck Settings

You can assign settings for DV Record delay (frames) and DV Stop Delay (frames). These will vary depending on the deck you use. If you save them as a file (using the save button) and reload them when you use the same deck again, you will not have to recalibrate every time you switch decks.

Soft DV Settings

If you have a standard OHCI compliant DV board (Quattrus only) and have installed SoftDV, you can capture video from that card and convert it into DPS/DVA files for storage in the VTFS and/or use in Velocity projects.

Also, for Altitude systems, you can capture using SoftDV via IEEE-1394 I/O.

If you choose DV/HDV from the Input menu and/or you have Soft DV installed, these deck control options appear in the middle of the screen:

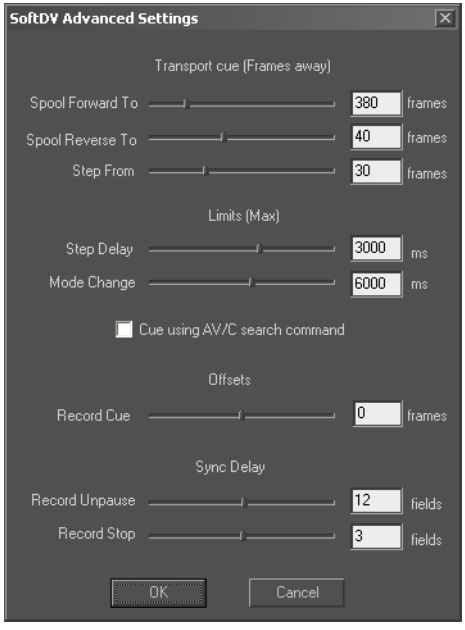
Deck Responsiveness - This setting determines how Velocity interacts with your deck. If the deck is very responsive, click More. If it is somewhat responsive, click Moderate. If it is not very responsive at all, click Less.

There have been custom deck settings created for some decks. You can search for and download these files from the Leitch website at www.leitch.com. Once you have placed these settings in a logical place on your system (with the project if you will not be using that deck again, or in a more general location if you use this deck on a regular basis), click the Load button in the Deck Settings Files section of the screen. Browse to the location of that file and double click on it to open, or click on it once and press the Open button.

You can view the custom settings file by clicking the **Advanced** button on the Settings window.

When this file is loaded, Velocity uses settings that are chosen to interact the best with that make and model of DV/HDV deck or camera.

Customize - If there is not a custom settings file available for your particular unit, you can create one yourself. With the Custom option selected under Deck Responsiveness, click the **Advanced** button. Another window opens.



Spool Forward/Reverse To - Fast forward or fast reverse with no tape head contact. The deck goes forward or backward in this mode until it falls within the range you specify before the start of the clip. Then it switches to normal play mode.

Step From - In this mode, the deck moves forward one frame at a time. There is no pre-roll on a DV/HDV deck, so the tape cues up to the exact frame it needs to start recording at.

Step Delay - The maximum amount of time between single frame steps when in step mode. If there is more time between steps than this, you will see an error message.

Mode Change - The amount of time allotted for the deck to switch from Spool to Play or Play to Step before Velocity returns an error message. If your deck has poor response, set this to a higher number.

Cue using AV/C search Command - Some decks have the capability for Velocity to tell it what timecode to find and it uses its built in search command. If your deck has this capability, check here and it will be used. Note, however, that on some decks it is not very accurate, does not provide timecode updates to Velocity while searching, and the only way you can cancel during the search is by stopping the deck manually. If the deck gets the wrong timecode, Velocity falls back on its own transport controls to search for the proper timecode.

Offsets - Record Cue - When your DV/HDV deck goes from stop to record pause, the tape may shift by a small amount. If you find that your DV/HDV deck does this consistently, use this setting to cue to that number of frames before or after the point requested. If your Print to Tape is consistently early, enter a positive number, and if it is consistently late, enter a negative number.

Sync Delay - Record Unpause - This is the mechanical delay between when a signal to go from record pause to record is sent by Velocity and when that signal is responded to by the DV/HDV deck. If you are consistently missing the first couple of frames of your video, then you need a longer record unpause delay. If you get a series of still frames at the beginning, set a shorter record unpause delay.

Record Stop - This is the mechanical delay between when a signal to go from record to stop is sent and when it is received. If your output is consistently cut off at the end, you need a longer record stop delay. If you consistently see a series of still frames at the end of your output, you need a shorter record stop delay.

Click **OK** when you are satisfied with your settings. The Custom Settings window closes.

To save the settings file so you can use it again, click the Save button in the Deck Setting Files section of the screen. Give the file a descriptive name and save it in a logical place on your computer.

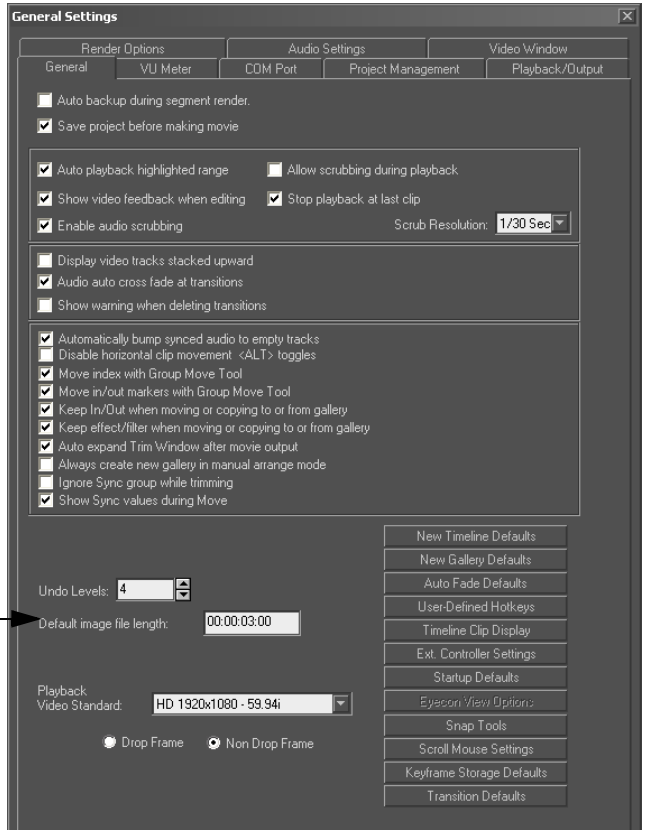
Note that these settings files are also used with capture.

Chapter 25
Preferences

Velocity has a series of preferences that can be accessed by right clicking on the timeline window and choosing Preferences, choosing **File > Preferences** from the main menu, clicking on the Preferences button in the toolbar, or by pressing Hotkey (default) F5.

General

General settings affect Velocity's timeline, gallery and trim window tools.



This menu is not available if you are using a Quattrus system

Auto backup during segment render - Automatically backs up the active timeline every minute during the rendering process.

Save Project Before Making Movie - If this box is checked, you will be asked to save your Project whenever you use the Movie Output function.

Auto Playback Highlighted range - When this is selected, and you drag the mouse across a range on the timeline, it is automatically played back Temporarily reverse this setting by holding down the shift key while you drag a range.

Show Video feedback when editing - When this option is checked, the current frame is displayed on the video monitor while trimming, slicing or indexing a DVA/LTA or DPS/LTV clip. A small pop up window by the mouse cursor displays the current timecode of the frame that is being edited on the timeline. Normally this is nice to have because it shows exactly what frame you are editing, but it can slow down the trimming process on a slow computer. If editing is slow on your machine, you may want to uncheck this option.

Enable audio scrubbing - Enable or disable audio scrubbing during timeline editing. Scrubbing means real time audio and video feedback as the mouse moves across the timeline. Normally you should leave this checked to get audio feedback as editing is performed. Disable this if the system is not able to scrub or if faster editing response is desired.

Allow scrubbing during playback - When this option is checked, you will be allowed to scrub the timeline at the same time video is playing back.

Stop playback at last clip - When this option is checked (the default setting), playback will automatically stop at the end of the last clip in a sequence. When this option is unchecked, playback will go on past the last clip until it reaches the end of the timeline, even if it has to play "blank" portions of the timeline.

Scrub Resolution - Sets the play interval for each audio feedback point. Tune the scrub resolution for the best audio scrub quality for your particular system. Start with 1/8 th of a second and vary based on the resulting scrub quality. If the scrub resolution is too small, the audio will sound choppy. If the scrub resolution is too large, the audio will have an echo effect and slow down editing operations.

Display Video Tracks Stacked Upward - When this is checked, the Video tracks start with the highest-numbered track at the top and end with V1 at the bottom of the list. When this is not checked, video tracks begin at the top with V1. This has no affect on the audio tracks, which always begin with A1, with the numbers getting bigger as the tracks get lower.

Audio auto cross fade at transitions - When this is checked and you create a transition between the clips on "a" and "b", the audio between the transi-

tions fades from one into the other. For example, audio from V1a will become softer as the audio from V1b becomes louder during a fade transition.

Show warning when deleting transitions - If a clip on an "a" track forms a rendered transition with a clip on a "b" track (in expanded track mode), or if an overlapping clip forms a transition in a track (single track mode), moving one of the clips away will delete that transition. When this box is marked, Velocity warns you whenever you are about to remove a transition. You can always use the Undo feature under the Edit menu to recover the transition (and the original clip positions).

Automatically bump synced audio to empty tracks - When this is checked, synced DVA/LTA audio bumps to the first open track when you move the video portion. If this is not checked and you move the video portion of a DVA/LTA, there must be space on the same audio tracks the audio portion are already on or the move is not allowed. This can be useful if you are using track based audio panning.

Disable Horizontal Clip Movement <ALT> Toggles - When this is turned on, clips can only be moved from track to track, with no movement in relation to the time scale, unless the ALT key is held down. Conversely, if you usually work with this turned off - so clips can be moved horizontally -- and you wish to move a particular clip from, for example, track 1 to track 3 without moving it horizontally, hold down the ALT key and you can be sure the clip will not change its relationship to the time scale.

Move index markers with Group Move tool - When this is checked and you have index markers on the timeline, they will move with the clips under them when you use the Group Move (Gap) tool. When this is not checked, index markers stay where they are with respect to the timeline.

Move In/Out Markers with Group Move tool - When this is checked and you have In and/or Out markers on the timeline, they will move with the clips under them when you use the Group Move (Gap) tool. When this is not checked, I/O markers stay where they are with respect to the timeline.

Keep In/Out when moving or copying to or from Gallery - When this is checked and you move a clip from the timeline to the gallery, In and Out markers stay with the clip. All the clip's media is still available, whether this is checked or not.

Keep effect/filter when moving or copying to or from Gallery - When this is checked and you copy a clip from the timeline to the gallery, any effects applied to that clip remain with it.

Auto expand Trim Window after movie output - When this is checked, if your trim window is closed and you make an output movie file, the trim window opens with the new movie file in it, ready for viewing. If this is not

checked, you can open the trim window after making a movie and open the new file from the gallery.

Ignore Sync Group while Trimming - When this is checked, if you trim a sync group (for example a DVA, with video and audio tracks) in the timeline, the portion of the clip (be it the audio portion or the video portion) that your mouse is hovering over when it gives the IN or OUT flag is trimmed, but the other portion is not. When this is not checked, audio and video from a sync group are trimmed simultaneously. The default Hotkey to toggle this on or off on an individual trim basis is W.

Show Sync Values During Move - This option defaults to on. When it is on and you trim an unsynced DVA/LTA on the timeline, an indicator of the distance the clip has moved from being in sync appears beside the indicator of how many frames the clip has been moved. This information does not appear when the option is unchecked.

Undo Levels - Defines how many levels of undo Velocity should keep track of. This number is limited only by the memory that is available to your machine. Velocity will display an error message if there isn't enough memory available to keep track of the selected number of undos. If you notice that Velocity is responding slowly to timeline commands, try reducing the number of Undo Levels. Undo affects actions in the trim window, gallery, timeline and VU Meter.

Default Image File Length - When you bring clips to the timeline from the gallery, they will automatically get assigned a length (in timecode) as you define here.

Playback Video Standard - This drop-down menu contains all of the supported video standards in Velocity. In order to play back video clips, you must know which HD or SD standard those clips fall under, and select the appropriate standard from this menu. Since the Quattrus hardware can't support HD media, this menu will not be available in Quattrus systems. Instead, the software will automatically detect which mode the Quattrus hardware is in and set itself to NTSC or PAL accordingly. Your chosen video standard will be saved with the project files.

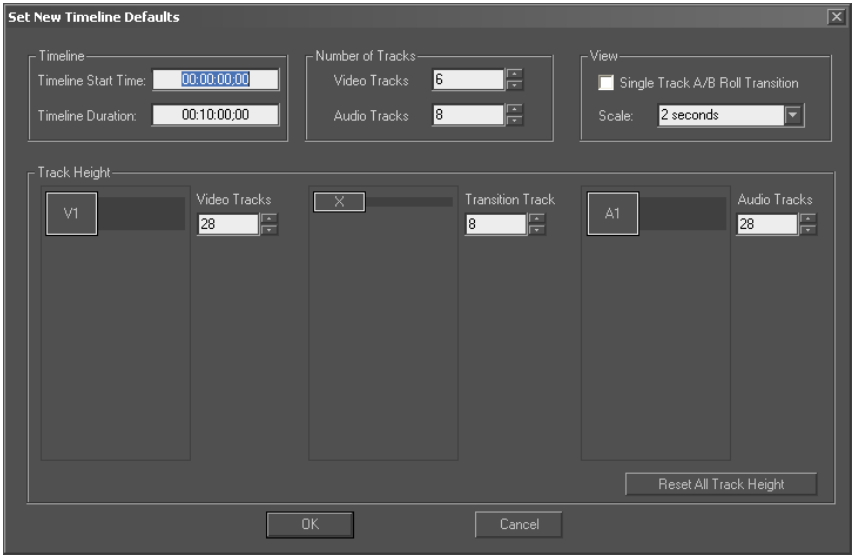
Drop Frame - When this option is enabled, Velocity will drop the last .03 frames per second, having the video play back at the standard 29.97 (or 59.94 for HD) frames per second. This means that if a clip's duration says to be 30 seconds, for example, the duration is exactly 30 seconds and not less.

Non Drop Frame - When this option is enabled, the actual duration of a clip will be slightly shorter than the displayed duration because this option won't take the dropped framed into consideration. This means that the 29.97 frames per second (or 59.94 for HD) will actually be that exact amount.

Note: If a progressive HD format is selected as the Playback Video Standard, the **Drop Frame** and **Non Drop Frame** options will not be available.

New Timeline Defaults

Clicking on the "New Timeline Defaults" button in the General tab will allow you to adjust the start time, duration, number of tracks, view options, and track heights of your timeline.



Timeline

In the Timeline section you can set the Timeline Start Time and Timeline Duration of your timeline by simply entering in the appropriate times in the spaces.

Number of Tracks

You can adjust the number of Video and/or Audio tracks on your timeline by clicking on the up or down arrow buttons next to the number fields to increase or decrease the number of tracks on your timeline. You can also manually type in the number of tracks in the appropriate number field.

View

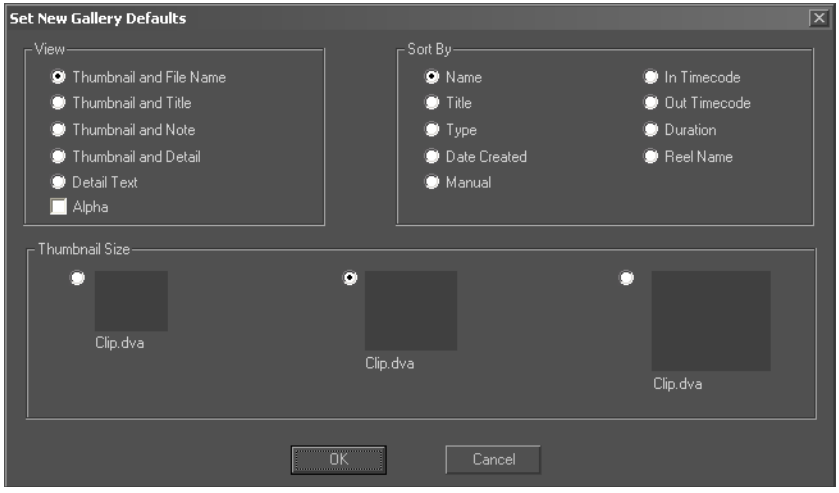
In the view section you have the option to check Single Track A/B Roll Transition mode, which will allow you to create transitions by dragging a clip onto another clip in the same track. In this mode you will not see separate transition tracks.

Track Height

You can adjust track heights for video track, transition tracks, and audio tracks by clicking on the up or down arrow buttons next to the number fields to increase or decrease the heights of the tracks. You can also manually type in a numerical value for each track height. Click the "Reset All Track Heights" button to reset all track heights to their default settings.

New Gallery Defaults

When you click on the "New Gallery Defaults" button, you have the choice to change gallery view options, sorting options, and thumbnail sizes.



View

In the View section you can choose to have your gallery show thumbnails with the file name, title, note, detail, or you may choose to show just detail text without a thumbnail.

Sort By

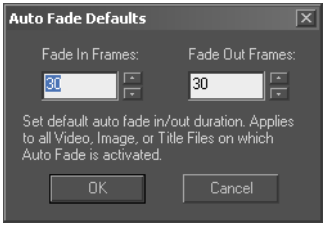
You can sort your gallery items by Name, Title, Type, Date Created, In Timecode, Out timecode, Duration, Reel Name, or you can check the Manual option to click and drag where you would like your gallery items to be located.

Thumbnail Size

In the Thumbnail Size section, you can select which size you would like your gallery thumbnails to be based on the three sizes shown.

Auto Fade Defaults

This box determines the rate at which auto fades occur, where they are used on the timeline.



User-Defined Hotkeys

Press this button to open the window that allows you to review and alter Velocity's Hotkey assignments. For a complete list of Hotkeys, see Chapter 26. You can also access e User-Definable Hotkey interface by pressing (default) Hotkey F6.

The tabs at the top left side of the window represent different areas of the interface. The General Tab contains Hotkeys for timelines, galleries, the trim window, and the VU Meters as a group.

Some Hotkeys are applicable no matter which of the four windows is focused. No matter which window has focus, if you execute an insert, an insert happens, even if the focus is on the timeline or gallery.

Some functions are window specific. If you press the Hotkey assigned to Stop, and the timeline window is selected, play stops on the timeline. If the trim window is active, play stops in the trim window.

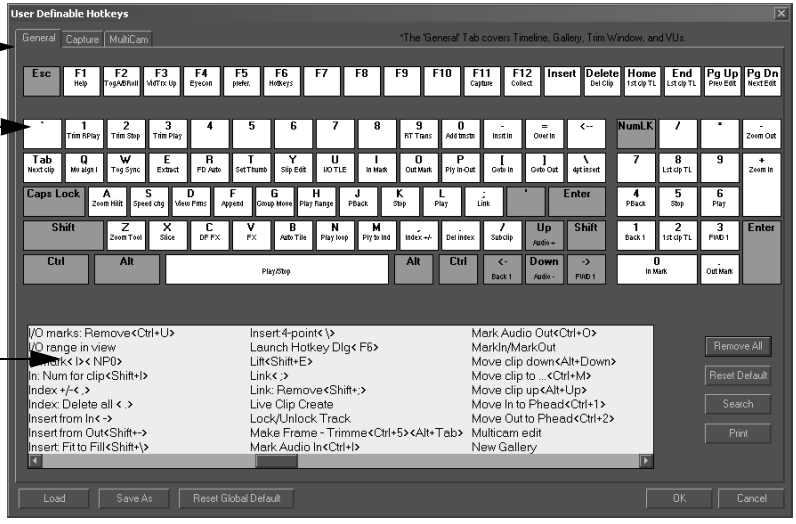
By default, the display shows Hotkeys that are available by pressing a single key. You can also use Hotkeys using key combinations - CTRL, ALT or SHIFT. To view the Hotkeys that use a key combination, hold down the CTRL, ALT or SHIFT key. On the keyboard layout, the combination key that you are holding down turns black.

Buttons that are reserved and cannot be used or changed from their assignment appear as gray on the keyboard layout.

Tabs represent the different interfaces.

Keyboard template

List of tools



If you hold down ALT to assign some functions to ALT+[something], keys like F (file), O (output), E (edit) etc will be grayed out, as those are reserved for system use.

The Hotkeys you assign apply ONLY to the selected interface. The interface displays which keys have already been assigned. Once in a different tab (Capture or General), you can re-use keys used in other tab.

Assigning a Hotkey Using the Mouse

Select any one of the list of tools from the bottom window, and drag it on top of any key on the template to assign that tool to the selected key.

Once the cursor is over the target Hotkey, the Hotkey changes color. Release the mouse button and the tool locks onto the Hotkey. You can assign the same tool to multiple Hotkeys, but you cannot assign multiple tools (from the same tab) to a single Hotkey.

Assigning a Hotkey Using Your Computer Keyboard

Single click an item in the list, and then press the key on the keyboard that you would like to assign it to. The corresponding key changes color on the keyboard.

If you want to assign a certain function to a key combination (CTRL, ALT or SHIFT plus another key), hold the CTRL, ALT or SHIFT key on your computer keyboard, grab the tool from the list, and drag it onto the key you wish to assign.

After the Hotkey has been assigned, it is listed next to the respective tool in the tool list. If you have multiple Hotkeys assigned to a tool, it lists all of them after that tool.

Moving a Hotkey

Click on the key that holds a Hotkey, hold the mouse down and drag it to the key you would like to assign to that function. Release the mouse button.

Removing an Existing Keyboard Assignment

Right click on the key and select "Remove Assignment", or click on the "Remove All" button in the upper right of the interface to remove ALL assignments.

If you select "Remove All", either from the right click or by hitting the button, you will be asked if you're sure you want to do this.

Reset the defaults by either hitting the "Reset Defaults" button, or by right clicking on a key and selecting "Reset Defaults".

Saving and Reloading Hotkey Settings Files

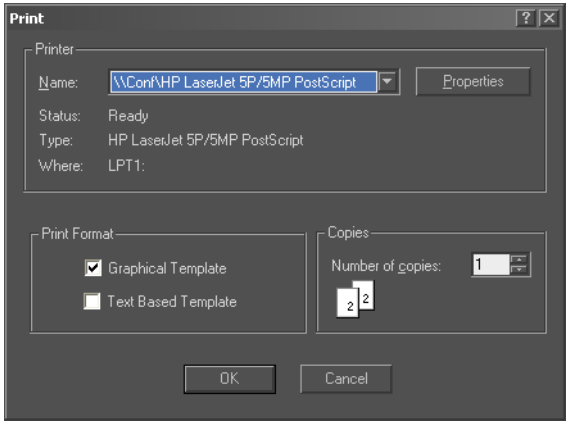
When you click OK to close the User Definable Hotkey interface, a HKY file is automatically saved to the root of the directory where Velocity is installed. I.e., C:\Program Files\DPS\Velocity.

You can load this file again with another project by clicking the "Load" button. This is particularly useful if multiple people are working on multiple projects on the same Velocity system.

Click the "Save As" button to determine a different location for the file. If you save your profile on a floppy disk, and take it with you to a different machine, you can instantly load the environment you're comfortable working with.

Printing out your Hotkey Assignments

Press the "Print" button, and Velocity will print out a template of your personalized Hotkeys.



In the Print Range section, you will have the option to print out only the tab currently displayed, or print out all of the tabs.

To see, for example, the General Hotkeys that are available in combination with the Shift key, hold down the Shift key on your keyboard while you press the Print button on the screen with your mouse. Or select Print All Tabs on the Print window to cover all the bases.

In the Print Format section, select a graphical template to be printed, a text based template, or both formats.

The graphical template is an actual map of the keyboard with the keys assigned.

The Properties button will access print settings for your individual printer, allowing you to print out in Landscape mode or resize to fit your preferred size of paper.

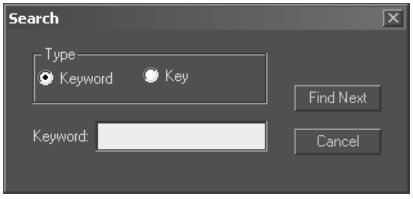
The text based is simply a list:

INSERT FROM INCTRL I
INSERT FROM OUTCTRL O
PLAY/STOPSPACEBAR
etc.

If you are using an international keyboard, it may look different than the one on your monitor. It will still be key-based assignments, instead of position-based assignments. Hotkeys are assigned to characters, not locations.

Search the User-Definable Hotkey List

Press the Search button to open a new window:



The Hotkey Search window can do two types of searches:

Keyword - Searches the Hotkey list's descriptive text.

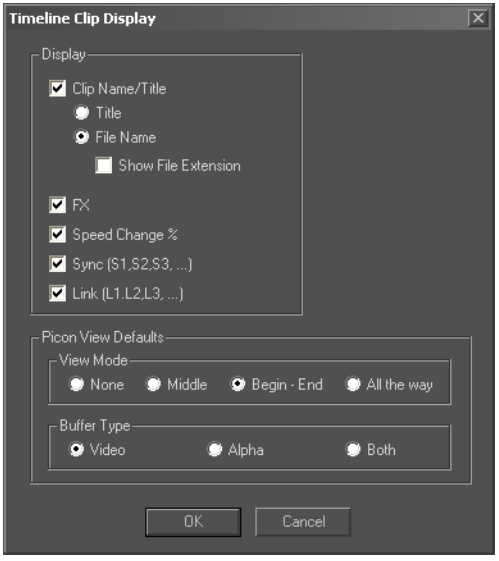
Key - Searches for a Hotkey (the portion in the Hotkey list that is enclosed in <> brackets). If you search for a key, all entries in the list that include that key are eventually found by the search, including entries that use that key in conjunction with the Alt, Ctrl or Shift key.

Enter the item you wish to search for. If you are searching for a Hotkey that uses a number, type that number. If you are searching for a Hotkey that uses a number on the number pad, type NP in front of the number you wish to search for.

Press Find Next. In the User-definable Hotkey window, below the search window, the first item in the list that has that name is highlighted. The list scrolls to display that item. If you press Find Next repeatedly, you can scroll through all the items that contain that key or keyword. Eventually, when you have gone through them all, the search starts again at the beginning.

Timeline Clip Display

Choose how much or how little information you wish to view on the labels of clips on your timeline.



Display

Clip Name/Title - If you check here, you can choose between the two options of title or file name. If you choose Title and a clip has no title, the clip displays its File name without a file extension. If you choose File name, you can display the File name extension as well (i.e., DPS, TGA, DPT etc.).

FX - Shows a number of effects in the top left corner of a video clip that has effects applied.

Speed Change - A Percentage in the top right corner of a clip.

Sync - Displays in the top left corner of the clip before any effects listings.

Link - Displays in the top left corner of the clip before sync and effects.

Picon View Defaults

Picons are single frames of video that appear on clip bars on the timeline.

View Mode

None - No picons appear.

Middle - A single picon appears in the middle of the clip. The image is the trimmed first frame of the clip.

Begin - End - Picons appear at both the beginning and end of the clip. The images are the trimmed first and trimmed last frames of the clip.

All the way - Picons appear back-to-back all the way across the clip.

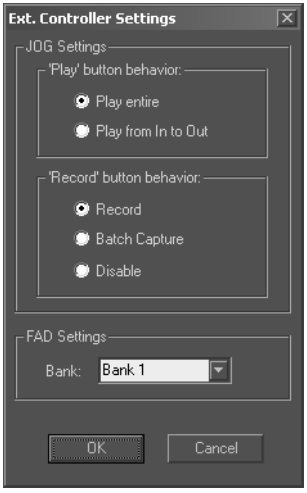
Buffer Type

You can choose from Video, Alpha, or both video and alpha.

Picon View settings are applied to new clips that are added to a timeline but not to clips that were on the timeline prior to changing the settings. To apply these defaults to all clips on the timeline, regardless of individual clip settings, right click a blank space on the timeline and choose "Set All Picon View Clips to Defaults".

External Controller Settings

Choose how you wish the play button on the JOG-4000 or JOG-5000 external controller to operate. If you don't have a JOG-4000 or JOG-5000 connected to your system, this has no effect.



JOG Settings

Play button behavior - Entire clip or In to Out.

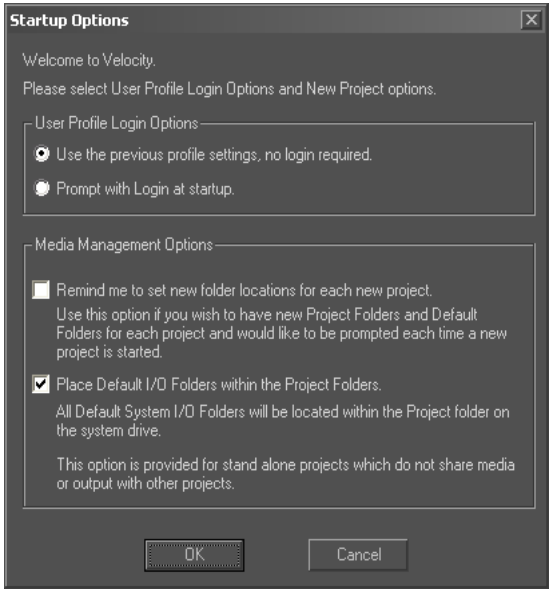
Record button behavior - When you are in the Capture window in Timecode Mode, the record button can behave like either Record (to do on the fly capture) or Batch Capture (capture the entire list).

FAD Settings

Bank - A bank is a grouping of audio channels. For example, Bank 1 represents channels 1-8. Select which back you want to work with through this drop-down menu.

Start-up Defaults

These options determine what happens when you start or re-start Velocity.



User Profile Login Options

You have the option to have Velocity use the previous profile settings while launching, which will not require a login. Otherwise, check the “Prompt

with Login at startup" option to have the user(s) login when they launch Velocity.

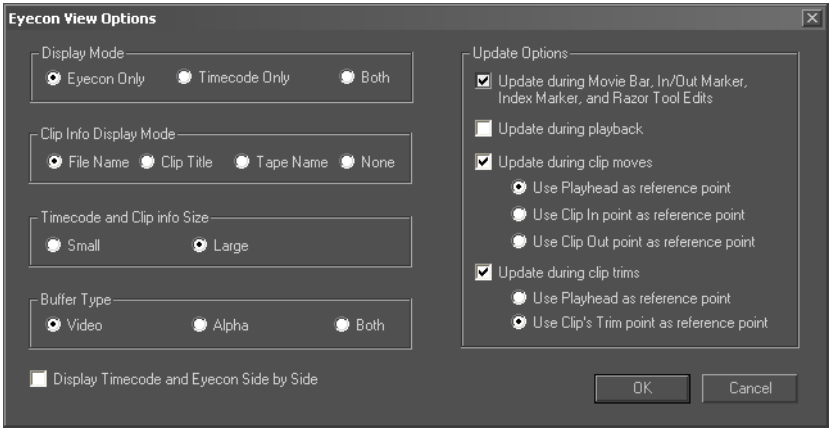
Media Management Options

Remind me to set new folder locations for each new Project - When you select this option, every time you create a new project a window will open asking you to choose a location for default folders on your system and media (P) drives.

Place Default I/O Folders within Project Folders - When you select this option, every time you create a new project, media is automatically placed in the Project system and media folders.

Eyecon View Options

Eyecons are a column of clip previews that appear just to the right of the timeline track headers. They can be viewed by dragging the separator bar between the timeline and Track headers to the right.



Display Mode - You can choose between Eyecons (single frame images from the clip under the playhead), timecode of that same clip, or both. The timecode is displayed using the same settings as the timeline, so if the timeline timecode is displayed in frames, it will be displayed in frames in the Eyecon view as well.

Clip Info Display Mode - You can choose whether you want you clips to display the File Name, Clip Title, Tape Name, or no clip information (None).

Timecode and Clip Info Size - Choose from small or large.

Buffer Type - You can display video, alpha, or both video and alpha.

Display Timecode and eyecon side by side - When this is selected, the timecode appears to the left of the Eyecon. When it is not selected, the timecode appears beneath the Eyecon.

Update Options

If no Update Options items are checked, the Eyecon View only updates when the playhead is left over a clip.

Update during Movie Bar, In/Out Marker, Index Marker and Razor tool edits - When checked, the Eyecon bar constantly updates during the listed activities. As they are all scrub-based, they do not affect performance.

Update during playback - Eyecon bar updates constantly during timeline playback, including using the JKL (default) Hotkeys and smooth scrub.

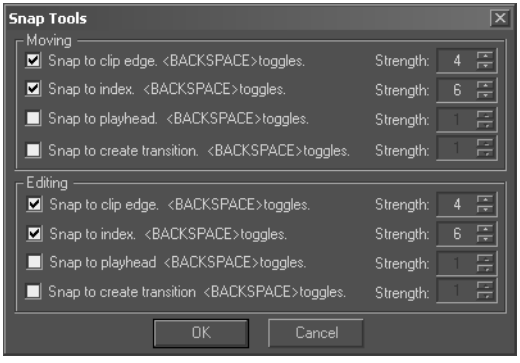
Update During Clip Moves - If this is enabled, you can choose to use the Playhead, Clip In point or Clip Out point as the reference during clip moves. This determines what shows in all the Eyecons during dragging clips.

Update during Clip trims - If this is enabled, you can choose to use either the Playhead or the Clip's Trim Point as the reference.

The Eyecon View options are also available by right clicking in the eyecon view column on the timeline.

Snap Tools

When you move an item near to another item on the timeline, the way that other item affects it is referred to as Snap.



Moving

These settings affect what happens when you drag clips from the trim window, gallery or around the timeline. These settings affect the Gap tool as well as dragging individual clips.

Editing

Tools in this section affect how the clip edge reacts when are trimming it on the timeline.

Snap to clip edge - When this box is marked, the edge of a clip automatically snaps to the edge of any other clip it encounters along the timeline. This lets you easily put two clips together without any space between them.

Snap to Index - With this on, the edge of a clip automatically snaps to any timeline or clip point that is marked with an index. This is useful when you have an index marked at a specific time and you would like one or more clips to start at that time.

Snap to Playhead - When this box is checked, clips automatically snap to the Playhead if it is within range.

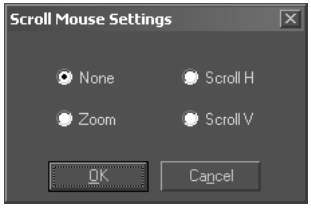
Snap to Create Transition - Snaps to the default transition length as set in the trim window settings (by right clicking in the trim window).

Strength - Determines how close together two elements have to be in order for the edge to snap.

Temporarily reverse the snap capability by holding down the Backspace key.

Scroll Mouse Settings

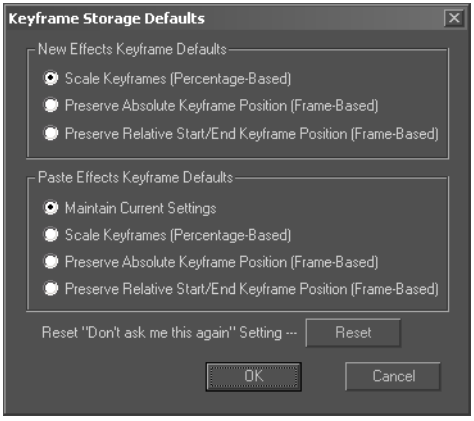
If you are using a scroll mouse with Velocity, then you have the option to customize your mouse settings by clicking on the "Scroll Mouse Settings" button in the General tab.



You can have the scroller on your mouse scroll vertically (Scroll V), horizontally (Scroll H), zoom in or out on the timeline (Zoom), or you can select None for the scroller to have no effect.

Keyframe Storage Defaults

These settings determine the storage preferences for keyframes.



New Effects Keyframe Defaults

Scale Keyframes (Percentage-Based) - This option will apply keyframes to clips in a percentage-based fashion, meaning that the effect will act based on the clip length.

Preserve Absolute Keyframe Position (Frame-Based) - This option will apply keyframes to clips in a frame-based fashion, meaning that the number of frames the effect has will always be the same for every clip it is involved with.

Preserve Relative Start/End Keyframe Position (Frame-Based) - This option will apply keyframes to clips also in a frame-based fashion, but will always keep the same start and end keyframe position for each clip involved.

Paste Effects Keyframe Defaults

Maintain Current Settings - This option will have the pasted keyframes maintain their current settings.

Scale Keyframes (Percentage-Based) - This option will paste keyframes to clips in a percentage-based fashion, meaning that the effect will act based on the clip length.

Preserve Absolute Keyframe Position (Frame-Based) - This option will paste keyframes to clips in a frame-based fashion, meaning that the number

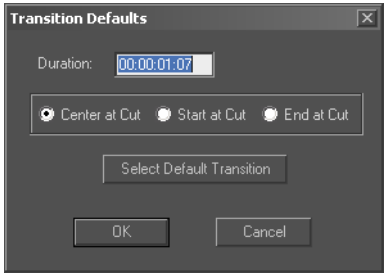
of frames the effect has will always be the same for every clip it is involved with.

Preserve Relative Start/End Keyframe Position (Frame-Based) - This option will paste keyframes to clips also in a frame-based fashion, but will always keep the same start and end keyframe position for each clip involved.

Reset "Don't ask me this again" Setting - Click the Reset button to reset this setting to its disabled state.

Transition Defaults

These settings affect the use of transitions in your project.



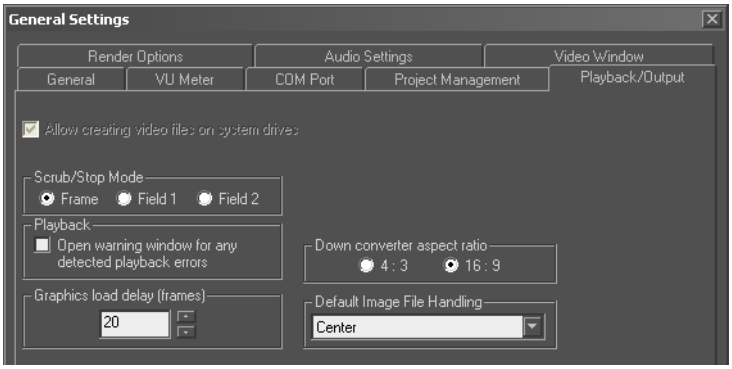
Duration - You can set the duration of a selected transition here

You also have the option to choose whether you want the selected transition to be centered at the cut, started at the cut, or ended at the cut.

Select Default Transition - If you click this button the Real Time Transitions window will open, allowing you to choose the appropriate transition effect for your selected transition.

Playback/Output

These settings affect the way Velocity interacts with the Altitude or Quattrus hardware - video output, graphics usage, etc.



Allow creating video files on system drives - Check here if you wish to be able to render and capture DPS/LTV video on your Velocity's system drives.

Scrub/Stop Mode

This affects what appears on your video monitor when the scrubbing playhead comes to a stationary position. Often, displaying Field 1 or Field 2 will produce a more stable and satisfying picture than viewing both fields simultaneously (full frame).

Playback

Open warning window for any detected playback errors - If this option is checked you will be given a warning if the playback data rate is higher than the rate supported by your hard drives. This warning will also be shown if "Safe Spin" has occurred during playback.

Graphics Load Delay (frames)

When you play a series of graphics on the timeline, it may take a frame or two to switch from one to the next in the frame stores. The Graphic Load Delay forces you to render the second graphic if it is placed within the setting for Graphics Load delay. If your graphics are placed close together on the timeline and do not play back correctly, increase the Graphic Load Delay setting.

Output Selection

Video 2 - You have the option to choose whether you want the main signal or the key signal to appear on your Video Output 2 video monitor. If you

want the key signal to appear, make sure the **Key Signal** check box is enabled.

Down Converter Aspect Ratio

Choose from 16:9 and 4:3 - Whichever of these you choose, when viewing your project it will appear normally when playing back through standard equipment. However, the screen shape is considerably wider in 16:9 mode, so transitions that are based on bitmaps will be mis-shapen. Selecting 16:9 resizes them to fit the pixel shape of the 16:9 screen.

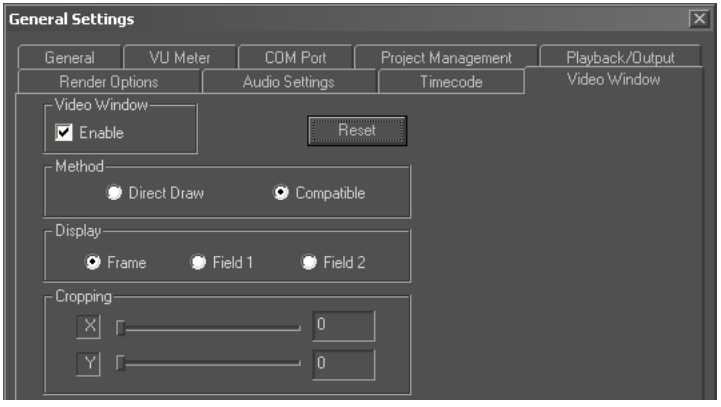
Default Image File Handling

When image files which are smaller or larger than a standard screen size are sent to the timeline, they are normally resized to fill the screen, even when this distorts the image by changing the aspect ratio. If you want to keep the same aspect ratio you may choose one of several options, including resizing it to fill as much of the screen as possible or positioning the image on the screen without changing the size. If the image does not fill the screen the unused areas will be black. If the image overflows parts of the screen those parts will not be shown.

If you change this setting mid-way through a project that already has graphic image files applied to the timeline, you will have to right click on each graphic and select Reset Graphic to apply the change if you do not want to use the previous setting.

Video Window

Settings affect Velocity's VGA preview screens in the trim window, Capture and MultiCam editing interfaces. The settings affect the output to your VGA screen's Preview windows only, and do not have any impact on what will appear on an output monitor, VTR or other output device.



Video Window

Enable - When this is checked, you can view your video in the trim window, Capture window and MultiCam Editing interfaces. When it is not checked, you must view your video on an external monitor.

Method

The default is Compatible mode. If your video card does not support Direct Draw or has trouble keeping up with the video output you must use Compatibility mode. If your VGA card supports Direct Draw, switch to it for improved system performance.

Display

The Raster drop down menu allows you to choose from Frame, Field 1 and Field 2. If you have video with a great deal of motion you may wish to use one of the Field options. However, this reduces the amount of information on your VGA screen.

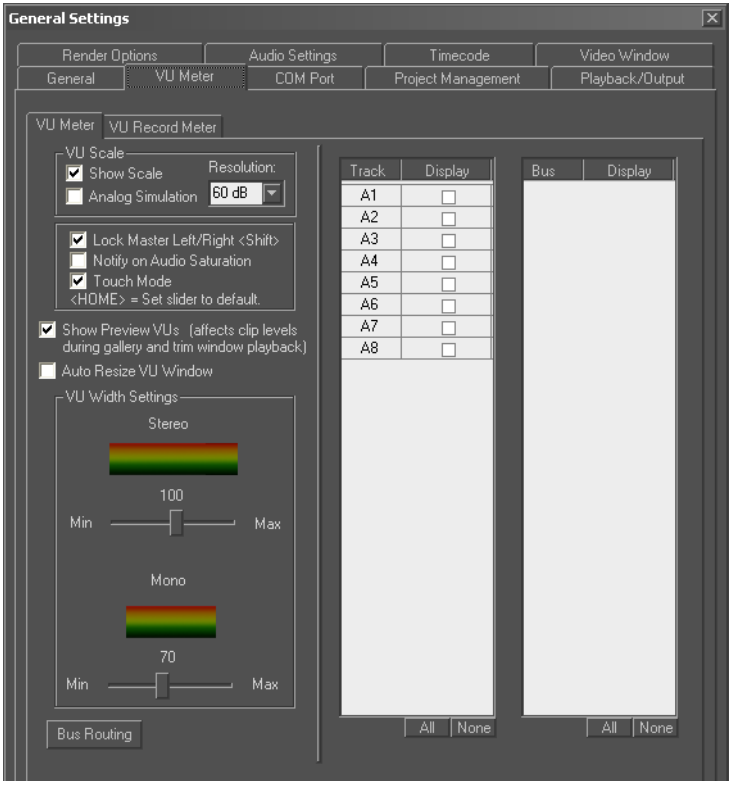
Cropping

Two sliders allow you to stretch the image along the x and y axes, effectively cutting off the edges.

Reset - Click here to return all slides and settings (except the Video Window Enable check box) to their default settings.

VU Meter

You can also open the VU Meter Preference window by right clicking on the Settings button in the VU meter section of the screen.



VU Scale

Show Scale - When this is checked, you can see numbers on the color volume indicators.

Analog Simulation - When this is checked, the scale on the VU Meters changes from a digital audio scale (with 0 dB at the top of the scale) to an analog style audio scale that puts 0 at the dividing line between the green and yellow parts of the scale, with positive values for red and yellow parts of the scale and negative values for green parts of the scale.

Resolution - You may choose which part of the scale you would like to view. You may view from 60 dB, which includes the entire red, yellow and

green range, or you may zoom in stages until you are viewing just the top 12 dB, which includes just the red and yellow range.

Lock Master Left/Right - Checking this box locks the left and right audio channels, so that when you drag one slider, the other one is dragged by the same amount. To temporarily reverse this setting, hold down the Shift key while you drag a slider.

Notify on Audio Saturation - When this box is checked, a small window pops up when audio saturation is detected. If you want to record or playback audio without audio distortion you will need to turn down the audio levels when saturation is detected. This window can make it difficult to use the sliders during audio capture and will stop timeline playback, so there may be times when you will want to disable this function. Whether or not this function has been enabled, the red warning marker appears on the VU Meter when audio saturation is detected.

Show Preview VUs - When this option is checked you will be able to adjust the preview VUs, which affects clip levels during gallery and trim window playback.

Auto Resize VU Window - When this option is checked, the VU window will contract and expand appropriately as new channels are added/removed.

VU Width Settings

Using the Sliders, you can adjust the width of the VU meters that represent both stereo and mono tracks.

Display

The right pane of this settings window allows you to choose which audio tracks have sliders on the VU Meters, and which tracks play back in real time.

Track - This column lists all the audio tracks on the timeline. You cannot alter the tracks here (to add or remove tracks from the timeline, right click on the timeline and choose Add Tracks or Remove Tracks from the menu).

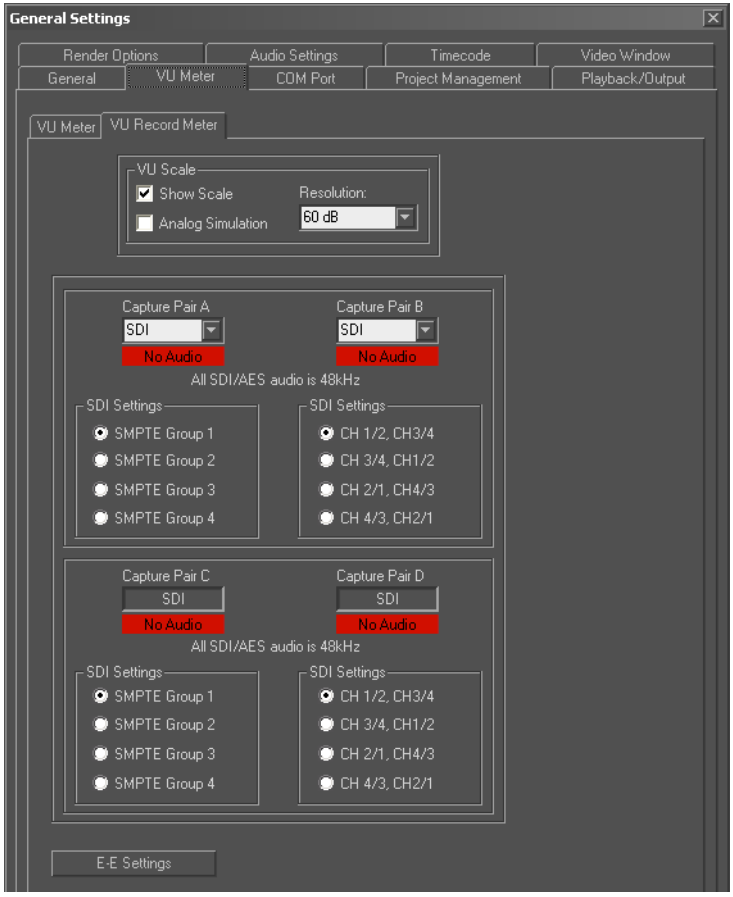
Real-Time - Audio tracks which have a check mark beside them will play back in real-time when you play the timeline. You can have a maximum of eight during normal playback, or six if you

Display - Check marks indicate audio tracks that have their own sliders on the VU meters. Note that only audio tracks that have checks beside them in the Real-time column can be checked in the display column. The “All” and “None” buttons allow you to quickly reset your selections.

Bus Routing - Click on this button to open the Bus Options window to adjust the physical audio outputs (see Chapter 13 for more information).

VU Record Meter

The first three options are described in the VU Meter section.



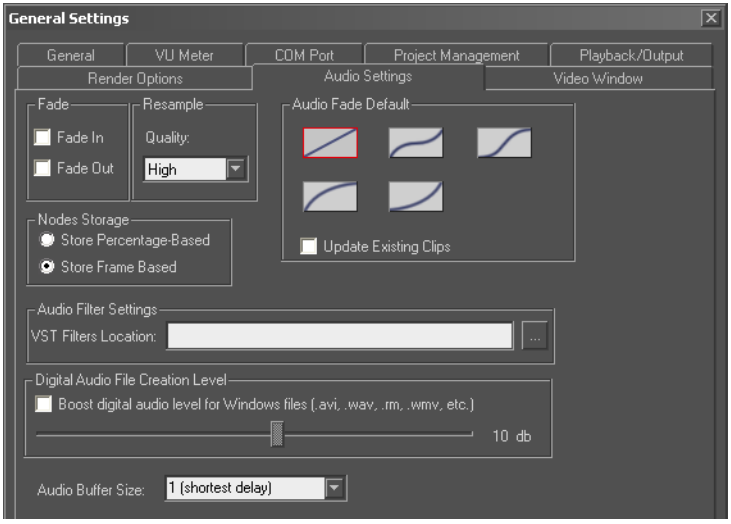
Choose the audio source you wish to capture from. All potential audio capture sources are listed. If you choose SDI (if you have it available), press the Advanced button you can choose group and channel as well.

E-E Settings - Click this button to open the E-E options window, which will allow you to adjust the physical audio outputs (see Chapter 13 for more information).

You can also access the VU Record Meter Preference window by right clicking on the Audio Settings button in the Capture Settings.

Audio Settings

These are hardware specific audio settings.



Fade - Helps you to avoid audio pops that you may encounter on some computer systems during the beginning and/or end of audio clip playback. Fade In and Fade Out do a very quick ramp up of the audio at the start and/or a very quick ramp down at the end.

Resample - If you capture audio at one sample rate (22 kHz for example) and you then play it back from the timeline at a different sample rate (44 kHz for example) your computer will need to resample the audio so that it can playback all of the audio at the timeline's playback sample rate. Normally you can leave the default Quality of the Resample rate set to High. The Very High setting will use more of your computer's CPU and can cause a small lag before audio playback begins.

Nodes Storage - You have the option for your nodes to be stored in a percentage-based fashion, meaning the nodes will adjust based on the length of the clip. You also have the option to have your nodes stored in a frame-based fashion, meaning that the exact amount of frames for each node will be exactly the same at all times.

Audio Fade Default - You can choose from the five pre-made audio fades at your default audio fade. Click on the **Update Existing Clips** check box

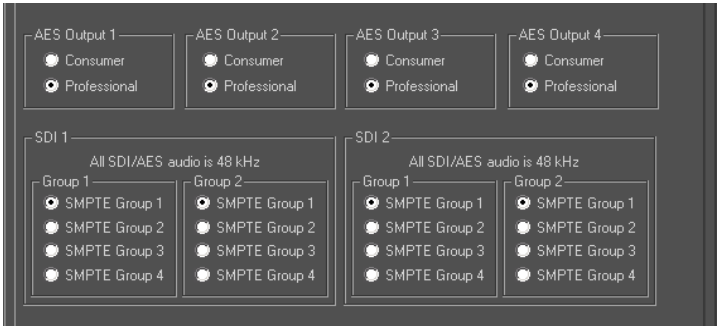
to have your chosen audio fade apply to all existing audio fades on your project.

Audio Filter Settings - If you have VST filters installed, you can browse to your system location to choose your desired VST audio filter.

Digital Audio File Creation Level - The slider at the bottom of the screen adjusts the audio volume of your output files. If you find that your audio is consistently too low, place a check beside **Boost digital audio level for Windows files**. Experiment with the slider positioning until you achieve the correct level.

Audio Buffer Size - You can determine the amount of delay in making on-the-fly adjustments. Options are 1 (shortest delay) to 5 (longest delay).

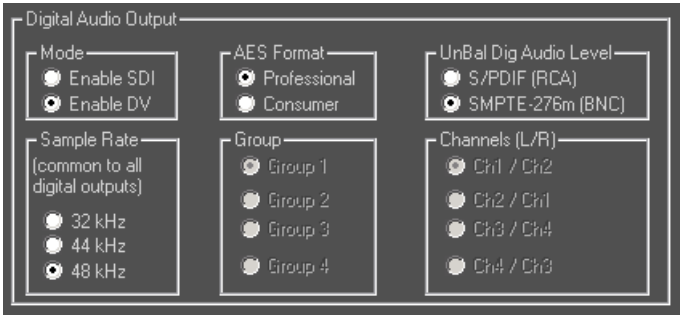
AES/SDI Digital Audio Settings (for Altitude)



AES Outputs 1-4 - If you are going to output to AES, you may choose Professional or Consumer format. Check the specifications for your audio equipment to determine the correct setting.

SDI 1-2 - If you select SDI as your audio output format, you may select the Group that you output to. No matter which channels and group you select (and you can only choose one radio button in each section of the screen) all the audio that is selected on your timeline (four tracks - either three stereo hardware audio channels and one mix-down track, or four stereo hardware audio channels) will be output onto that group and those channels. If you will be sending your SDI-mastered tape to a broadcast facility, you may want to find out beforehand which group and channels they prefer to use, and then output to those. Or you may have your own in-house convention.

Digital Audio Settings (for Quattrus)



Mode - If you plan to output SDI or DV with embedded audio (and if you are outputting video to one of these formats) you should check the appropriate format under Digital Audio Output. You can only have one of these two formats selected at the same time.

AES Format - If you are going to output to AES, you may choose Professional or Consumer format. Check the specifications for your audio equipment to determine the correct setting.

Unbalanced Digital Audio Level - Choose RCA or BNC, depending on the type of cables that interface to your audio device.

Sample Rate - If you select DV audio as your output format, you can select the output sample rate. It's probably best to output at the same sample rate as most of your audio was captured at, that way your audio will undergo the least amount of re-rendering. However, if your DV device cannot accept the sample rate you are outputting, the point is moot.

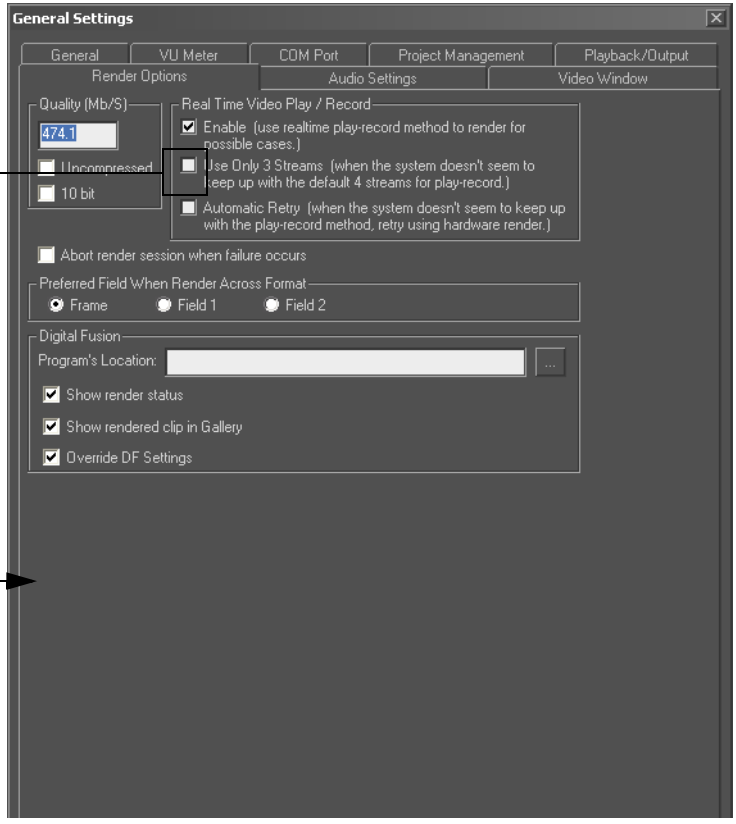
Channels/Group - If you select SDI as your audio output format, you may select the Channels and Group that you output to. No matter which channels and group you select (and you can only choose one radio button in each section of the screen) all the audio that is selected on your timeline (four tracks - either three stereo hardware audio channels and one mix-down track, or four stereo hardware audio channels) will be output onto that group and those channels. If you will be sending your SDI-mastered tape to a broadcast facility, you may want to find out beforehand which group and channels they prefer to use, and then output to those. Or, you may have your own in-house convention.

Render Options

To change your rendering settings and re-render you have to unrender all previously rendered segments.

Option only available on Quattrus systems

DV Options only available on Quattrus systems



Quality

Quality (Mb/s) - The data rate of the rendered DPS/LTV files is normally set the same as the data rate you intend to use for your captured clips. For example, if you are using clips that were captured at 6 MB/s you should set this value to 6 MB/s. Otherwise you may notice a drop in quality for those sections of the timeline that require rendering.

Uncompressed - If you have uncompressed video clips in your project, you may wish to check here. However, if your footage is already compressed, it will just take up more hard drive space, without perceptible improvement in quality.

10 bit (on Altitude systems only) - Place a check here if you want to have your LTV files rendered in 10 bit video, resulting in higher quality that 8 bit video.

Set Default - Click this button to make the quality value the default value.

Real Time Video Play/Record

Enable - When this is checked, all rendering that can be done as real-time rendering is first attempted that way. If that fails, Velocity makes a second attempt at rendering the effect, this time as a scrub-render. When this is unchecked, Velocity automatically does a scrub render by default when you render segments that can be real-time rendered.

Use 3 streams (on Quattrus systems only) - If you have problems with stuttering playback during four-video stream output, check here. This option limits playback during Play/Cord rendering to three video streams (it adds an extra pass during multiple pass renderings) to ensure a smooth render.

Automatic retry - when this is checked, if your system fails on the first attempt to render a timeline segment (a play/cord render), it will try again, doing a scrub render.

Once a segment of the timeline has been rendered, it will play back on the Preview window and the external video monitor with the effects applied.

Place a check in the **Abort render session if failure occurs** box if you want Velocity to automatically abort the rendering process if an error causes a failure. If this option is disabled (default setting) during a Render All and rendering fails, Velocity will skip that segment and continue to render the rest of the segments on the timeline.

Padding - Also called Fixed Field Size, this forces each frame to use exactly the same amount of drive space, depending on your capture rate (the number is Mb/S). When this option is not checked, the capture program can use different amounts of drive space for each frame, depending on how much compression is needed for each frame, to reduce the amount of drive space used for the entire clip. However, if you plan to modify individual frames in your clip (for an animation, for example) the size of the new frame may be greater than it was for the old frame (because of the compression) and you may run into problems. If you have checked the Padding option, all the frames will have the same data size reserved for them, so the new frames will always have enough space.

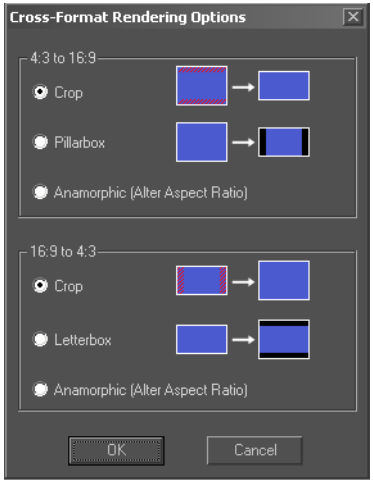
Source Data When Rendering to Progressive Formats

Choose whether you want Field 1, Field 2 or Frame as your preferred render across format.

Cross-Format Rendering Options

Click the Cross-Format Rendering Options button and a window will appear.

Here you can select which type of format you want your cross-render output to look like. There are choices for both 4:3 to 16:9 rendering and 16:9 to 4:3 rendering.



Digital Fusion

Program Location - Click the Browse button to locate the correct DFX-Plus executable file.

Show Rendered Clip in Gallery - When you send a clip to DFX+ from the timeline and this option is selected, after rendering, that clip is replaced on the timeline, and the newly rendered clip is added to the active gallery. When this is not selected, the clip is only replaced on the timeline, but not placed in the gallery.

Override DF Settings - When this is selected, flows created by Velocity override the Loader Process Mode (PAL/NTSC, fields, frames or reversed). When this is not checked, loaders may be processed incorrectly by DFX+.

Show Render Status - When this is enabled, Velocity and Fusion are in constant communication whenever a clip, transition or region is sent to DFX+. After rendering DFX+ automatically saves your flow, closes it and replaces the virtual clip on the Velocity timeline with the new, rendered media. When this is not checked, you must perform these tasks yourself after rendering.

Output to DV (Quattrus Only)

HPS Mode - Recommended mode for use if your system is equipped with SoftDV version 118 or earlier.

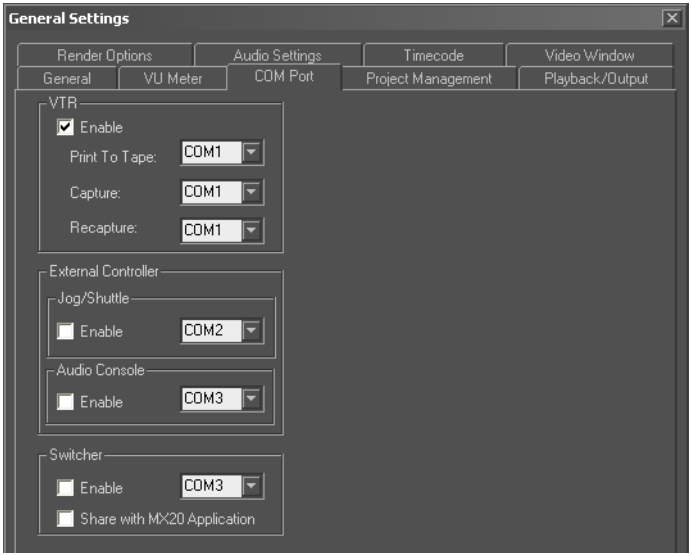
CODEC Mode - Recommended mode if your system is equipped with SoftDV version 119 or later and provides a more reliable output to a DV device.

There are three options that you can consider that will increase or decrease the amount od rendering done when outputting to DV, based on your system's performance:

- **No rendering required for HPS mode, minimum rendering required for CODEC mode**
- **Render effects/transitions**
- **Render effects/transitions, titles and graphics**

Note: The Output to DV settings will only be applied if the VTR Input in the Print to Tape preferences is set to DV.

COM Port



VTR

Print to Tape, Capture and Recapture - Choose the COM Port that the rs-232/422 converter is connected to. They can all be connected to the same COM Port in a case when you have a single VTR hooked up which will perform all these functions (though not simultaneously).

Enable - This option must be checked in order to use the VTR.

The COM Port listed for VTR cannot be the same as that listed for External Controller or Switcher, if they are enabled. If they are not enabled, their settings are not important.

External Controller

This section refers to both the JOG/Shuttle and Audio Console, which are described extensively in Appendices C1-C3.

Enable - When you check here, the software knows to check to see if the controller is present.

Choose the COM Port the External Controller is connected to. It cannot be the same as the VTR or Switcher (if you have one).

Switcher

Switcher refers to the WJ-MX20 video mixer switcher.

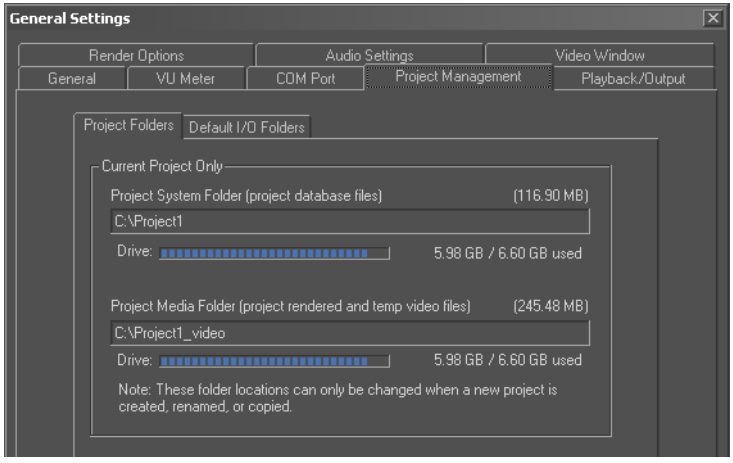
Enable - This must be checked if you wish to use the switcher.

Choose the COM Port the Switcher is connected to. It cannot be the same as a VTR or External Controller.

Share with MX20 Application - This refers to a stand-alone control application which also works with the WJ-MX20. You can have them both open simultaneously.

Project Management

Among other things, this screen provides information about hard drive usage. If the light blue bars indicate your drives are full, you may wish to delete un-needed media before proceeding. For more information, see Chapter 2.



Project Folders

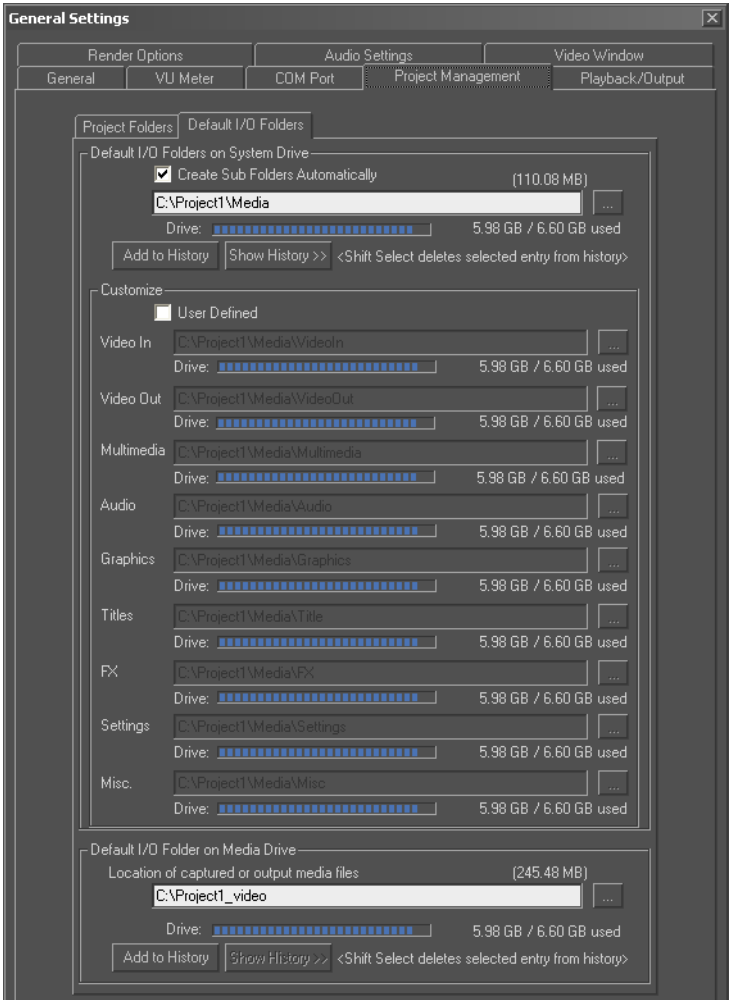
Project System Folder - The location on a system drive where media is stored.

Project Media Folder - The location on a dedicated SCSI video drive where only rendered video (DPS) files are stored, as well as containing the Virtual Tape File System so you can access and render files in a variety of formats.

These items are here for information purposes only. You can only alter this information when you start a new project.

Default I/O Folders

Velocity project management tries to save like media together. These settings determine the sub-folders inside the Project folders where different types of media are actually saved. For more information, see Chapter 2.



Default I/O Folders on System Drive

Create Sub-folders automatically - When you check here, use the Browse button to the right to select a location on a System drive (e.g., C or D) to place the main and sub-folders in.

Add History - Adds the current drive location to the History list.

Show History - Displays the History list. If you have never added anything to the History (Using the Add History button) this will display nothing.

Customize

User Defined - When you check here, you can use each designate locations for each of seven different types of media. You may, for example, want to save all titles for all projects in one common folder, but want to audio for various projects separate.

Default I/O Folder on Media Drive

Use the Browse button to select a new location to capture video clips to.

Chapter 26
Keyboard Shortcuts

Velocity offers keyboard shortcuts for most functions. You can assign most of the Hotkeys yourself. This allows you to align the Hotkeys for similar functions within different programs that you may use, or key combinations that are comfortable or easy for you to remember.

Default Hotkeys

Most of the Hotkeys can be changed. This list describes only the default settings for the Hotkeys. Items that have no Hotkey listed do not have a default Hotkey, but you can assign one for them.

You can assign the Hotkeys to the various tools on the timeline, trim window, Capture screen, etc.

Note: Changing hotkeys such as Lift, for example, that remove a portion of the timeline should not be assigned as a SHIFT hotkey, as SHIFT will invoke a ripple, thus changing the nature of a hotkey like Lift.

List of Assignable Hotkeys

General

Add w/Transition <0> - Adds a selected clip in the gallery to the timeline, creating a transition on the furthermost right clip on track V1.

Align By TC(Move) - Aligns selected clips on the timeline with the In point of the clip on the highest priority track.

Align In Move <Q> - Aligns the beginning of the selected clip with the In point on the timeline

Align In Trim - Trims the selected clip's In point to the location of the In marker on the timeline

Align In/Out Trim - Trims the selected clip's In point to the location of the In marker on the timeline and trims the clip's Out point to the location of the Out marker on the timeline.

Align Out Move <Shift+Q> - Aligns the end of the selected clip with the Out point on the timeline

Align Out Trim - Performs an Out trim on a clip in order to align with another clip(s)

Alpha View Toggle - Toggles alpha views

Append to TLE/GY <F> - Sends the selected clip on the timeline to the active gallery, and vice versa

Apply Video Effects <V> - Opens the Apply Effects interface (clip must be selected on the timeline)

Audio Crossfade <Ctrl+L> - Creates an audio crossfade with two selected audio clips that overlap on the timeline

Audio Fade <Ctrl+K> - Creates an audio fade on a selected audio clip on the timeline

Audio Fade Type <Ctrl+D> - Opens the Fade Options window which allows you to choose which type of audio fade you wish to use for the selected clip

Audio Target None <Alt+NP0> - Applies no Audio Target Track

Audio Target Trk 1 - 9 <Alt+NP(1-9)> - Sets the Audio Target Track in the trim window

Auto Bump Audio <Ctrl+B> - Bumps the audio level up

Broadcast Always <Shift+B> - Enables the Broadcast Only feature, which means that whatever is going on in your timeline goes out live (Quattrus only)

Capture <F11> - Launches the Capture interface (only when the gallery is selected)

Clip Idx <.> - Adds a clip index to the selected clip

Clip In: Adjust <Shift+[> - Navigates to the beginning of the selected clip on the timeline, showing the timecode, and allows you to trim to adjust the In point of the clip

Clip Info: Display - Displays the Clip Info for a a clip that is selected on the timeline

Clip Out: Adjust <Shift+]> - Navigates to the beginning of the selected clip on the timeline, showing the timecode, and allows you to trim to adjust the In point of the clip

Clip: Mute Audio <Shift+A> - Mutes the selected audio file

Close Gallery - Closes the current gallery

Close Timeline - Closes the current timeline

Collapse X Tracks <F2> - Collapses all transition tracks on the timeline

Collect <F12> - Opens the Collect Clips window, allowing you to navigate to the necessary locations to load clips into the gallery

Consolidate - Opens the Consolidate Project window, which can allow Velocity to gather information about all of the media and other files needed by your project to their respective folders

Consolidated Copy - Opens the Consolidated Copy window, which can allow Velocity to gather ALL of the system files and media files needed by your project and copies these files to any SYSTEM folder you choose

Copy <Ctrl+C> - Performs a copy

Copy Audio FX - Copies Audio effect attributes

Copy Project - Copies the current project

Copy Timeline - Copies the selected timeline

Create a new user p(rofile) - Creates a new .usr file

Cut <Ctrl+X> - Removes a selected clip(s) from the gallery or timeline

Delete After Cursor <Ctrl+]> - Deletes the parts of clips after where the playhead is located

Delete Before Cursor <Ctrl+[> - Deletes the parts of clips before where the playhead is located

Delete Clip <Del> - Deletes a clip from the timeline or gallery

Delete From System - Permanently deletes a clip from your designated video drive

Delete Gallery - Deletes the current gallery from the project

Delete Timeline - Deletes the current timeline from the project

Deselect Clips - Deselects the currently selected clips on the timeline or gallery

Display Cur Frame <D> - Shows a preview of a frame on a to be rendered clip on the timeline

Duration clip Num <Shift+U> - Opens the Change Clip In/Out window, which allows you to manually change the duration of the selected clip

Effects: Add - Adds the current effect to a clip

Effects: Auto Fade <R> - Applies an Auto Fade to the selected clip

Effects: Color FD <Shift+R> - Opens the Fade to Black/Window window, which allows you to choose a color for a fade

Effects: Copy <Shift+C> - Copies effect attributes

Effects: Custom FD - Opens the Custom Fade window, which allows you to use the keyframer to create a fade

Effects: DF <C> - Launches Digital Fusion when a clip is selected on the timeline

Effects: None - Applies no effects to selected clips

Effects: Paste <Shift+V> - Pastes effect attributes

Extend Left <Shift+9> - Extends a selected clip on the timeline to it's original, untrimmed Out point

Extend Right <Shift+0> - Extends a selected clip on the timeline to it's original, untrimmed In point

Extract <E> - Performs an Extract, which removes parts of clips that lie between an In and Out point on the timeline, while shifting all other clips on the timeline to the left the same amount of frames as were removed

Find clip <Ctrl+F> - Opens the Find Clip window, which allows you to find a clip from the list provided

Go 1 Frame Back <Shift+J><NP1> - Navigates one frame backwards on the timeline or trim window

Go 1 Frame FWD <Shift+K><NP3> - Navigates one frame forward on the timeline or trim window

Go 1 Minute FWD - Navigates one minute forward on the timeline or trim window

Go 1 Second FWD - Navigates one second forward on the timeline or trim window

Go 10 Frames Back <Shift+H> - Navigates 10 frames backwards on the timeline or trim window

Go 10 Frames FWD <Shift+L> - Navigates 10 frames forward on the timeline or trim window

Go 2 Minutes FWD - Navigates two minutes forward on the timeline or trim window

Go 30 Seconds Back - Navigates 30 seconds backwards on the timeline or trim window

Go 30 Seconds FWD - Navigates 30 seconds forward on the timeline or trim window

Go 5 Frames Back - Navigates five frames backward on the timeline or trim window

Go 5 Frames FWD - Navigates five frames forward on the timeline or trim window

Go Live! <Shift+G> - Enables Go Live!

Go to <Ctrl+G> - Opens the Go To window, which allows you to navigate to a specific point on the timeline by entering the appropriate timecode

Go To Next Vol Node <Ctrl+E> - Navigates to the next volume node on a selected audio clip on the timeline

Go To Prev Vol Node <Ctrl+W> - Navigates to the previous volume node on a selected audio clip on the timeline

Goto 1st TLE clip <Home><NP2> - Navigates to the first clip in succession on the timeline

Goto beg. of TLE <Shift+Home> - Navigates to the beginning of the timeline

Goto end of TLE <Shift+End> - Navigates to the end of the timeline

Goto In Point <[> - Navigates to the In point on the timeline or trim window

Goto last TLE clip <End><NP8> - Navigates to the end of the last clip in succession on the timeline

Goto Next Index <Shift+.> - Navigates to the next index

Goto Out Point <]> - Navigates to the In point on the timeline or trim window

Goto Prev. Index <Shift+,> - Navigates to the previous index

Group Move Tool <G> - Enables the Group Move tool, which allows you to move multiple clips at the same time on the timeline

GY Info: Display - Opens the Gallery Information window

GY Info: Edit - Opens the Edit Gallery Information window

GY: Print Icon+Txt - Prints both the icon and text of clips in the gallery

GY: Split - Creates a duplicate of the current gallery and sends the currently selected clip to the duplicated gallery

GY: Text Only <Shift+F8> - Displays clips in the gallery as text

GY: Thumb + File <Shift+F5> - Displays clips in the gallery as thumbnails with the file name

GY: Thumb + notes <Shift+F6> - Displays clips in the gallery as thumbnails with notes

GY: Thumb + Text <Shift+F7> - Displays clips in the gallery as thumbnails with text

GY: Thumb + Title <Shift+T> - Displays clips in the gallery as thumbnails with titles

Help <F1> - Launches the Help system

Highlight - Opens the Gallery Highlights window when the gallery is selected, allowing you to choose which type of files you want to be highlighted on the gallery

Highlight None - Disables any highlighted items in the gallery

I/O Mark on TLE <U> - Places an In marker at the beginning of the first clip on the timeline and places an Out marker at the end of the last clip

I/O marks: Remove <Ctrl+U> - Removes the In and Out markers from the timeline

I/O range in view - Places an In marker at the beginning of the first clip in view on the timeline and places an Out marker at the end of the last clip in view (the last clip must end in view for an Out marker to be placed at the end of it)

In Mark <I> <NP0> - Places an In marker where the playhead is located on the timeline

In: Num for clip <Shift+I> - Opens the Change Clip In/Out window, allowing you to manually change the In point of the selected clip on the timeline

Index +/- <,> - Adds or removes an index where the playhead is located

Index: Clip Del All <Ctrl+.> - Removes all indices from the selected clip

Index: Delete all <Ctrl+,> - Removes all indices from the timeline

Insert from In <-> - Inserts the edited clip from the trim window to the timeline where the In point is located, shifting all clips to the right the exact amount of frames as the size of the inserted clip

Insert from Out <Shift+-> - Inserts the edited clip from the trim window to the timeline where the Out point is located, shifting all clips to the left the exact amount of frames as the size of the inserted clip

Insert: Fit to Fill <Shift+\> - Changes the clip speed to fit the marked gap between clips or timeline In and Out markers

Insert: 4-point <\> - Performs a 4-point insert

Launch Hotkey Dlg <F6> - Launches the User Definable Hotkeys interface

Lift <Shift+E> - Removes all material in between the In and Out markers on the timeline while shifting all other clips that lie to the right of the Out point left the exact amount of frames that have been lifted from the timeline

Link <;> - Links selected clips together on the timeline so they can all be moved at once

Link: Remove <Shift+;> - Removes the link from the selected clips

Live Clip Create - Creates a live clip when the gallery is selected

Lock/Unlock Track - Enables the Lock tool

Loop Playback <N> - Toggles Loop Playback on and off, which allows playback to resume from the beginning of the segment once it reaches the end

Make Frame - Trimmer <Ctrl+5> - Allows you to save a single frame as an image file when you are in the trim window

Mark Audio In <Ctrl+I> - Marks an In point

Mark Audio Out <Ctrl+O> - Marks an out point

MarkIn/MarkOut - Places In and Out markers around a selected clip (or clips) on the timeline

Move clip down <Alt+Down> - Moves a selected clip down to the next available track (press ENTER to plant the clip on the track)

Move clip to ... <Ctrl+M> - Opens the Move Clip To: window where you can manually enter the timecode for the selected clip's In or Out point on the timeline

Move clip up <Alt+Up> - Moves a selected clip up to the next available track (press ENTER to plant the clip on the track)

Move In to Phead - Moves the selected clip's In point to the location of the playhead on the timeline (can also be used for multiple clips)

Move Out to Phead - Moves the selected clip's Out point to the location of the playhead on the timeline (can also be used for multiple clips)

Multicam edit - Opens the Multicamera Editor

New Gallery - Opens the New Gallery window

New GyBin - Opens the New Gallery window

New Project <Ctrl+N> Opens the Save Project window where you can start a New Project (you will be asked if you want to save your current project before the window appears)

New Timeline - Opens the New Timeline window

New TleBin - Opens the New Timeline window

Next Audio <Alt+Pg Dn> - Moves a selected audio clip down to the next available track (press ENTER to plant the clip on the track)

Next clip <Tab> - Navigates to the next clip in succession on the timeline

Next Edit <Pg Dn> - Navigates to the next edit in succession on the timeline

Next Page <Shift+Pg Dn> - Navigates to the next timeline area

Next Video <Ctrl+Pg Dn> - Navigates to the previous video clip on the timeline

Open Gallery - Opens the Open Gallery window

Open Project - Opens the Open Project window

Open Timeline - Opens the Open Timeline window

Out Mark <O><NP.> - Marks an Out point

Out: Num for clip <Shift+O> When a clip is selected on the timeline, this will open the Change Clip In/Out window, allowing you to manually change the location of the In or Out point

Output Frame <Shift+F> - Allows you to save the current frame shown as an image file

Output Movie <Shift+D> - Opens the Movie Output window, allowing you to make a movie out of the material in the movie output range on the timeline

Overwrite from In <=> - Replaces clips on the timeline where the In point is located starting at the In point

Overwrite from Out <Shift+=> - Replaces clips on the timeline where the Out point is located starting at the Out point

Pan mode <Shift+N> - Enables Pan Mode, which allows you to pan over the timeline by clicking and dragging the mouse

Paste <Ctrl+V> - Pastes clips to their appropriate locations

Paste Audio FX - Pastes the copies audio effects to another audio clip (???)

Play <L> <NP6> - Starts playback

Play Hilit Range <H> - Plays back material covered in a highlighted range

Play in Reverse <J> <NP4> - Plays back the timeline in reverse

Play In to Out <P> - Plays back material between the In and Out point on the timeline

Play Movie Range - Plays back the material that is covered by the movie range

Play to Index <M> - Plays back and stops once the playhead has reached an index

Play/Stop <Space> - Plays/Stops playback

Preferences <F5> - Opens the Preferences window

Prev Audio <Alt+Pg Up> - Navigates to the next audio track

Prev clip <Shift+Tab> - Navigates the playhead to the beginning of the previous clip on the timeline

Prev Edit <Pg Up> - Navigates to the previous edit

Prev Page <Shift+Pg Up> - Navigates to the previous timeline area

Prev Video <Ctrl+Pg Up> - Navigates to the previous video clip on the timeline

Print <Ctrl+P> - Prints the gallery or timeline, depending on which one is active

Quick Titler - Opens the Quick Titler

Quit/Exit <Ctrl+Q> - Closes Velocity

Razor Cut <Shift+X> - Performs a cut on all clips that the playhead

Redo <Ctrl+Y> - This will redo the change or edit that has just been discarded.

Refresh Window <Ctrl+R> - Refreshes current window

Remove Audio Fade - Removes an audio fade from a selected clip on the timeline (if applicable)

Remove Vid Fade - Removes a video fade from a selected clip on the timeline (if applicable)

Rename Gallery - Opens the Rename Gallery window where you can rename the current gallery

Rename Project - Opens the Rename Project window where you can rename the current project

Rename Timeline - Opens the Rename Timeline window where you can rename the current timeline

Replace Clip - Opens the Replace Clip dialog where you can browse to the clip you want to replace the selected clip with

Reset I/O <Ctrl+T> - Resets In and Out points

Reverse clip - Reverses the selected clip so it will play backwards

Ripple Delete <Shift+Alt+Del> - Performs a Ripple Delete when a clip(s) are selected on the timeline

RT Transitions <9> - Opens the Real Time Transitions dialog when a transition is selected on the timeline

Save current user profile - Saves the current user profile

Save Project <Ctrl+S> - Saves the current project

Select All Clips <Ctrl+A> - Selects all clips on the timeline of gallery, depending which window is active

Select Highlighted - Selects all clips in the gallery that are highlighted on the timeline

Select Used - Selects all clips in the gallery that are used in the current project

Show Eyecon View <F4> - Toggles Eyecon View on and off

Simultaneous Edit <BACKSPACE> - Enables the Simultaneous Edit tool when you hover the mouse over the edit between two adjoining clips

Single frame Zoom <Alt+F1> - Changes the zoom range to one frame, while zooming on the frame where the playhead lies

Slice <X> - Performs a slice where the playhead lies over a selected clip

Slide Clip Left - Slides selected clip to the left

Slide Edit - Enables the Slide Edit tool, which allows you to adjust a clip's position in a series of clips without affecting the Timeline In/Out points of the series of clips.

Slip Edit <Y> - Enables the Slip Edit tool which allows you to adjust the In and Out points of a clip without affecting its position on the timeline or its duration

Sort by file date - Sorts all clips in the gallery by the date the file was modified

Sort by file size - Sorts all clips in the gallery by file size

Sort by file type - Sorts all clips in the gallery by file type

Sort by Name - Sorts all clips in the gallery by name

Speed Change <S> - Opens the speed change dialog

Speed Change Tool - Enables the speed change tool in which you can change the speed of a clip on the timeline by dragging its In or Out point

Stack Video Trx Up <F3> - Toggles stacking video tracks right side up or upside down

Stop Playback <K><NP5> - Stops playback

Subclip at Indexes </> - Creates subclips using all indices on the timeline

Swap Clips Sync A/V <Shift+W> -

Thumbnail Large - Changes the gallery thumbnail size to large

Thumbnail Medium - Changes the gallery thumbnail size to medium

Thumbnail Small - Changes the gallery thumbnail size to small

Toggle Sync/ AV Loc <W> -

TogWindow <Ctrl+Tab> - Toggles each open window in Velocity, making each window active as it is selected

Tracks: Add - Opens the Add Track(s) window

Tracks: Delete - Opens the Delete a Track window

Tracks: Hide Audio <Shift+1> - Hides all audio tracks on the timeline

Tracks: Hide Video <Shift+2> - Hides all video tracks on the timeline

Tracks: Reset <Shift+4> - Resets all tracks to their default positions and heights

Tracks: Show All <Shift+3> - Shows all tracks on the timeline

Transition Group A-D - Opens Transition Group A-D when a transition is selected on the timeline

Transition Wizard - Opens the Transition Wizard when a transition is selected on the timeline

Trim Apply - Applies the changes you have made to a clip in the trim window to the timeline

Trim In to Phead - Trims a clip in to the playhead on the timeline

Trim Out to Phead - Trims a clip out to the playhead on the timeline

Trimmer Load Clip - Loads a clip into the trimmer

Trimmer Lock Dur - Locks the duration

Trimmer Lock In - Locks the In point

Trimmer Lock Out - Locks the Out point

Trimmer Play <3> - Plays clip through trim window

Trimmer RPlay <1> - Plays the clip in reverse

Trimmer Stop Play <2> Stops playback

Trimmer: Ripple <Shift+P> - Performs a ripple when clip is sent to the timeline

Undo <Ctrl+Z> - This will discard the change or edit that has just been made.

UnSync A/V <Shift+S> - This will unsync the audio and video of a segment.

Unsync: Del Audio - This will unsync the audio and video of a segment while deleting the audio portion.

Unsync: Del Video - This will unsync the audio and video of a segment while deleting the video portion.

Video Target Trk 1-8 <Ctrl+NP(1-8)> - Sets the Video Target Track in the trim window

View in Frames - Changes the timeline and all clip info into frames (view in timecode is the default)

Virtual Clip - Opens the Virtual File Creation dialog when the Gallery is active

Voice Over - Opens the Voice Over dialog

Window Tile - This hotkey organizes the gallery, timeline, preview window and VU meter into four equally sized areas onscreen.

Window Tile Horiz - This hotkey organizes the gallery, timeline, preview window and VU meter into four equally sized areas onscreen.

Windows Auto Tile <B> - This hotkey returns all Velocity windows to their default positions.

Windows Cascade - This hotkey stacks and the gallery, timeline, VU meter and preview windows on top of each other.

Zoom 1 Minute <Alt+F10> - Changes the zoom range to one minute

Zoom 1 Second <Alt+F5> - Changes the zoom range to one second

Zoom 10 Seconds <Alt+F8> - Changes the zoom range to 10 seconds

Zoom 15 Frames <Alt+F4> - Changes the zoom range to 15 frames

Zoom 2 frames <Alt+F2> - Changes the zoom range to two frames

Zoom 2 Minute <Alt+F11> - Changes the zoom range to two minutes

Zoom 2 Seconds <Alt+F6> - Changes the zoom range to two seconds

Zoom 20 Seconds <Alt+F9> - Changes the zoom range to 20 seconds

Zoom 4 frames <Alt+F3> - Changes the zoom range to four frames

Zoom 4 Minutes <Alt+F12> - Changes the zoom range to four minutes

Zoom 4 Seconds <Alt+F7> - Changes the zoom range to four seconds

Zoom HiLit Range <A> - Zooms in on a highlighted range

Zoom In <NP+> - Zooms in to the next scale

Zoom Out <NP-> - Zooms out to the previous scale

Zoom to Clip Range - Zooms in on the currently selected clip range

Zoom Tool <Z> - Opens the zoom tool, which allows you to zoom in on any specific point on the timeline

Zoom: Quick Nav <Shift+Z> - Adjusts the zoom so all clips on the timeline are shown at once onscreen

Capture

2x Back - Moves the scrubbing slider to -2x

2x FWD - Moves the scrubbing slider to 2x

Add Index <.> - Adds an index

Back 1 Frame <Shift + J><NP1> - Navigates back one frame

Eject Tape <NP8> - Ejects the tape from the VTR

End - Navigated to the end of the tape

Fast FWD <NP9> - Fast forwards the tape

FWD 1 Frame <Shift+K><NP3> - Moves Forward 1 frame

Home <NP2> - Rewinds the tape to the beginning

In Point <NP0> - Adds an In point

New List <Ctrl+N> - Creates a new list

Open List <Ctrl+O> - Opens a previously saved list

Pause <NP5>

Play <NP6>

Play Reverse <NP4>

Play/Stop <Spacebar>

Record <R>

Rewind <NP7>

Save <Ctrl+S> - Saves work

Stop Deck - Stops playback on the deck

Multicam

Align clips by TC <A> - Aligns the selected clips for the multicam edit by their In points

Back 1 Minute <F3> - Moves the playhead back one minute in the multicam edit window

Back 1 Second <F5> - Moves the playhead back one second in the multicam edit window

Back 2 Minutes <F2> - Moves the playhead back two minutes in the multicam edit window

Back 30 Seconds <F4> - Moves the playhead back 30 seconds in the multicam edit window

Back 5 Frames <F6> - Moves the playhead back five frames in the multicam edit window

Camera 1-8 <1-8><NP1-8> - Switches to Camera 1

Forward 1 Minute <F10> - Moves the playhead forward one minute in the multicam edit window

Forward 1 Second <F8> - Moves the playhead forward one second in the multicam edit window

Forward 2 Minutes <F11> - Moves the playhead forward two minutes in the multicam edit window

Forward 30 Seconds <F9> - Moves the playhead forward 30 seconds in the multicam edit window

Forward 5 Frames <F7> - Moves the playhead forward five frames in the multicam edit window

Forward 5 Minutes <F12> - Moves the playhead forward five minutes in the multicam edit window

Goto End <End> - Moves the playhead to the end of the multicam edit sequence

Goto Start <Home> - Moves the playhead to the beginning of the multi-cam edit sequence

Help <F1> - Launches the help system

Loop Play <N> - Enables Loop Play, which has the playhead automatically playback from the beginning of the sequence after it reaches the end

Next Edit <Pg Dn> - Navigates to the next edit

Play/Stop <Space> - Plays and stops the sequence

Preview Mode <P> - Enables/disables the preview window

Previous Edit <Pg Up> - Navigates to the previous edit

Scrub Back <J> - Scrubs the sequence in reverse motion

Scrub Forward <L> - Scrubs the sequence in forward motion

Settings Dialog <S> - Opens the Multicam Settings dialog

Stop Scrub <K> - Stops the scrub

Appendix A
Troubleshooting

Common Problems

Settings Problems

Possible Causes:

dpsNLE.ini file corrupt.

What to Do:

Delete the dpsNLE.ini file from the Velocity installation folder on your system drive.

Timeline Won't Play Back

Possible Causes:

There is a corrupt clip in the timeline.

What to Do:

First you must find the corrupted clip in the timeline. Then you can delete it or replace it and the timeline will become playable again.

Highlight the first half of the timeline. If it starts to play that half is ok and the corrupt clip is in the other half. Continue to half the remaining play range until you close in on the "bad, unplayable" section. Delete or replace the clips/transitions in that section.

Errors with Uncompressed Video

Possible Causes:

Your SCSI Media drives may not be fast enough to work with uncompressed video.

Transitions between two uncompressed streams of video must be rendered.

What to Do:

Quattrus is capable of playing back up to four streams of uncompressed video, depending on the media storage solution you use. Altitude is capable of playing back up to two uncompressed HD video streams.

The system requirements for uncompressed video are necessarily greater than for compressed video:

-Striped drive (volume) to consistently achieve required data transfer rate. This would entail a 15,000 RPM striped drive (volume).

- More RAM, due to greater need to render effects.

When using Velocity for uncompressed operations, please be sure to check the following:

Sustained Playback Data Rate - The video drives must be fast enough to handle the playback of both a single uncompressed clip (~21MB/s) as well as combined compressed / uncompressed playback (up to about ~28MB/s). Velocity systems allow real time transitions between compressed (up to about 6 MB/s) and uncompressed clips. RAIDs are sometimes capable of sustained video playback at these rates. Quattrus requires a striped pair of 15,000 RPM drives to play back four streams of uncompressed video.

Seek Speed - Another important factor is the seek speed of the video drives. During a transition effect involving one uncompressed clip (CLIP A) and a compressed clip (CLIP B), each resulting frame is a composite of a frame from CLIP A and another frame from CLIP B. Thus the video drive heads need to seek quickly between different parts of the drive disks to alternately pull off frames from each clip. This seek time must also be fast enough to sustain real time operations as well.

In order to verify that a system is capable of uncompressed operations, run the following tests:

1 Capture an uncompressed clip (clip A) onto the video drive (Volume 1).

2 Turn on the data rate overrun warnings in Velocity (File > Preferences and choose the Playback/Output tab. Check “Open warning window for any detected playback errors.”)

3 Collect clip A into the Velocity gallery and drag it to the Velocity Timeline.

4 Play this clip by highlighting it on the Timeline.

5 If no warning appears after playback, your drives can playback a single uncompressed clip. If a data rate overrun warning appears, the video drives on this system is not capable of uncompressed playback. See your dealer for recommended options.

6 Capture a compressed clip (clip B) on Volume 1.

7 Collect clip B into the Velocity gallery and drag it onto the Velocity Timeline.

8 Place clip B after clip A. Highlight both clips and play them back to back. There should be no problems.

9 Now create a transition between CLIP B and CLIP A on the Velocity Timeline.

10 Play clip B, the transition and clip A. If there is a data rate overrun warning, this means that the video drives are not able to play back both compressed and uncompressed clips at the same time. See your dealer for recommendations.

11 With a Quattrus system, you can repeat these steps with two more uncompressed clips, layering them on the timeline and applying a DVE effect such as a perspective to the third and fourth clips to test four-stream functionality.

12 Split the compressed and uncompressed clips onto two separate drives which you know can keep up with the playback requirements:

13 Add another video drive (let's call this Volume 2) to the system (test this as in steps A - F) to verify playback capabilities.

14 Capture some compressed clips at 6 MB/s onto Volume 2.

15 Create transitions between uncompressed clips (from Volume 1) and the compressed clips just captured (from Volume 2). If the playback is good (no glitches, no data overrun warnings) your system should be able to sustain mixed mode operations. If there are data overrun warnings, see your dealer for further suggestions.

Audio Level Fluctuations

Possible Causes:

Compatibility mode on your VGA monitor is using up too many system resources.

What to Do:

Try the following procedures:

1 Disable the preview window.

2 Switch from Compatibility to Direct Draw mode on your Trim Window Settings.

3 If you have a dual-monitor VGA card, place your trim window in the primary screen.

4 Reduce the size of your trim window screen.

5 If your Altitude or Quattrus card is sharing an IRQ with another board in your system, move it to a different PCI slot in your computer.

Clicking on a Clip Moves It

Possible Causes:

Your snap strength is set too high.

What to Do:

Under **File > Preferences** in the Main Menu, choose the General tab and press the Snap Tools button. Set Snap To to a higher number.

You may turn off horizontal clip movement (or toggle it by holding down the ALT key) by changing the setting in **Files > Preferences**, also on the General tab.

Playback is Grainy or Black and White on Video Monitor

Possible Causes:

If your video output is black and white, you have component video connected to your breakout box, but you have composite selected under preferences.

If your video output is grainy, you have composite video connected to your breakout box, and you have component video selected under preferences.

What to Do:

Check your video connections on your breakout box. Ensure that the same settings are selected in **File > Preferences** and choose the Playback/Output tab.

Make Movie Fails

Possible Causes:

Error messages mention "Block Limit Exceeded".

What to Do:

From the main menu, choose **File > Preferences** and choose the Render Options tab. Uncheck real time video play/record.

The resulting DVA Movie will be minus any EQ settings from the timeline.

Staying Away From Crashes and Corruptions

You can reasonably expect to rarely have crashes with your Velocity system. Users regularly report working on projects that are one to two hours long with over 1000 clips without problems.

Hardware

Make sure your system has plenty of ventilation, with fans blowing across the hard drives and Altitude or Quattrus board. System overheating can express itself in corrupt clips on the timeline, or in system unreliability.

Connect your computer and video drives to a battery-driven UPS (uninterrupted power supply). This is especially important if your area is prone to brown-outs or power failures.

Always shut your computer down correctly before shutting off the video (P) drives.

If ever something goes wrong with your system, check your cables first. Ensure that the total cable length from your Altitude or Quattrus board to the terminator after the last video drive in your system is less than or equal to 4.5 feet.

Software

Defrag your system and audio drives before every project and not during projects. Optimize the video drive between projects as well. If your video drives are not empty when about to start a project, optimize them before capturing new footage. For information on video (P) drive optimization, see your Altitude or Quattrus User's Guide.

Backup Options

If you don't need to back up the timeline and clips (this may take longer and have a very low chance of being used), print your final movie to tape. After delivery to client/client approval, only keep the finished master tape. If you have to change something in this backup, recapture the backup, bring in only the needed new footage, and cut it into the backup footage.

Another option is a SCSI DAT tape backup.

Timeline Viewing

Velocity timelines are XML documents. To view a timeline, you can right click on a TLE file in Windows Explorer, select “Open as...” and choose Internet Explorer.

Appendix B

Video Compression and Hard Drive Space

HD Storage Requirements

Storage Required for 1 Hour Recording (GB)

Format	Frame Height	Frame Width	Frame Rate	Uncompressed (10-bit)	Uncompressed (8-bit)	2:1 Compression	3:1 Compression
1080/23.976PsF	1920	1080	23.976	416.7	333.4	166.7	111.1
1080/24PsF	1920	1080	24	417.1	333.7	166.9	111.2
1080/25PsF	1920	1080	25	434.5	347.6	173.8	115.9
1080/29.97PsF	1920	1080	29.97	520.9	416.7	208.4	138.9
1080/30PsF	1920	1080	30	521.4	417.1	208.6	139.0
1080/50i	1920	1080	25	434.5	347.6	173.8	115.9
1080/59.94i	1920	1080	29.97	520.0	416.7	208.4	138.9
1080/60i	1920	1080	30	521.4	417.1	208.6	139.0
720/23.976p	1280	720	23.976	185.2	148.2	74.1	49.4
720/24p	1280	720	24	185.4	148.3	74.2	49.4
720/50p	1280	720	50	386.2	309.0	154.5	103.0
720/59.94p	1280	720	59.94	463.0	370.4	185.2	123.5
720/60p	1280	720	60	463.5	370.8	185.4	123.6

SD Storage Requirements

Maximum Time (in minutes)

compression ratio	data rate (Mb/s)	36 GB drive	72 GB drive	146 GB drive	292 GB drive	Comments
1:1	160	30.8	61.6	123.2	246.4	Uncompressed
2:1	80	60	120	240	480	Digital BetaCam quality
2.5:1	64	76	162	304	608	
3:1	53.6	92	184	368	736	
3.5:1	45.6	108	216	432	864	Component video
4:1	40	124	248	496	992	
4.7	34	144	288	576	1152	S-video
5:1	32	152	304	608	1216	Broadcast quality
6:1	26.4	184	368	736	1472	
7:1	22.8	216	432	864	1728	Composite video
8:1	20	244	488	976	1952	
9:1	17.6	280	560	1120	1140	

Appendix C
Using the JOG-5000 External Controller

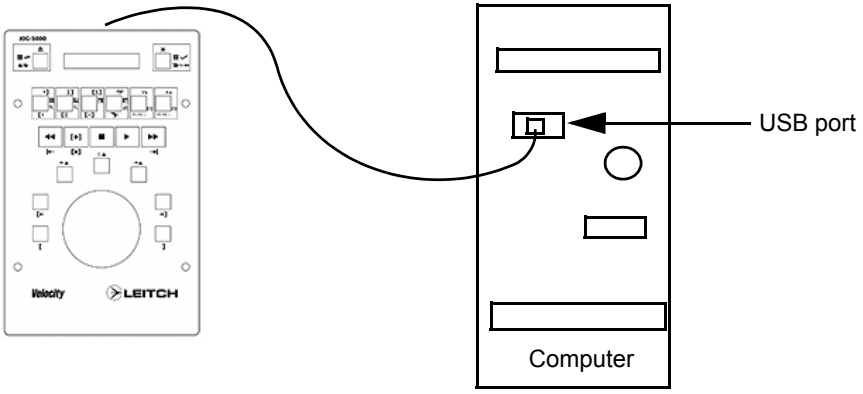
The JOG-5000 external controller can be used for Timeline scrubbing, Trim Window and Multicam editing, as well as deck control for batch capture and print to tape.

Connecting the JOG-5000

Before you begin to connect the JOG-5000 to your computer, **you must have the most recent drivers on your system, as well as Velocity software version 8.2.26 or greater.** If your Velocity distribution CD is older than version 8.2.26, then you will need to download the most recent drivers for the JOG-5000. You can access and download these drivers at the Leitch web site (www.leitch.com) in the Support/Downloads section for Velocity. If you have an updated Velocity disk, then you may install the appropriate drivers directly from the disk.

Once the appropriate USB drivers have been obtained (if applicable), you will need to extract them by double-clicking on the downloaded file. A self extraction dialog will appear and you will then be asked to choose where you would like the driver files to be stored on your hard drive (you can select **Browse** to choose the file path). After the drivers have been successfully installed, you will be able to begin connecting the JOG-5000 to your machine.

To connect the JOG-5000 to your machine, you simply need to plug the controller's USB plug into an unused USB port. The USB port is the controller's source for power, rather than a standard power cable.



After you have connected the controller to an unused USB port on your machine, you will be prompted by the New Hardware wizard that new hardware has been found. Since you have the appropriate drivers installed, you can follow the steps in the wizard to install the new hardware.

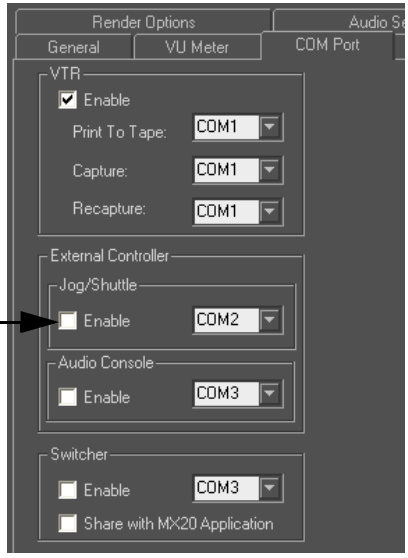
Configuring the JOG-5000

After the connection process has been completed, you will be able to configure your connections for the JOG-5000. When you connected the JOG-5000 to your computer, a COM port was established depending on what USB port you chose. To find out which COM port has been assigned to the driver, access the Start menu and go to **Control Panel**. Double click on the **System** icon and select the **Hardware** tab. Under the **Device Manager** section, click on the **Device Manager** button.

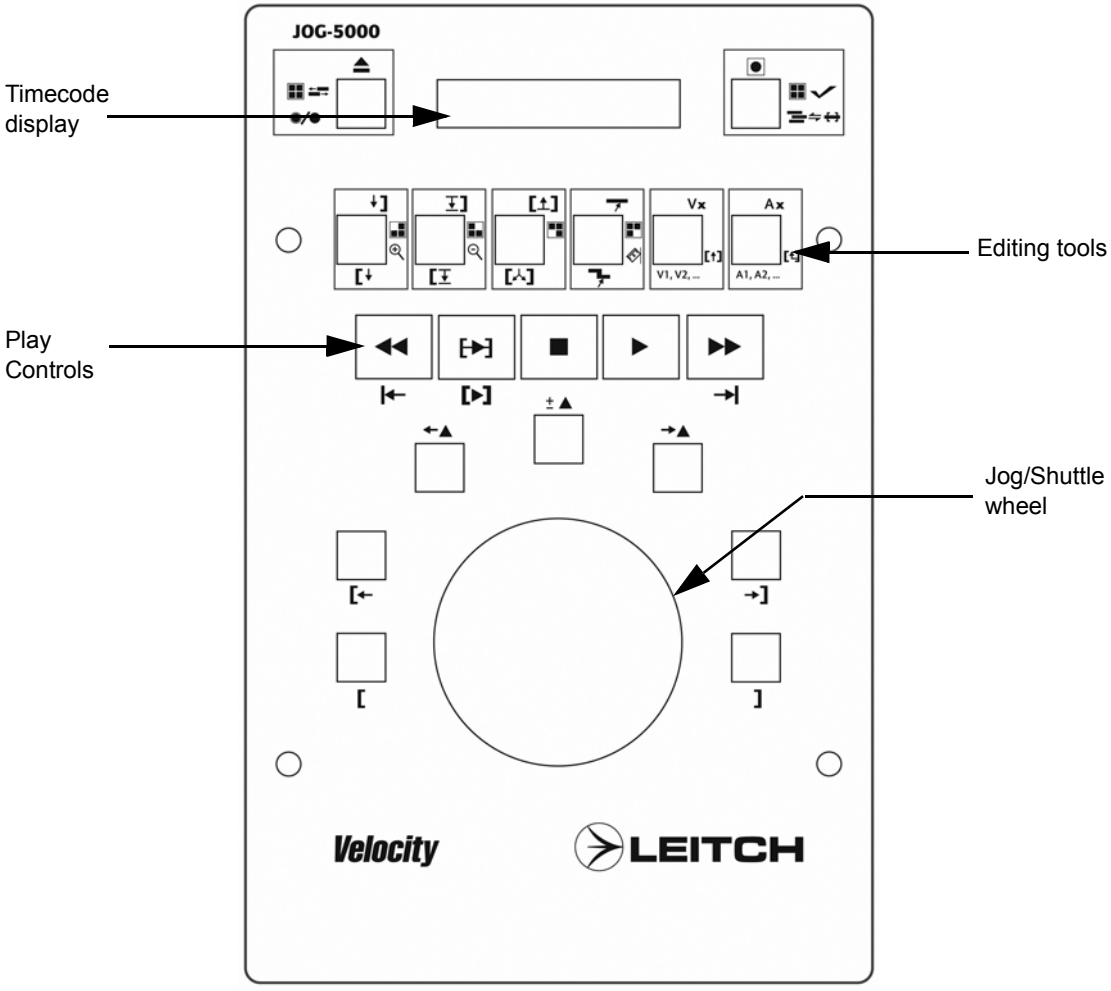
Double-click on **Ports (COM & LPT)** and you will find the JOG-5000 driver and its assigned COM port.

You may want your controller assigned to a specific COM port on your computer for purposes of convenience. To assign the driver to a specific COM port, right-click on the JOG-5000 driver and select **Preferences.** From there click the **Port Settings** tab and click the **Advanced** button. On the top left corner of the window, you can assign a specific COM port to the JOG-5000. Next, you must go through Velocity to make sure that the controller is enabled and that the COM port setting you just made matches within Velocity's preferences. To do this, launch Velocity and select **File > Preferences**. Select the **COM Port** tab and look to the **External Controller** section. Select the appropriate COM port that the controller is assigned to from the drop-down menu. **NOTE:** In order for the Velocity program to recognize the JOG-5000, the **Enable** check box *must* be checked.

Adjust COM port settings and check Enable to use controller



JOG-5000 Overview and Functionality

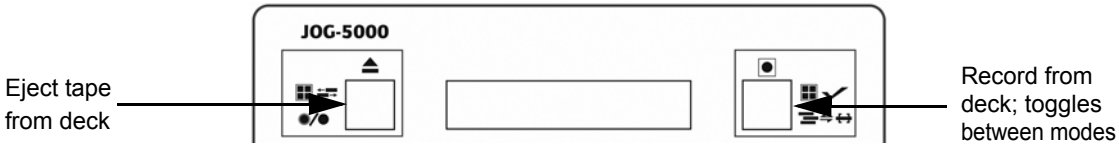


Batch Capture and Print to Tape Deck Control

The JOG-5000 controller operates like the Jog/Shuttle wheel in the Batch Capture window. You can use the Jog/Shuttle wheel to control the deck. The Jog/Shuttle wheel on the GUI indicates the status of the JOG-5000's wheel at all time, just as if you were using the mouse or Hotkeys to control the VTR or DV device.

Batch Capture Mode

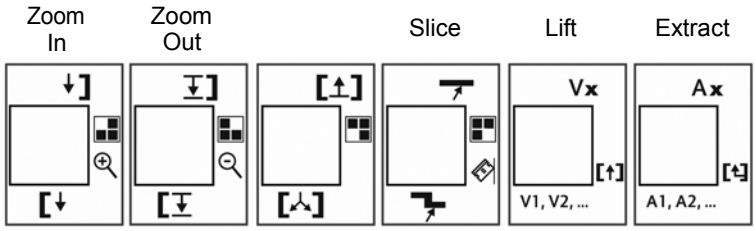
You can perform Batch Capture functions from the JOG-5000 by using the two buttons on each side of the time code display.



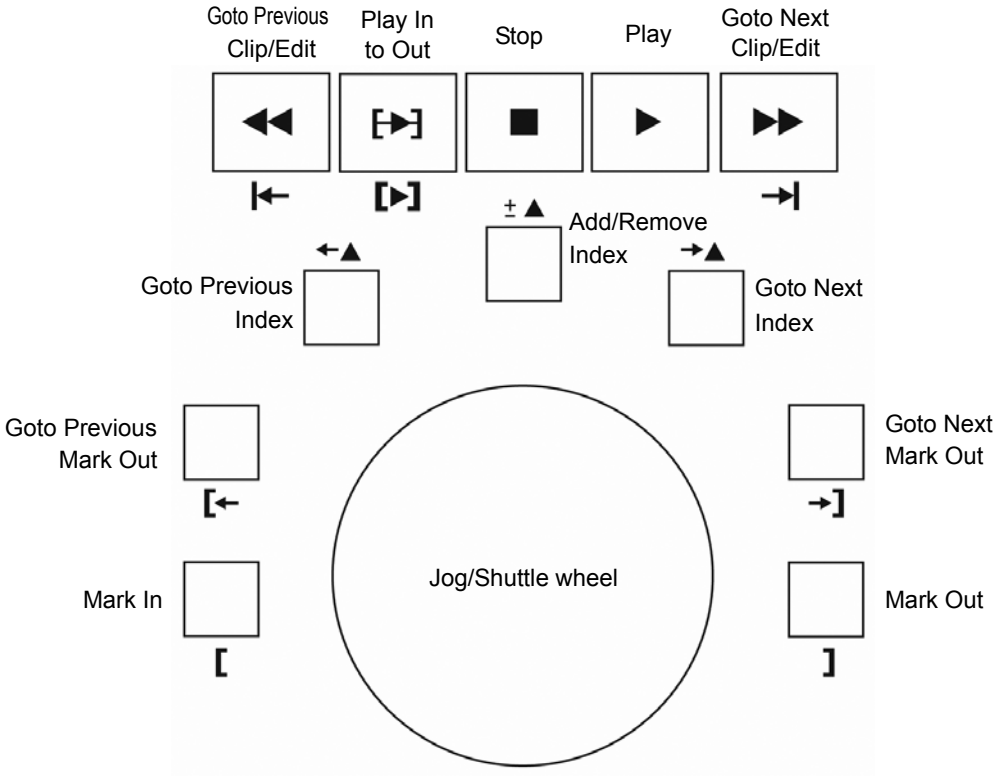
You should keep in mind that the button on the top right corner of the controller (the Record button in Batch Capture mode) is the toggle button that switches to Trim mode, Timeline mode, and MultiCam mode.

Timecode Mode

When the controller is in Timeline mode, you may perform functions such as scrubbing the Timeline with the Jog/Shuttle wheel, lifting and extracting clips, zooming in or out of the Timeline, and marking positions on the Timeline. The tools for editing in Timeline mode are located in the row of editing tools buttons below the time code display. The tools highlighted in light blue are for use in Timeline mode only.



The Play Controls and Jog/Shuttle wheel can allow you to navigate through a clip quickly and efficiently. Surrounding the Jog/Shuttle wheel are mark in and out functions and index markers for marking and editing within the timeline or trim window.

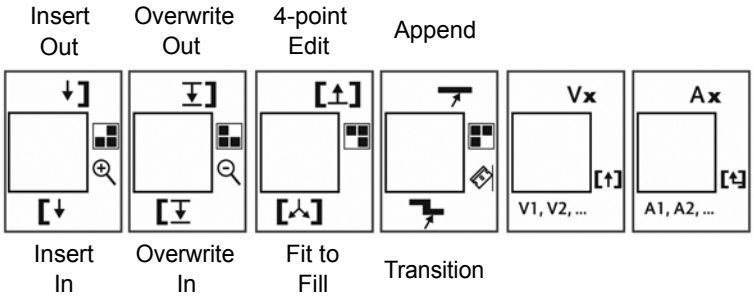


Note: The play controls will work in every mode.

Trim Mode

When the controller is in Trim mode, you may perform operations directly from the JOG-5000 while using the Trim window in Velocity. You can mark indexes and in and out brackets like you can do in Timeline mode, but you

can also do Trim Window editing techniques such as overrides, inserts, and 4 point edits.



You will notice that above every tool button there is small LED light. By default, the function printed below the button will be performed when the button is pressed *unless* the LED light is lit. When the light is on, the top function will be performed.

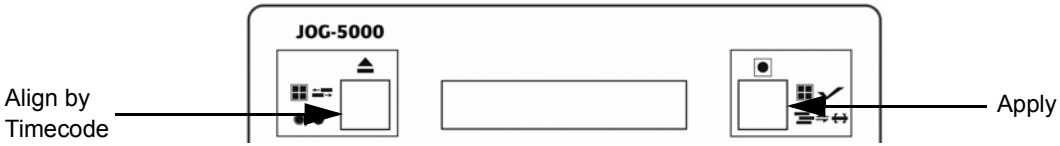
This button (located directly to the left of the time code display) is what toggles between the two functions on a tool button. In order to turn the light on, you must first press the toggle button, then hit the appropriate tool button. The light should be turned on. Finally, you must hit the same tool button again to activate the function. Follow the same procedure to turn the light off.

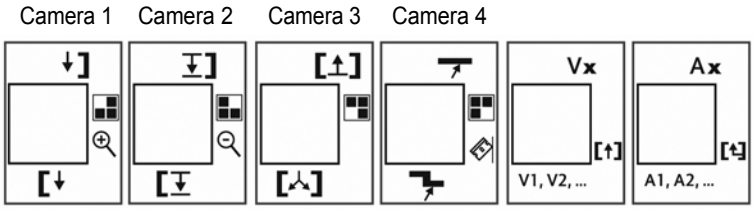
To adjust your External Controller Settings, go to **File > Preferences**. Select the **General** tab and click on the **Ext. Controller Settings** button. You may adjust the behavior for the 'Play' and 'Record' buttons. See Chapter 25 for more information.

MultiCam Mode

The JOG-5000 also allows you to edit your videos in MultiCam mode. After you have selected MultiCam mode within Velocity, you may select the appropriate camera angles you wish to use.

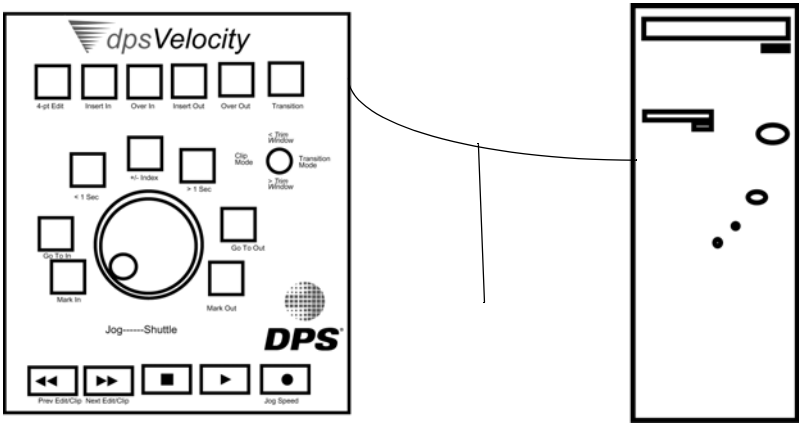
You can perform MultiCam functions from the JOG-5000 by using the two buttons on each side of the time code display and the tools buttons.





Appendix D
Using the JOG-4000 External Controller

The external controller can be used for timeline scrubbing and trim window editing, and deck control for batch capture and print to tape.



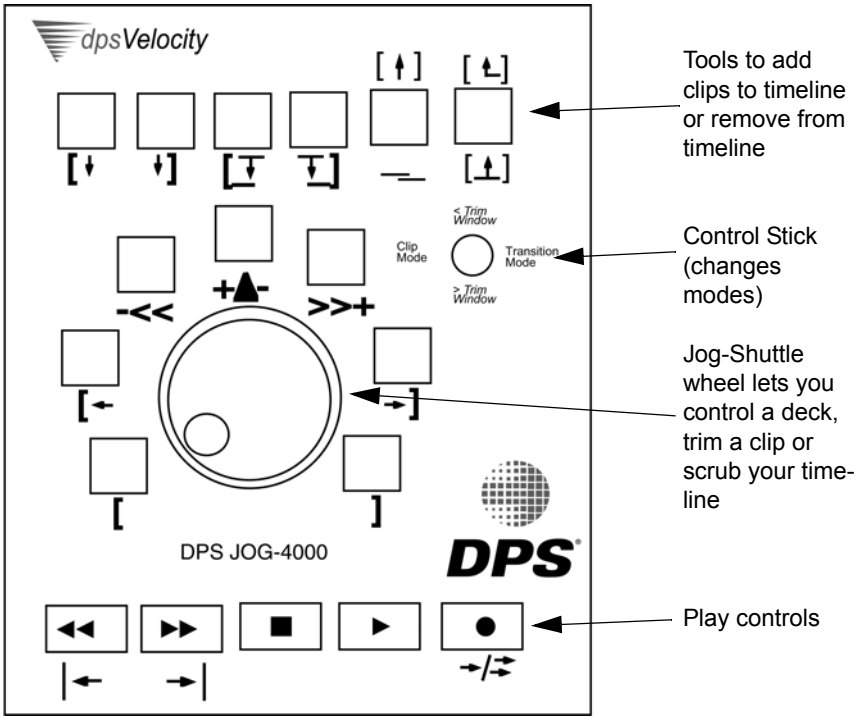
Connecting the JOG-4000 And Setting It Up

To connect the JOG-4000 to your Velocity system, plug the power cable into any regular outlet. Connect the serial cable to an unused serial port on the back of the computer.

From within Velocity, select **File > Preferences** and click on the Com Port tab. in the External Controller section of the screen place a check mark next to Enable so the software knows the controller is there. Select the Com port the controller is attached to on your computer.

The markings on the JOG-4000 relate to the buttons on the trim window and Batch Capture interface.

Batch Capture and Print to Tape Deck Control

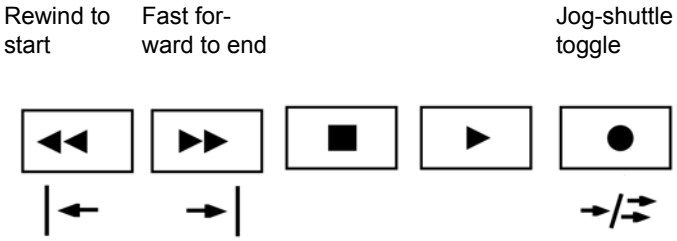


You can use the Jog/Shuttle wheel to play your input source (RS-422 controlled VTR or standard DV device).

The JOG-4000 controller operates like the Jog/Shuttle wheel in the Batch Capture window. The Jog/Shuttle wheel on the GUI indicates the status of the JOG-4000's Jog/Shuttle wheel at all times, just as if you were using the mouse or Hotkeys to control the VTR or DV device.

Use the Mark In and Mark Out buttons to the left and right of the Jog Shuttle Wheel to create entries in your batch list.

Use the Record button to begin capturing your batch capture list.



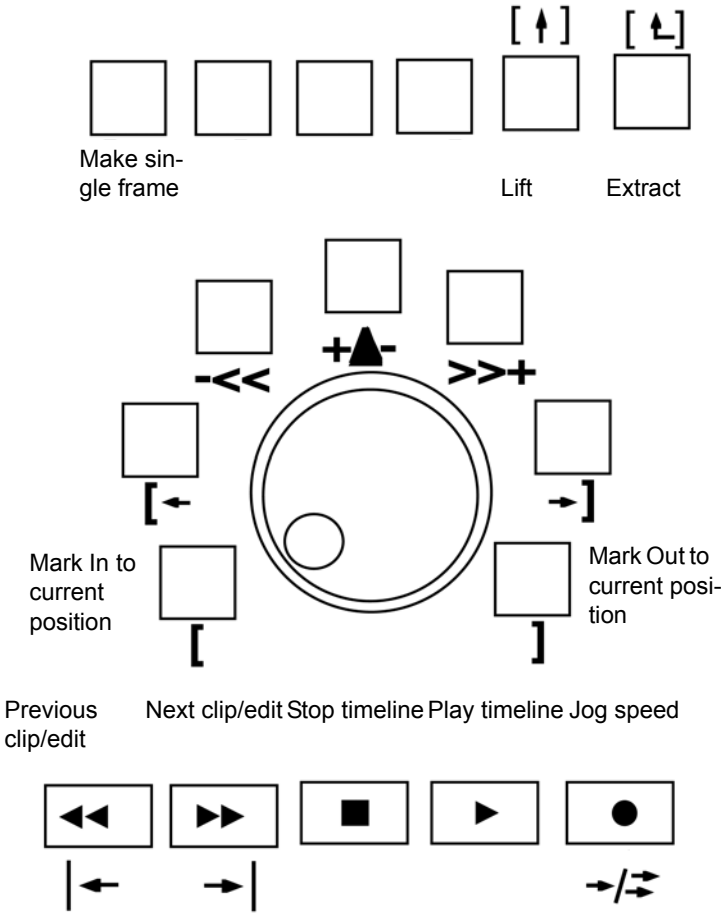
Trim Window

When working with the JOG-4000, you can use the Control stick. It has four positions:

- Up expands the trim window.
- Down contracts the trim window.
- Left left-side (clip/transition trim) mode (and expand if necessary).
- Right puts the controller in right-side (timeline) mode

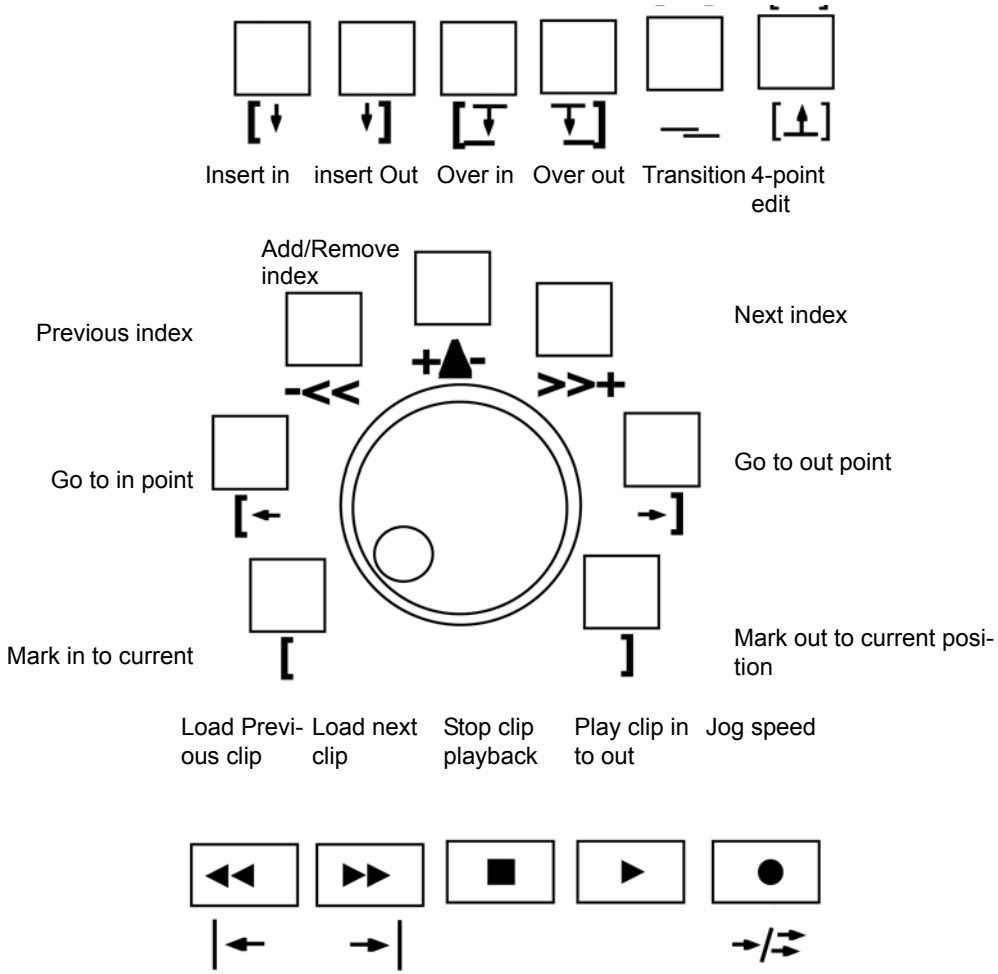
In the trim window, if you press the Record button, this toggles low/high jog speed. When you are in high speed mode, the red light above the button comes on.

Timeline Mode



When Print to Tape is open, the Record button activates it.

Trim Mode



In **File > Preferences**, on the General tab, press the External Controller Settings button to open a window.

The two options on this screen allow you to determine whether the Play button plays the entire clip, or just the marked In to Out, and whether the record button (in capture) activates on the fly capture, or captures the entire batch list.

Appendix E
Using the FAD-5000 Audio Control Console

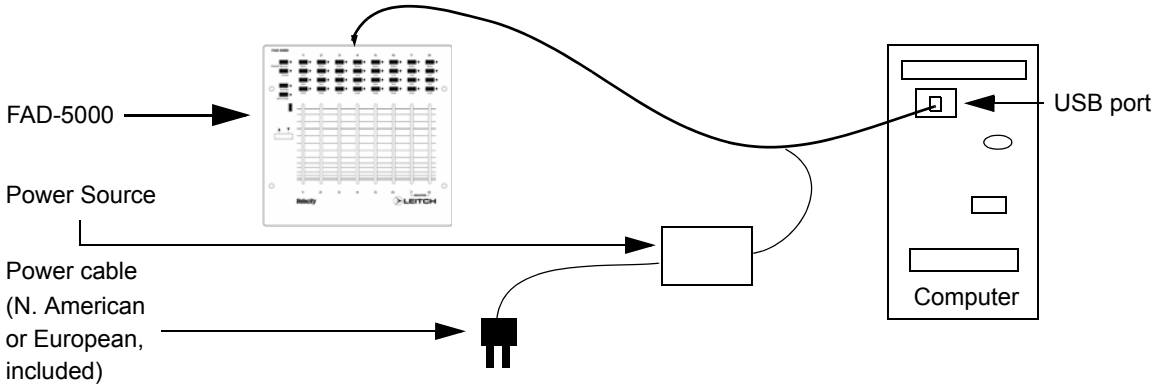
The FAD-5000 motorized external audio fader console provides an easy, tactile interface to Velocity's audio mixing capabilities. You may control up to eight tracks of audio with precision in real time.

Connecting the FAD-5000

Before to connect the FAD-5000 to your computer, **you must have the most recent USB drivers on your system, as well as Velocity software version 8.2.26 or greater.** If your Velocity distribution CD is older than version 8.2.26, then you will need to download the most recent USB drivers for the FAD-5000. You can access and download these drivers at the Leitch web site (www.leitch.com) in the Support/Downloads section for Velocity. If you have an updated Velocity disk, then you may install the appropriate drivers directly from the disk.

Once the appropriate USB drivers have been obtained (if applicable), you will need to extract them by double-clicking on the downloaded file. A self extract will appear and you will then be asked to choose where you would like the driver files to be stored on your hard drive (you can select **Browse** to choose the file path). After the drivers have been successfully installed, you will be able to begin connecting the FAD-5000 to your machine.

The dual connector cable that accompanies the FAD-5000 has both a USB port plug and a power source cord that plugs into the power source that is provided with the controller. Also included are two power cables that are plugged into power source and a power outlet. One power cable is compatible with North American outlets while the other cable is compatible with European outlets.



After you have connected the controller to an unused USB port on your computer, you will be prompted by the New Hardware wizard that new hardware has been found. Since you have the appropriate drivers installed, you can follow the steps in the wizard to install the new hardware.

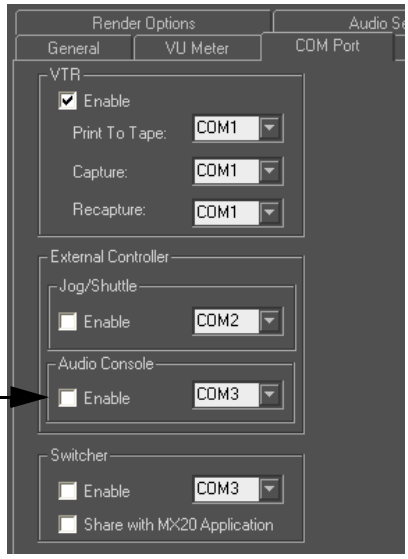
Configuring the FAD-5000

After the connection process has been completed, you will be able to configure your connections for the FAD-5000. When you connected the FAD-5000 to your computer, a COM port was established depending on what USB port you chose. To find out which COM port has been assigned to the driver, access the Start menu and go to **Control Panel**. Double click on the **System** icon and select the **Hardware** tab. Under the **Device Manager** section, click on the **Device Manager** button.

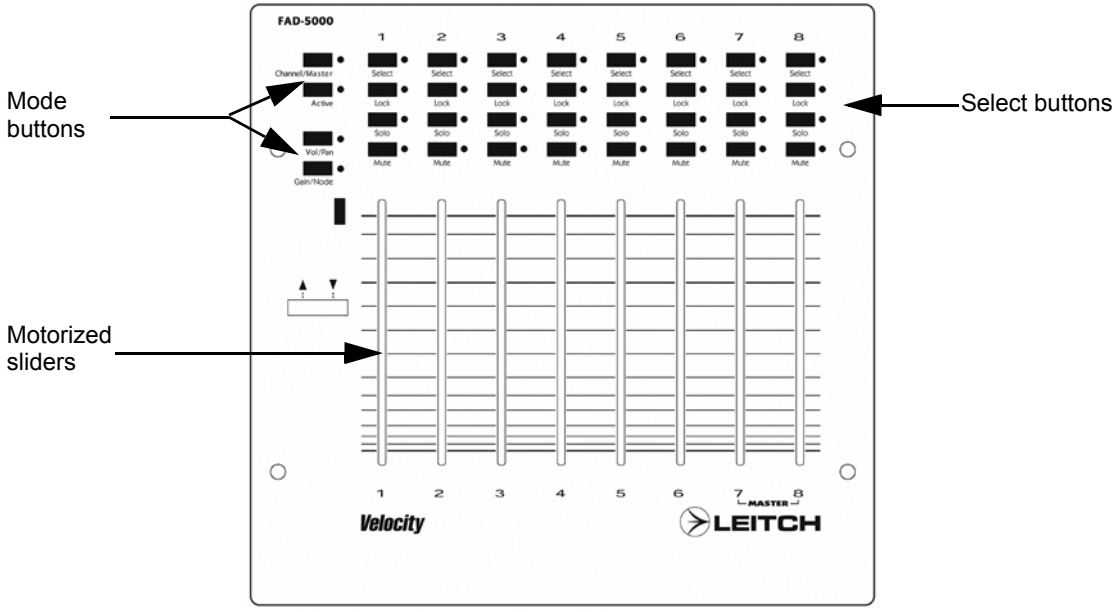
Double-click on **Ports (COM & LPT)** and you will find the FAD-5000 driver and its assigned COM port.

You may want your controller assigned to a specific COM port on your computer for purposes of convenience. To assign the driver to a specific COM port, right-click on the FAD-5000 driver and select **Preferences.** From there click the **Port Settings** tab and click the **Advanced** button. On the top left corner of the window, you can assign a specific COM port to the FAD-5000. Next, you must go through Velocity to make sure that the controller is enabled and that the COM port setting you just made matches within Velocity's preferences. To do this, launch Velocity and select **File > Preferences**. Select the **COM Port** tab and look to the **External Controller** section. Select the appropriate COM port that the controller is assigned to from the drop-down menu. **NOTE:** In order for the Velocity program to recognize the FAD-5000, the **Enable** check box ***must*** be checked.

Adjust COM port and check Enable to use console



FAD-5000 Overview and Functionality



Note: When a button is *Active*, that means that the LED light next to the button is lit.

Channel/Master button

The Channel/Master button is used to toggle between Channel and Master mode on the console.

When the Channel/Master button is active, then the console will work in Master slider mode. This means that Channels 1-6 remain Timeline channels, but 7 and 8 become the Master controls.

When the Channel/Master button is not active, then the panel works in standard Channel mode, based on the items that are currently displayed in the VU meters.

The Mute, Solo, and Lock buttons work as they do on the Timeline when the Channel/Master button is active.

Also, if you have "selected" any of the channels using the select buttons, the selected channel will now be able to be adjusted with the up and down arrow buttons on the console for fine tuning.

Active button

The Active button is used to determine which tracks are displayed from 1-8 on the VU meter.

When the Active button is active, the selection buttons are used to determine which tracks to display. If a selection is active (green LED light is on), that track will appear in the VU meter and will be active on the console. If the selection is not active, that track will not be displayed.

When the Active button is not active, the console will work in Standard mode and all buttons are available depending on other settings.

The Mute, Solo, and Lock buttons can not be available when the Active button is active and changes made to the sliders have no impact.

Vol/Pan button

The Vol/Pan button is used to toggle between Channel and Bus mode.

Note: Panning support will not be available at the time of the FAD-5000's release, but will become available with the release of Velocity 9.0.

When the Vol/Pan button is active, then the console controls Bus mode.

When the Vol/Pan button is not active, then the console controls Channel mode.

The Mute, Solo, Lock and Selection buttons are available whether the Vol/Pan button is active or not active.

Gain/Node button

The Gain/Node button is used to toggle between Clip-based or Node-based level changes.

When the Gain/Node button is active, then the console controls Clip-based levels.

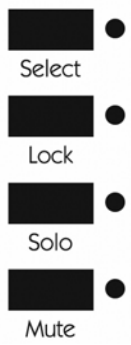
When the Gain/Node button is not active, then the console controls Nodes (of either Volume or Panning).

The Mute, Solo, Lock and Selection buttons are available whether the Gain/Node button is active or not active.

Volume Adjust buttons

When the FAD-5000 is not in Active mode, the **Mute** button determines which track is adjusted with these buttons. To adjust the selected track, tap the increase or decrease button to gradually change the volume level.

Select, Lock, Solo and Mute buttons



The Select button is used to select a track. When the FAD-5000 is in Active mode, the selected track will be displayed on the VU meter.

The Lock button is used when you feel like a track needs no more adjusting. You may lock the track by pressing the Lock button and you will not be able to make any changes to that track until the track is unlocked.

The Solo button is used when you want a single track playing by itself. All other tracks will be muted as your selected track plays alone.

The Mute button is used when you want no sound playing on a track.

Appendix F
Velocity/NEXIO Server Interchange

The Velocity Server Interchange option module is a software plug-in enabling bi-directional push/pull interchange of media files with Leitch's NEXIO server system. This module can also be used with Leitch's earlier VR series servers, but may require additional VR hardware.

Functionality Requirements

If you are using a VelocityQ system, you must have software version 8.2.31 or higher to use the VelocityQ/NEXIO Server Interchange features. When using a VelocityQ system, you will be able to perform interchanges of SD media only between servers.

If you are using a VelocityHD system, you must have software version 9.1 or higher to use the VelocityHD/NEXIO Server Interchange features. When using a VelocityHD system, you will be able to perform all of the same SD interchange options as a VelocityQ system plus the ability to perform interchanges of HD media.

You must also have DirectX 9.0 or newer installed on your Velocity system. DirectX downloads can be found at *www.microsoft.com/windows/directx/default.aspx*.

The Server Interchange option requires Velocity to be networked to a Leitch server model that supports FTP Server functionality. With the Leitch NEXIO line of servers, any NEXIO model can act as an FTP server. These include:

-NX4000TXS shared storage server

-NX4000ITS integrated storage server

If you are using a VR series server, then a WS400 Network Gateway is required to provide the FTP functionality necessary for bi-directional interchange between Velocity and the VR series server. While Instant Online can be used when exporting from Velocity to VR servers as DV25 or DV50-encoded AVI files, it does *not* support the importing of VR server files to Velocity, nor the exporting from Velocity in the native LXF file format.

Note: The earlier VR300 series *cannot* be interfaced directly with Velocity.

The IP interface between Velocity and the Leitch servers (either the VR Network Gateway to the NEXIO server) should be at least Gigabit Ethernet, as the speed of the IP link will be a key determining factor in the performance of the transfers to and from the server.

Server Connection Setup

NEXIO (ITS or TXS) Setup

To import/export files to the NEXIO line of products, you need a NEXIO (ITS or TXS) server running FTP server on it (no WAN streamer is required).

To set up the server connection:

1 Hook a Gbit Ethernet copper crossover cable from Velocity's GigE port on the NEXIO's GigE port.

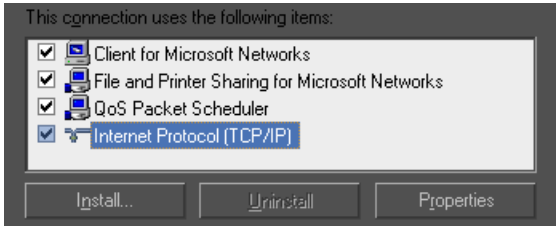
2 Make sure the GigE port is configured to 1000Mbps Full Duplex or Auto if 1000Mbps is not listed as an option.

3 Match the GigE IP addresses on both Velocity and NEXIO to use same class C.

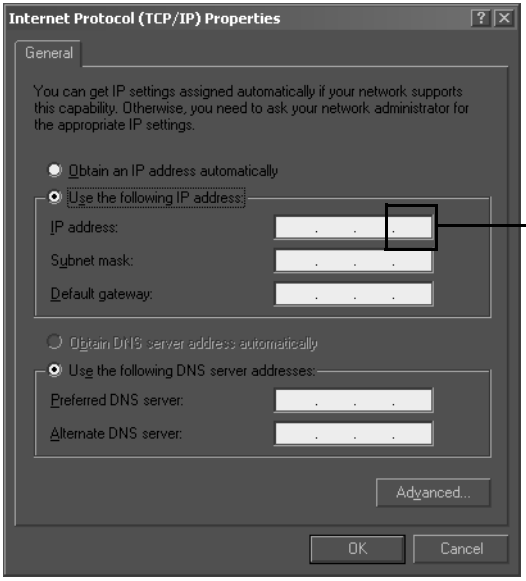
4 Hook the 100Mbps Ethernet cable from the Velocity 100 Mbps Port to the VR Net's main switch.

5 Make sure the 100Mbps port is configured to 100Mbps Full Duplex and also verify that the switch is the same.

6 Check to see what the IP address of the VR Net is by clicking on the Start menu and then clicking on **Control Panel**. In the Control Panel, click on Network Connections. Right-click on the network connection you want to use with the server and select **Properties**. In the **General** tab, select Internet Protocol (TCP/IP), click on it once to select it and then click on the **Properties** button.



After the TCP/IP properties window appears, you should then see an IP address filled in (it will look something like 192.168.90.xx).



The last 2 digits of the IP address must be unique from other work stations accessing the server.

Note: The last two digits in the IP address will be a *unique* number that separates each work station that accesses the server.

Assign the IP address you just looked up for Velocity's 100Mbps connection within this range on your Velocity work station by following the same steps as above to reach the TCP/IP properties window. Once you have reached the TCP/IP properties window, click on the "Use the following IP address" radio button and enter the IP address assigned to the server making sure the last two digits are unique from other work stations accessing the server.

7 The subnet mask for Velocity should be 255.255.255.0 by default.

8 Ping the NEXIO server's Ethernet port where Velocity is connected via Gbit by clicking on the **Start** menu and selecting **Run**. In the Open text section type "ping", followed by a space and then the IP address (i.e. 192.168.90.xx) for the particular link.

9 Set the IP locking in NEXIO's registry setting (under LLM control = IP Address = xx and IPSubNetmask = xx) to match your 100 Mbps VRNet Ethernet port address.

10 Check the registry setting on the NEXIO for the port number under "FTPPort" (should be set to 2098)

11 Verify that Port 2098 is set for FTP transfer in Velocity.

VR Chassis (VR 440/400 with WS400) Setup

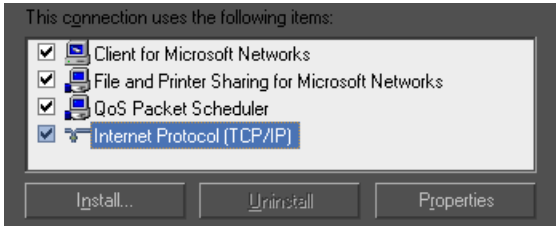
Note: To import/export files to the VR server series you must have a VR420 or 440 server, WS400E WAN streamer, drives, and cables.

To set up a VR chassis:

1 Hook a Gbit Ethernet copper crossover cable from Velocity's GigE port on the WAN streamer's GigE port.

2 Make sure the GigE port is configured to 1000Mbps Full Duplex or Auto if 1000Mbps is not listed as an option.

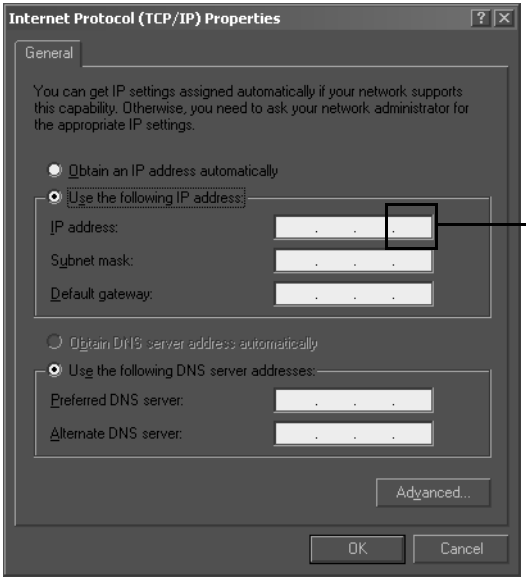
3 Check to see what the IP address of the VR Net is by clicking on the Start menu and then clicking on **Control Panel**. In the Control Panel, click on Network Connections. Right-click on the network connection you want to use with the server and select **Properties**. In the **General** tab, select Internet Protocol (TCP/IP), click on it once to select it and then click on the **Properties** button.



After the TCP/IP properties window appears, you should then see an IP address filled in (it will look something like 192.168.90.xx).

Note: The last two digits in the IP address will be a *unique* number that separates each work station that accesses the server.

4 Assign the IP address you just looked up for Velocity's 100Mbps connection within this range on your Velocity work station by following the same steps as above to reach the TCP/IP properties window. Once you have reached the TCP/IP properties window, click on the "Use the following IP address" radio button and enter the IP address assigned to the server making sure the last two digits are unique from other work stations accessing the server.



The last 2 digits of the IP address must be unique from other work stations accessing the server.

5 Subnet mask for Velocity should be 255.255.255.0 by default.

6 Ping the NEXIO server's Ethernet port where Velocity is connected via Gbit by clicking on the **Start** menu and selecting **Run**. In the Open text section type "ping", followed by a space and then the IP address (i.e. 192.168.90.xx) for the particular link.

7 Set the IP locking in NEXIO's registry setting (under LLM control = IP Address = xx and IPSubNetmask = xx) to match your 100 Mbps VRNet Ethernet port address.

8 Check registry setting on NEXIO for port number under "FTPPort" (should be set to 2098)

9 Verify that Port 2098 is set for FTP transfer in Velocity.

Functionality Overview

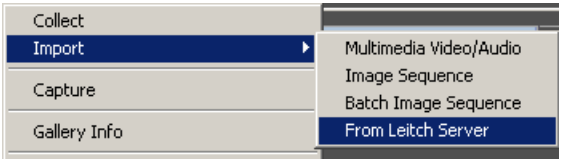
The Velocity Server Interchange option is based on a push/pull model. With this option, you can browse the servers' MediaBase directly from the Velocity user interface. Once the clip(s) are selected they are transferred to Velocity for multi-layer post production editing and finishing. The transfer occurs over a TCP/IP connection (such as gigabit Ethernet).

How to Pull From the Server

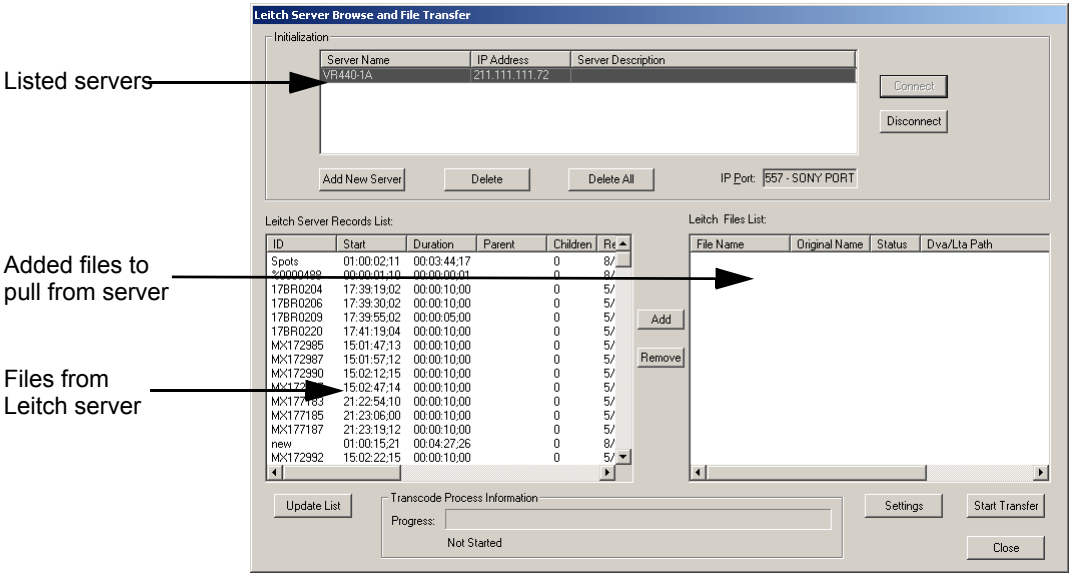
To pull from the server:

1 Launch VelocityQ.

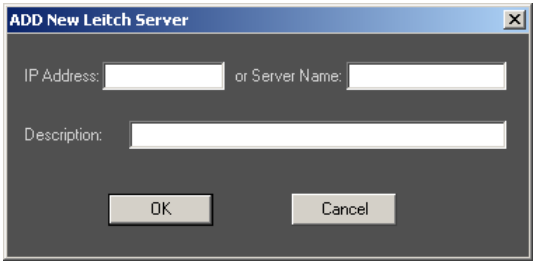
2 Right-click in the Gallery and choose **Import > From Leitch Server**.



The Leitch Server Browse and File Transfer window will appear.



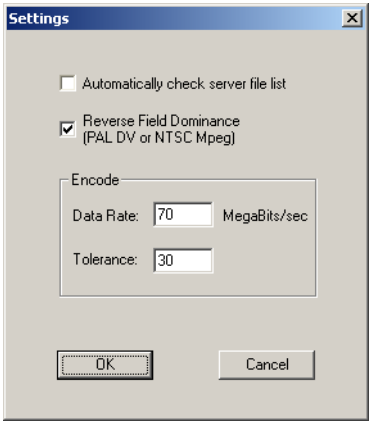
3 Before you can connect to a server, you must add a server to the list in the Initialization section on top of the Leitch Server Browse and File Transfer window. To add a server, click the Add New Server button. The Add New Leitch Server window will appear. If you enter the Server Name, Velocity will automatically find the IP Address and enter it, or you can enter the Server Name and Velocity will enter the IP Address. You may enter a description of the server for easy identification in the Description section. Click OK when you are done entering the appropriate information.



To delete a server, select it and click the Delete button or you can delete all of the servers from the list by clicking the Delete All button. After you have added a server(s) to the server list, select the server you wish to browse/pull from and click Connect. Once connected, a list of files on the Leitch Server will appear under the Leitch Server Records list column.

Note: If you would like to browse a different server after you are connected, disconnect from the current server by clicking the Disconnect button, then select a different server to browse and click Connect.

In the Leitch Server Browse and File Transfer dialog, there is a Settings button located just below the added files list on the right side. Click the Settings button to open the Settings window.



If you want the list of files sent from the Leitch server to be automatically updated as files are added, then check the **Automatically check server file list** check box. If you do not want the list to be updated automatically, make sure this check box is disabled and if you want to manually update the list, click on the **Update List** button (located directly to the left of the progress bar) on the Leitch Server Browse and File Transfer dialog.

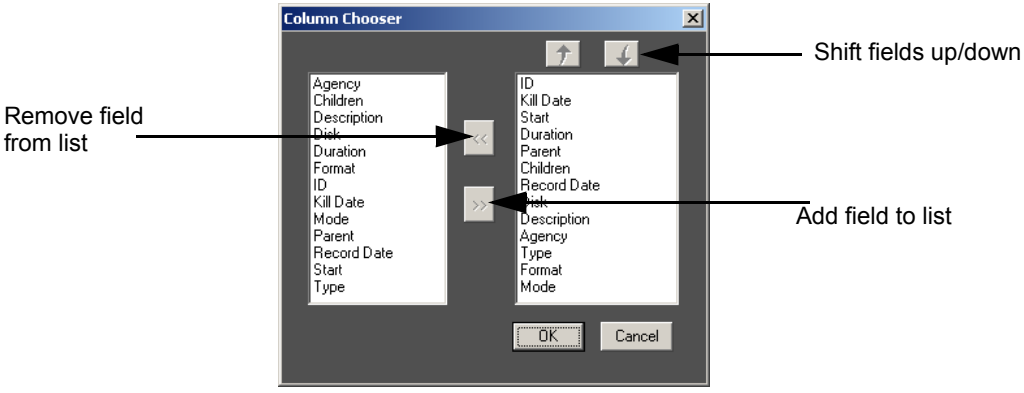
When you are pulling PAL DV or NTSC MPEG clips from the Leitch server, make sure the **Reverse Field Dominance (PAL DV or NTSC**

Mpeg) check box is enabled to ensure that the proper field dominance is used for those clips.

In the Encode section of the Settings dialog, you can manually enter in the values for data rate and tolerance to achieve the desired clip quality.

4 You have the ability to change which fields you want showing on the Leitch Server Records List by right-clicking somewhere on the list and choosing Configure Detail Text.

The Column Chooser window will appear.

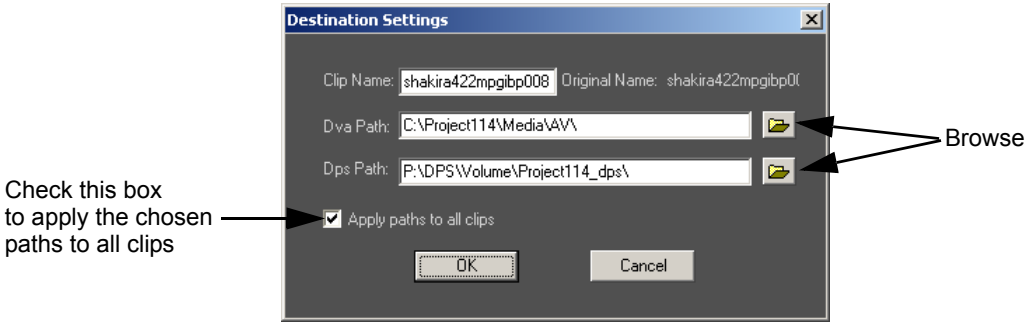


5 To choose which columns you want shown on your file list, select a field on the left then click the >> arrow button. To remove a field from the list, select the field on the right side and click the << arrow button. You can change the order of the fields in the list by selecting a field and using the arrow buttons on top of the fields on the right side to shift them up or down (if you want a field to be on the far left, then make sure it is on top of the list, far right on the bottom of the list, etc.). After you have chosen your columns, click OK.

6 In the Leitch Server Browse and File Transfer window, you can add files to the DPS/LTV File List by selecting a file (or select multiple files by holding down the CTRL or SHIFT keys as you would in File Explorer) and clicking on the **Add** button. To remove an item from the list, select the file(s) and click the **Remove** button. You can also click and drag one or multiple files from one list to the other.

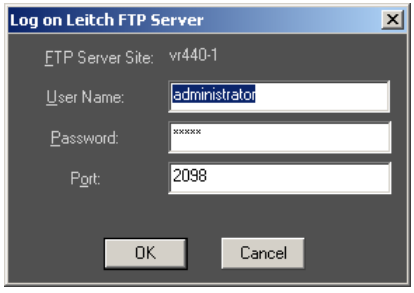
7 You also have the ability to change the destination settings for files that you want to pull from the server. Double-click on the DVA/LTA path of a listed file in

the DPS/LTV Files List and the Destination Settings window will appear.



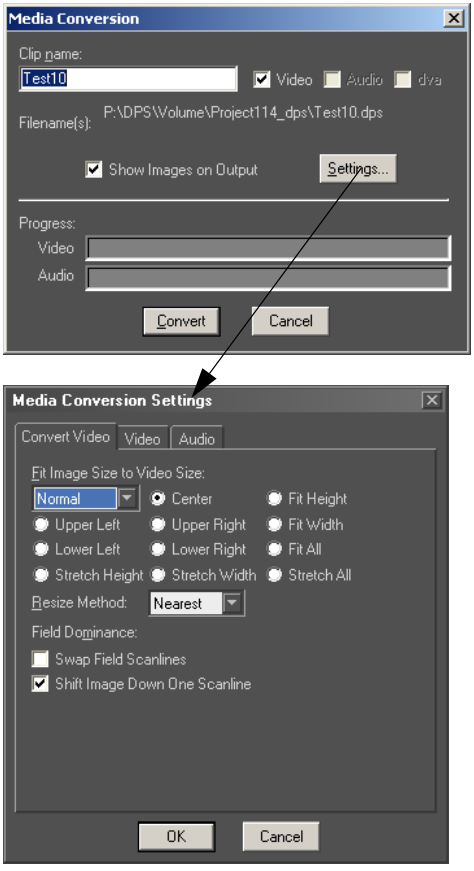
Choose your destination settings and click **OK**.

8 Once you have the file(s) to pull selected, click the **Start Transfer** button on the Leitch Server Browse and File Transfer window. The Log on Leitch FTP Server window will appear. You will then need to enter a User Name and Password. Click the **OK** button.



9 Once the file(s) have transferred, a Media Conversion window will appear that allows the you to choose file settings and attributes. Click on the **Settings...** button to change settings on audio and video.

Note: Refer to *Chapter 9: Collecting Media* in the Velocity manual for more details on media conversion settings.



10 Once you have chosen your desired settings, hit **Convert** and the file will be converted into a DPS/LTV file before being dropped into the Gallery. At that time the file is now ready for editing.

As the server media is received by Velocity, it is decompressed or transcoded to Velocity's native MJPEG format (at your chosen data rate) for use in Velocity.

Once post production editing and finishing is complete, the finished result can then be exported back to the server in the your choice of the server's native file formats. Again, the media is transcoded into this file format (along with applicable metadata associated with the Leitch LXF format), then transferred over the TCP/IP connection.

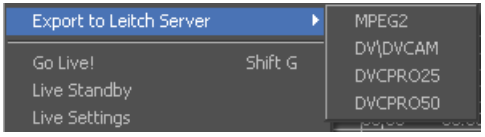
Velocity can import and export the Leitch server's native LXF format, using either MPEG-2 50Mbits/sec. I frame only or DV25/DV50 compression. Depending on how your particular servers are configured, your Leitch server installation may support one or both formats. Each channel (playback or recording) of each server may be individually configured for support of particular formats.

NOTE: In cases where the user wishes to transfer only a portion of a clip from the server, subclips must first be created on the server itself. If subclips are first created in the servers' MediaBase and are selected in the Velocity interface, Velocity will correctly transfer only the content specified in the subclips.

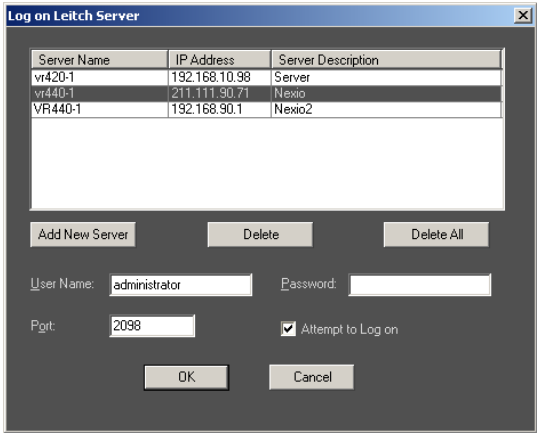
How to Push to the Server

To push to the server:

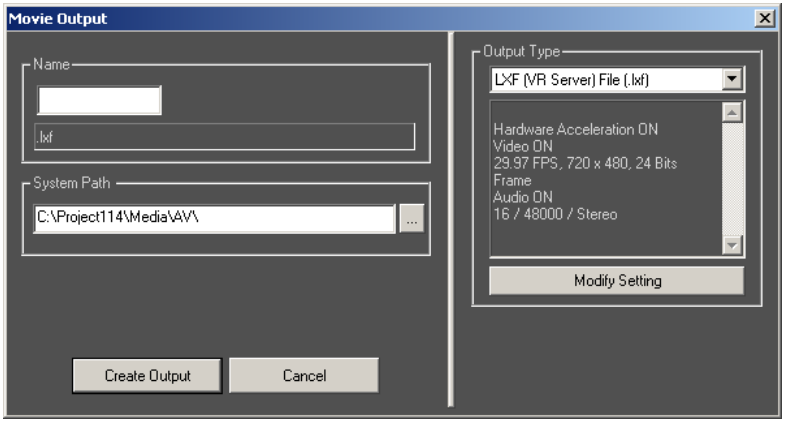
1 Go to the Output menu in Velocity and select **Export to Leitch Server > MPEG2, DV/DVCAM, DVCPRO25 or DVCPRO50.**



2 A Log on to Leitch Server dialog will appear, prompting you to enter a user name and password. You may also add a new server by clicking the Add New Server button. To delete a listed server, select the server and click the Delete button. Click the Delete All button to delete all of the listed servers. Click OK when you are ready to log in.



3 Once you are connected to the server, the Movie Output window will appear. Type in a name for your new ID that will appear on the server in the Name section.



You may also select whether you want to enable a hardware accelerate, as well as adjust the video size, aspect ratio, compression setting, or audio options if you click the Modify Setting button in the Movie Output window.After all the settings have been made, click Create Output in the Movie Output window.

4 Transcoding will then begin and a Transfer Clips to Leitch Server... window will appear, showing the progress of the transfer.

On the FTP server window of the Nexio or WAN Streamer you should get a message saying that the transfer is complete.

Appendix G
MainConcept MPEG Encoder Options

MainConcept MPEG Encoder - The Advanced Interface

This document will give an overview of the MainConcept MPEG Encoder's advanced settings. It includes the paragraphs you also find in the manual which comes with the MPEG encoder as well as some additional paragraphs for the advanced settings tree in the **Advanced Video Settings** pane. In the next version of the MPEG Encoder these paragraphs will be included in the regular manual. The software as well as the manual are in a state of constant growth so it might be possible that some aspects or parameters are not described in full detail or the complete satisfaction of the user. However, it is difficult to mention and describe every tiny setting in detail. But we try to do so as far as possible. Several options are highly dependent on the source material and this is always different. We don't want to offer a complete guideline for the best possible settings, because this is not possible in such a manual. We restrict ourselves to describing the important functions and tasks of the corresponding settings. But it is enough for now, let's start...!

The advanced interface offers even more settings, primarily for professional users in highly specialized environments. Advanced settings can be saved and loaded using the buttons at the bottom left of the window.

To reach this interface, click the **Advanced...** button in the detailed settings window.

The advanced window includes five panes: **Basic Settings**, **Video Settings**, **Advanced Video Settings**, **Audio Settings** and **Multiplexer Settings**. Some options are only available when certain parameters are in effect.

NOTE: The default settings in the main window generally offer the correct settings for high-quality results. We recommend that you only change the advanced settings if you are familiar with them and have a specific need to do so. Incorrect adjustments of these parameters can result in non-compliant MPEG files.

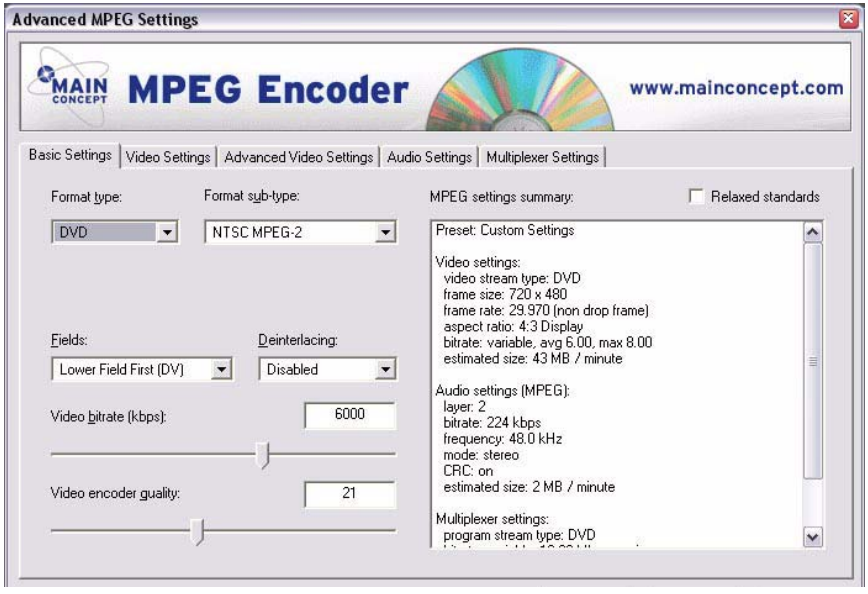
Before we explain the most important **Advanced Settings** in detail here some general remarks before. As mentioned above we recommend that only experienced users should modify these settings. Some of the **Advanced Settings** may be restricted by the settings selected in previous dialogs. When

encoding in the VCD, SVCD or DVD formats, it is possible to make changes to these settings such that the resulting file is not compliant for the chosen format.

The Basic Settings Pane

In the first pane you can adjust some general settings without going into details. The **Basic Settings** include options such as deinterlacing, field order and bitrate.

Here are the **Basic Settings** in detail:



Under **Format type** you specify the format you want to record once more. The drop-down menu offers several MPEG as well as some HD and many more formats.

Under **Format sub-type** you specify whether the captured video will be recorded in PAL or NTSC.

Relaxed standards enables you to record non-compliant MPEG streams in a particular format such as VCD, SVCD and DVD.

One setting that might need to be changed is **Field encoding**, which sets the correct field order. This setting should match the field order of the source video. DV is generally bottom field first, but other types of video may be different. It might be necessary to check your capture device's documentation to find out what setting is appropriate. Otherwise, you might

need to experiment with different settings. When the option **No fields** is selected, the whole frame will be converted.

Using the **Deinterlace** option EVE v2 only shows one frame instead of two fields. This is sometimes useful to remove stripes in a recorded video.

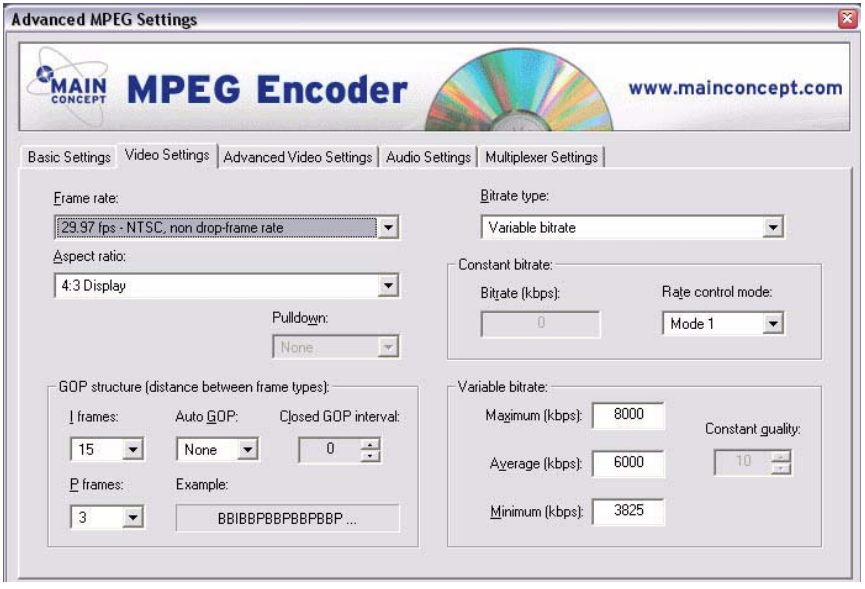
The slider **Video bitrate** enables you to set the appropriate bitrate. A higher bitrate leads to better quality, but also to a significantly larger file size.

The slider **Video encoder quality** at the bottom of the pane allows you to change the settings in two directions: performance and quality. Performance (to the left) means that the processing time of the recorded material is shortened. Quality (to the right) increases the picture quality of the recorded file. A higher quality setting results in slower processing time. A higher performance leads to lower quality.

On the right side of the window you see a summary of the most important settings, so that you can double-check them once more.

The Video Settings Pane

In this window you can change the settings for **Frame rate**, **Aspect ratio** and **GOP** (Group of Pictures) **structure**. You can also make various adjustments to the bitrate.



Under **Aspect ratio** you have different options:

Square Pels: Square resolution (used for PC monitors)

4:3: Standard format (TV)

16:9: Widescreen format (16:9 TV, cinema)

2.21:1: Aspect ratio

Pulldown:

The parameters under **Pulldown** convert 23.976 fps (frames per second) to 29.97 fps, or 24 fps to 30 fps, and it is supposed to be done only on progressive frame video (like film). The movie studios slow their films from 24 fps to 23.987 and then encode using pulldown to display at 29.97 fps. The video encoder manipulates the *Top Field First* (tff) and *Repeat First Field* (rff) flags to convert 4 frames (8 fields) to 5 frames (10 fields) like this:

(T = top field, B = bottom field)

frame 1: tff = 1, rff = 0 fields displayed: TB

frame 2: tff = 1, rff = 1 fields displayed: TBT

frame 3: tff = 0, rff = 0 fields displayed: BT

frame 4: tff = 0, rff = 1 fields displayed: BTB

So you get the sequence of fields: TB TBT BT BTB or grouped as frames: TB TB TB TB TB. The above would be considered **2:3** pulldown as it is 2 fields, 3 fields, 2 fields etc.

3:2 is the reverse:

frame 1: tff = 1, rff = 1 fields displayed: TBT

frame 2: tff = 0, rff = 0 fields displayed: BT

frame 3: tff = 0, rff = 1 fields displayed: BTB

frame 4: tff = 1, rff = 0 fields displayed: TB

In this case you get the sequence of fields: TBT BT BTB TB or grouped as frames: TB TB TB TB TB.

In most cases the MPEG Encoder adjusts the necessary settings automatically, so that the **Pulldown** option remains disabled.

GOP (Group of Pictures) structure:

I frames: These frames are also called Key Frames. All GOPs start with an I frame. I frames contain information for a complete picture, and can be decoded independent of any other frame. I frames are the largest (and least compressed) frames.

P frames: P frames are encoded using information from the previous I or P frame, and can only be decoded correctly if the previous I / P frame is available. P frames are smaller than I frames.

B frames: B frames are usually encoded using information from the previous I or P frame and the next I or P frame. In this case, B frames can only be decoded correctly if the previous and the next I / P frames are available. B frames are smaller than P frames. In addition, B frames can be encoded using only information from the next I / P frame but then they are larger than if they were encoded using both the previous and next frame information.

As a general rule for practical settings: The GOP size (in frames) is specified with the I frame setting and it must be a multiple of the P frame setting. When I frame is set to 1, all frames in the video will be I frames. When I frame is larger than 1, it specifies the size of the GOP, and the P frame setting specifies how often P frames occur in the GOP. If P frame is set to 1, the video will consist of only I and P frames. If P frame is larger than 1, B frames are placed between the P frames and the video will consist of I, P and B frames. Larger GOPs will yield greater compression but will possibly cause a loss of quality. We recommend using the default settings.

Auto Gop: This function always starts a new GOP when there is a scene change, i.e. the encoder sets an I frame. If you choose **None** from the drop-down menu, there will not be a scene detection. The **Fast** option is a quick method of scene detection where no VCSD happens. During the motion search the application checks, if a scene change occurs, and - if yes - the P frame is encoded as an I frame. Then the encoder starts a new GOP. **VCSD** is the abbreviation for *Visual Content Scene Detection*, which is a better way of doing scene detection. At first, the VCSD is carried out, i.e. the analysis of the frames, and then the GOP planning. It will yield a slightly slower encoding.

Closed GOP every: This value specifies how often the GOPs should be closed and is only of importance if there are B frames present in the GOPs. A value of 0 means do not close any of the GOPs, a value of 1 means close every GOP and a value of 2 means close every other GOP etc. If a GOP is closed, it can be decoded by itself. If a GOP is not closed, the first few B frames of the GOP will be dependent on the last P frame of the previous GOP and cannot be decoded correctly without decoding the previous GOP first. When a GOP is closed, the first few frames of a GOP are encoded so they only depend on the I frame in the GOP (the previous GOP is not required). This can be useful for setting "chapter" points so a player can jump to these GOPs and can start decoding immediately without having to read the previous GOP (or discarding the first few B frames).

Bitrate type:

Constant bitrate (CBR): Fixed bitrate (the relevant input prompt will be enabled if selected)

Variable bitrate (VBR): The minimum and maximum values define the bitrate range the encoder should stay within while encoding. The average value is the desired average bitrate of the video stream. The relevant input prompts will be enabled if selected.

Rate Control Mode:

Fast: An older mode, not normally used anymore.

Mode 1: Standard mode (recommended)

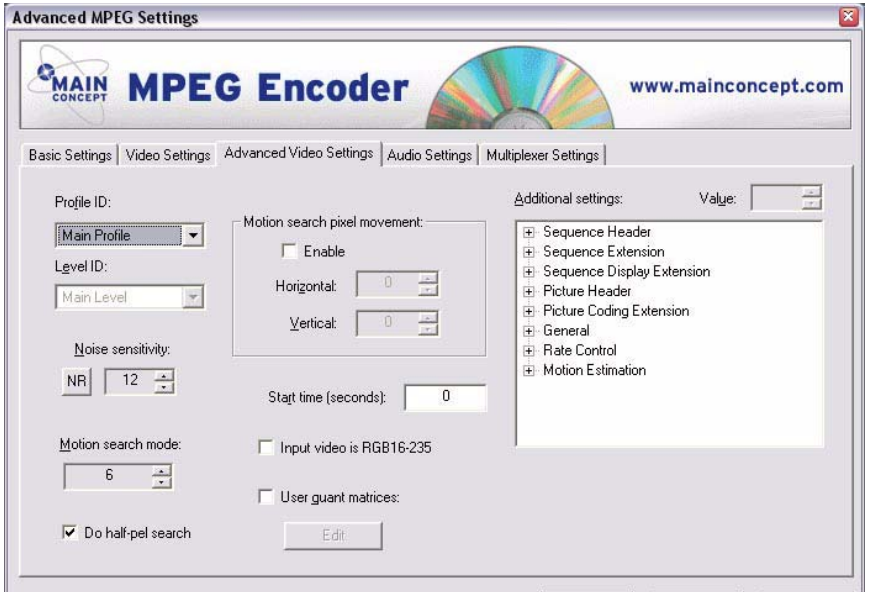
Mode 128: Experimental (will probably cause problems; it should only be used for testing)

Variable Bitrate:

The **Constant quantization** affects the macroblock quantization value, sort of the "compression" of the macroblocks. Lower numbers yield better quality and larger files (larger bitrate results in less compression). The range is 1 ... 31; 1 is probably excessive in that the quality does not improve much but the file size increases quite a bit. A range is probably 3 ... 15 for constant quantization operation. In normal VBR/CBR modes, the encoder changes the macroblock quantization value to adjust the bitrate; in constant quality mode it does not. You have to set the average and the minimum bitrate to zero in order to make the **Constant quantization** option active.

The Advanced Video Settings Pane

This pane offers professional settings which should not be changed if you are creating MPEG streams for VCD, SVCD or DVD. These adjustments are designed for specific, highly technical environments.



The box on the right side of this pane contains many more parameters for professional users. If you click on an option, details are listed under the box.

NOTE: We highly recommend that these changes are only performed by professional users.

We will explain the **Advanced Video Settings** in detail now:

Profile ID:

You have five different options here: **High Profile, Main Profile** (standard setting), **Simple Profile**, **4:2:2 Profile** and **Multiview Profile**.

Level ID:

You can choose between **High Level, High 1440 Level, Main Level** (standard setting), and **Low Level**.

The MPEG-2 spec (specification) allows for a large number of variations in the settings, e.g. the frame resolution can theoretically be as large as 2^{14} x 2^{14}. The **Profiles** and **Le-vels** just set limits on what the values of some of the other settings can be; so if a specification (like the DVD spec) says only *Main Profile/Main* or *Low Level* is allowed, the decoders can safely assume what the bounds of some settings are going to be. A DVD player does not have to account for the resolution being 2^{14} x 2^{14} because the DVD spec only allows a maximum of *Main Profile/Main Level* which only enables for a maximum frame resolution of 720x576.

Noise Sensitivity and Noise Reduction:

You switch between the two options by clicking the **NR** button. Use the controls to define the desired value:

Noise Sensitivity specifies how sensitive the video encoder is to noise in the source video; it does not reduce the noise in the source video at all. It sets a motion search threshold at which point the encoder will stop the search for matching blocks of pixels from one frame to another. Higher values mean low sensitivity (faster search times, less quality), while lower values mean higher sensitivity (longer search times, better quality). Typically this option is set in the 1 ... 14 range as follows:

1 ... 5 - Computer animation, VCD from DV-Source, after a line-filter or noise reducing filter (virtually no noise in the source video)

3 ... 7 - Digital video, DV-quality, Hi8-quality etc.

5 ... 14 - Analog captured video, Video 8, Hi8, broadcast TV

The setting is strictly based on the state of the source video; it has nothing to do with the type of output (DVD, SVCD or VCD).

If you are only concerned with quality (at the expense of speed), you should set the value to 1 all the time, as this would yield the best results (but for noisy video it would slow the encoder quite a bit without any quality benefit).

Basically what the setting does, is set a level in the encoder at which point the encoder will give up trying to match a pixel between two frames.

If the source video is noisy and the setting is set to a low value, the encoder will spend more time trying to match pixels from frame to frame, and (in the case of noise) it may not find a match at all, so excessive time is spent trying to find a match when there is none.

If the source video has no noise at all, and the setting is set to a very high value, the encoder may give up to soon and not match some pixels from frame to frame (wasting bits).

Noise Reduction is a specific noise filter. It reduces the noise in a frame (spatial reduction), but it doesn't do it from frame to frame (temporal reduction). The value range is 0 ... 31.

Motion Search Mode:

The **Motion Search Mode** defines which method is used to search for pixel movement in the video stream. A higher value specifies a better method and will normally yield better quality. The practical range is 3 to 11.

Do half-pel Search:

When this option is activated the **Motion Search** operation also looks for pixels that move only 1/2 of a pixel from one frame to the next (a subpixel search). This should usually be enabled and should only be disabled if speed is desired above quality.

Set motion search areas from pixel movement:

These settings specify the maximum movement of a pixel from one frame to the next. They are used to calculate the *Motion Search Areas*, the maximum area the encoder will search in an attempt to find a match for a block of pixels from one frame to the next. If the video has quite a bit of movement, it is useful to raise these values. Unfortunately, this also extends the encoding time.

These settings are an easy way to manipulate the *Motion Search vectors*. The motion search vectors can also be manually manipulated in the *Motion Estimation* section of the **Additional Settings** tree. The motion search vectors are different and optimized for the different frames and frame types.

Start Time (seconds):

This option specifies the starting timecode in the GOP header of the video stream. It is independent of the timecodes in the program stream. This timecode is specified as a frame number which is converted to a hr:min:sec:frames type timecode and placed in all GOP headers (automatically incremented). For instance, with 25 fps and a **Start Time** set to 300, the first timecode would be 00:00:12:00 or 12 seconds. As another example, one could encode 1 hour of video with the start time set to zero, then encode another hour of video with the start time set to 3600 seconds. Then when the two videos are played one after the other the timecode will be continuos between the two files.

Input video is RGB 16-235:

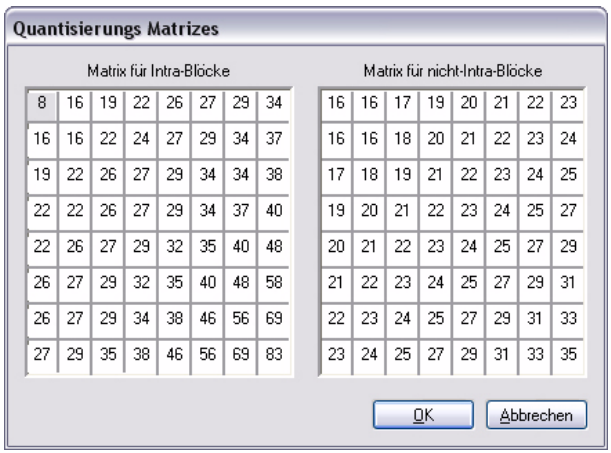
Ticking the checkbox Input video is RGB 16-235, particular black and white values are preserved. During encoding and decoding the RGB color space with R=G=B=16 is used, which corresponds to the color black. Furthermore, the RGB color space with R=G=B=235 is used, which corresponds to the color white. Normally the values for white are R=G=B=0, and for black R=G=B=255. The specification ITU601R now defines black (Y=16) and white (Y=235), i.e. the real video signal receives values which are "blacker than black" or "whiter than white" (so called super-black and super-white values). These super-black and super-white values get lost in the normal PC RGB 0..255 color space, but they are preserved with the Input video is RGB 16-235 option.

User Quantization Matrices:

Each 8x8 block of pixels in the image is run through a DCT (*Discrete Cosine Transformation*) function which yields an 8x8 block of DCT coefficients. These coefficients are arranged in the 8x8 array with the lower frequencies in the upper left corner of the array and the lower frequencies in the lower right corner. The numbers of these 8x8 blocks are the results of mathematical functions performed by the encoder to represent the video in a smaller number of bits.

The quantization matrices determine the divider used by the quantization function for each DCT coefficient. Lower numbers mean the coefficient will be quantized less (better quality, closer to the original DCT value but more bits are needed), while higher numbers mean the coefficients are quantized more (lower quality but less bits are needed). The default intra matrix values are biased towards the low frequency coefficients; they are represented better while the high frequency coefficients are not represented as well. The numbers on the top left handle the low frequency regions, and the numbers on the bottom right handle the high frequency regions. The human eye is less sensitive to the high frequencies, so that region can be compressed to a higher degree; this is why the values are higher there. If the whole matrix consists of 1, there would be virtually no compression at all (but a very large number of bits). If you set all numbers of the matrix to 255, you will obtain a very bad picture because it has been compressed to such a degree that it will lead to a significant loss of quality.

When you activate the checkbox you can click the **Edit** button in order to adjust the parameters for **Matrix for Intra Block** and **Matrix for non-Intra Block**. In the following window you can change these settings.



8	16	19	22	26	27	29	34
16	16	22	24	27	29	34	37
19	22	26	27	29	34	34	38
22	22	26	27	29	34	37	40
22	26	27	29	32	35	40	48
26	27	29	32	35	40	48	58
26	27	29	34	38	46	56	69
27	29	35	38	46	56	69	83

16	16	17	19	20	21	22	23
16	16	18	20	21	22	23	24
17	18	19	21	22	23	24	25
19	20	21	22	23	24	25	27
20	21	22	23	24	25	27	29
21	22	23	24	25	27	29	31
22	23	24	25	27	29	31	33
23	24	25	27	29	31	33	35

These values must be in the range 16 ... 256, with the exception that the first entry in the intra block matrix must be 8. Intra blocks are macroblocks coded using only information from the current picture (I frames), non-intra

blocks are macroblocks coded using information from the current picture and other pictures (B and P frames). If the bitrate is high you should not change the parameters. Ultimately, these values depend on the source material. If the bitrate is low you can change the parameters to get better results.

Additional Settings Tree:

Now we want to introduce the different parameters in the **Additional Settings** tree. The different options are displayed in the tree. You can change the settings by using the **Value** parameter box. Depending on the setting you have to adjust the appropriate option in the corresponding tree. A short definition of the selected option is offered under the display.

Under **Sequence Header** you find the following option:

VBV Buffer size: This value specifies the size of the *Video Buffering Verifier* (VBV) buffer in KB (1024 bytes). Decoders can use this value to determine the largest buffer needed to decode the video stream. Set it to zero to have the encoder compute a value based on the video bitrate. VCD specifies 40 KB, SVCD and DVD specify 224 KB. Use the **Value** prompt in order to change the parameters. See ISO/IEC 13818-2 section 6.3.3 or ISO/IEC 11171-2 section 2.4.3.2 for more information.

The option **Sequence Extension** offers two settings:

Progressive Sequence: If set to 1 all frames in the video are progressive, if set to 0 both progressive and interlaced frames can appear in the video. See ISO/IEC 13818-2 section 6.3.5 for more information. This option is only valid for MPEG-2.

Chroma Format: The option specifies whether to use the 4:2:0 or 4:2:2 (high profile only) chroma format for the encoded video. See ISO/IEC 13818-2 section 6.3.5 for more information. Only the 4:2:0 and 4:2:2 formats are supported. This option is only valid for MPEG-2.

Under **Sequence Display Extension** you can edit several options:

Enable Sequence Display Extension: If set to 1, sequence display extension headers are placed in the video stream after the sequence extension headers. If set to 0, the *Video format, Color Primaries, Transfer characteristics, Matrix coefficients* and *Display Size* settings are not used or present in the video stream. Some SVCD players can have problems if sequence display extensions are present, for DVD the sequence display extension may or may not be present. See ISO/IEC 13818-2 section 6.3.6 for more information. This option is only valid for MPEG-2.

Video Format: This setting is just a flag in the bitstream to inform the decoder how the pictures were represented before encoding. If the sequence display header is not present, the decoder will assume "*Unspecified video format*". This setting does not affect the encoding process at all. It is part of the sequence display extension and is only used when the Sequence display

extension setting is 1. See ISO/IEC 13818-2 section 6.3.6 for more information. This option is only valid for MPEG-2.

Color Primaries: This field specifies the x, y chromaticity coordinates of the source picture primaries. It is strictly an informative flag to the video decoder and does not affect the video encoding at all. DVD specifies a value of 2 (ITU-R BT.470-2 System M) or 4 (SMTPE 170M) for NTSC or 3 (ITU-R BT.470-2 System B,G) for PAL. See ISO/IEC 13818-2 section 6.3.6 for more information. This option is only valid for MPEG-2.

Transfer Characteristics: This field specifies the opto-electronic transfer characteristics of the source picture. It is strictly an informative flag to the video decoder and does not affect the video encoding at all. DVD specifies a value of 2 (ITU-R BT.470-2 System M) or 4 (SMTPE 170M) for NTSC or 3 (ITU-R BT.470-2 System B,G) for PAL. See ISO/IEC 13818-2 section 6.3.6 for more information. This option is only valid for MPEG-2.

Matrix Coefficients: This field specifies the matrix coefficients used in deriving luminance and chrominance signals from the green, blue, and red primaries when RGB =>YUV conversion (if any) is done. DVD specifies a value of 3 (ITU-R Rec. 624-4 System B, G) for both NTSC and PAL. Currently only a value 3 is supported regardless of the setting of this field. See ISO/IEC 13818-2 section 6.3.6 for more information. This option is only valid for MPEG-2.

Display Size: These values specify a rectangle which may be used by decoders as their active display area. MPEG itself does not define what these values are actually used for, so it is up to the decoders to handle as they see fit. DVD does define uses for these values, and the values should be 720x480 (NTSC) or 720x576 (PAL). These settings are part of the sequence display extension and are only used when the Sequence display extension setting is 1. Use the options Horizontal and Vertical to specify the exact value. See ISO/IEC 13818-2 section 6.3.6 for more information. This option is only valid for MPEG-2.

The DVD specification does specify the values to use for the **Color primaries, Transfer characteristics**, **Display horizontal size** and **Display vertical size** settings, if the SDE is present.

Under **Picture Header** the encoder offers one more setting:

Force VBV Delay: Set to 1 to have the VBV delay in the picture headers fixed to a value of 0xFFFF. Normally this is 1 when doing VBR encoding and 0 when doing CBR encoding. When the VBV delay is 0xFFFF a different method is used to input data to the VBV than if VBV delay is not fixed to 0xFFFF. See ISO/IEC 13818-2 section 6.3.9 or ISO/IEC 11172-2 section 2.4.3.4 for more information.

The option **Picture Coding Extension** offers several additional settings:

Intra DC Precision: Specifies the effective precision of the DC coefficients in intra-coded macroblocks. 10-bits usually achieves quality saturation, 11-bits can be used if the quantization is very low (the bitrate is quite high compared to the frame size/rate). See ISO/IEC 13818-2 section 6.3.10 for more information. This option is only valid for MPEG-2.

Use Frame Prediction and Frame DCT: Set to 1 to have the motion estimation and DCT (*Discrete Cosine Transformation*) computations done on both fields of a frame in the same pass, set to 0 to have them done on each field independently. Normally this should be 0 for interlaced frames and 1 for progressive frames. Setting this field to 1 will result in slight faster encoding but will yield less quality in interlaced frames. This setting can be specified independently for each frame type (I, B and P). See ISO/IEC 13818-2 section 6.3.10 for more information. This option is only valid for MPEG-2.

Quantization Scale Type: Specifies which mapping to use between the encoded quantization scale factor and the quantizer scale applied in the inverse quantization arithmetic. Set to 0 to specify a linear mapping or 1 to specify a non-linear mapping. This setting can be specified independently for each frame type (I, B and P). See ISO/IEC 13818-2 section 6.3.10 for more information. This option is only valid for MPEG-2.

Intra VLC Format: VLC is the acronym for *Variable Length Coding*. This option specifies one of two MPEG defined variable length coding tables used for intra coded blocks. Table 1 is considered to be statistically optimized for Intra coded pictures coded within the sweet spot range (e.g. 0.3 to 0.6 bit/pixel) of MPEG-2. Normally set to 1 for MPEG-2 video, this setting can be specified independently for each frame type (I, B and P). See ISO/IEC 13818-2 section 6.3.10 for more information. This option is only valid for MPEG-2.

Use Alternate Scanning Pattern: Specify one of two entropy scanning patterns which define the order in which quantized DCT coefficients are run-length coded. Set to 1 for the alternate scanning pattern or 0 for the zig-zag scanning pattern. The alternate scanning pattern is considered to be better suited for interlaced video where sophisticated forward quantization is not enabled. This setting can be specified independently for each frame type (I, B and P). See ISO/IEC 13818-2 section 6.3.10 for more information. This option is only valid for MPEG-2.

The **General** option offers two more parameters you can change:

Sequence End Code: If set to 1 a sequence end code is written at the end of the video stream (it terminates the stream). Normally this is set to 1, set to 0 if you intend to concatenate video streams together after encoding. See ISO/IEC 13818-2 section 6.3.2 or ISO/IEC 11172-2 section 2.4.3.1 for more information.

Embed SVCD User Blocks: If set to 1, user data blocks are placed in the bitstream to reserve space for the SVCD scan information data. The multiplexer then fills in the correct values when the video stream is muxed. Should only be enabled for SVCD video, but disabled for non-standard SVCD video.

Under Rate Control you find the following options:

The options **Reaction Parameter, Initial Average Activity, Initial Global Complexity Measure** and **Initial Virtual Buffer Fullness** are very complex as well as highly mathematical. These values are default to 0 and should not be changed unless advised to do so by MainConcept support.

Minimum Frame Percentage: This option is basically the target number of bits (as a percentage of the VBV size) for the first frame in the stream.

Pad Frame Percentage: This function is used when the VBR bitrate drops below the specified minimum bitrate. It is only applicable for VBR; if this field is 0 no padding occurs and the minimum bitrate is permitted to drop below the specified minimum. If the field is 100, the stream is padded to keep the minimum bitrate near the specified minimum.

Motion Estimation offers the following options:

- P Frame Motion Vector
- Forward Search Width
- Forward Search Height
- B Frame Motion Vectors
- Forward Search Width
- Forward Search Height
- Backward Search Width
- Backward Search Height

The search width and height settings set the (half) width of the window used for motion estimation. Here is an example of how to set these values, assuming a maximum motion of 10 pixels per frame in horizontal direction and 5 pixels per frame in the vertical direction and M = 3 (I B1 B2 P).

Table 1: Search Width and Height Values

forward	horizontal	vertical	backward	horizontal	vertical
I => B1	10	5	B1 <= P	20	10
I => B2	20	10	B2 <= P	10	5

Table 1: Search Width and Height Values

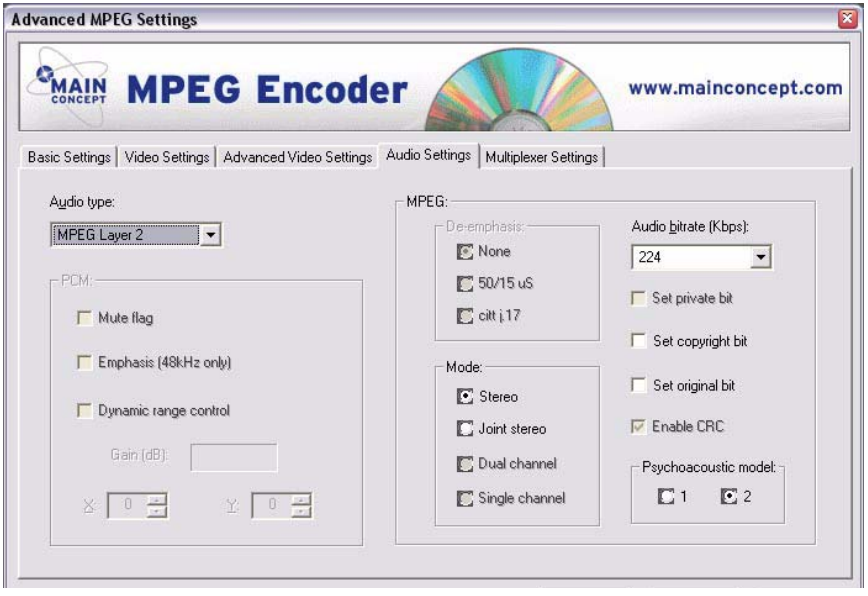
forward	horizontal	vertical	backward	horizontal	vertical
I => P	30	15			

The search window settings are +/- values, for instance if a search window value is 10, the actual search for a matching pixel is done from (x + 10, y) to (x - 10, y) for each pixel (x, y).

These values are usually set automatically by either the *Video encoder quality* sliders (**Search method** and **Search range**) or the **Motion search pixel movement** settings but can be set manually here.

The Audio Settings Pane

This pane offers professional adjustments for audio exporting.



The Audio Settings include the following options and parameters:

Audio type:

None: If you do not want to encode audio, select none here.

MPEG-1 Layer 1: Normally not used

MPEG-1 Layer 2: Used for VCD, SVCD and PAL DVD

PCM: Used for NTSC DVD

NTSC DVDs use LPCM (Linear PCM) audio (or AC3) as the standard audio type instead of MPEG Layer2. LPCM is an uncompressed audio format, which offers higher quality but it also uses far more of the total bitrate (consequently less bitrate is available for the video stream). PCM is only available for MPEG-2 type streams, and is seldom used for PAL DVDs.

MPEG:

Under **De-Emphasis** you find three options: **None, 50/15 uS** and **ccitt. j 17**.

This is a flag to the player specifying what kind of de-emphasis to perform on the audio. DVD and SVCD specify **None**, VCD can be either **None** or **50/15 uS**.

Mode:

Stereo: Standard stereo

Joint Stereo: This option can convert the sound to mono in the lower frequency range (which can hardly be perceived by the human ear). This results in an enhancement of the stereo quality in the median and higher frequency ranges. The setting is useful if the audio bitrate is below 200 Kbps.

Dual Channel: In this case both audio channels are output separately as mono channels; it is normally used for two-channel sound. The compression of the channels takes place separately.

Single Channel: Another expression for mono audio.

Audio Bitrate (Kbps):

32-384: This specifies the bitrate of the audio stream. Depending on the MPEG type selected, some values may not be available. Increasing the bitrate will yield better sound quality and result in larger files, or if the total bitrate is limited it will mean less of the total bitrate is available for the video.

Set private bit: Just a spare bit in the audio headers, which is user defined. DVD specifies it shall be 0.

Set copyright bit: Specifies whether the audio is copyrighted or not, this setting is completely arbitrary; it has no effect whatsoever.

Set original bit: Specifies whether the audio is a copy or an original, this setting is completely arbitrary; it has no effect whatsoever.

Enable CRC: Specifies whether a CRC is embedded in each audio frame, both SVCD and DVD specify enabled.

Psycho-acoustic model:

Two different models (**1** and **2**) specified by MPEG to compute the "just noticeable noise-level".

PCM:

Mute flag: Flag to the player whether to mute or not when all samples in an audio frame are zero.

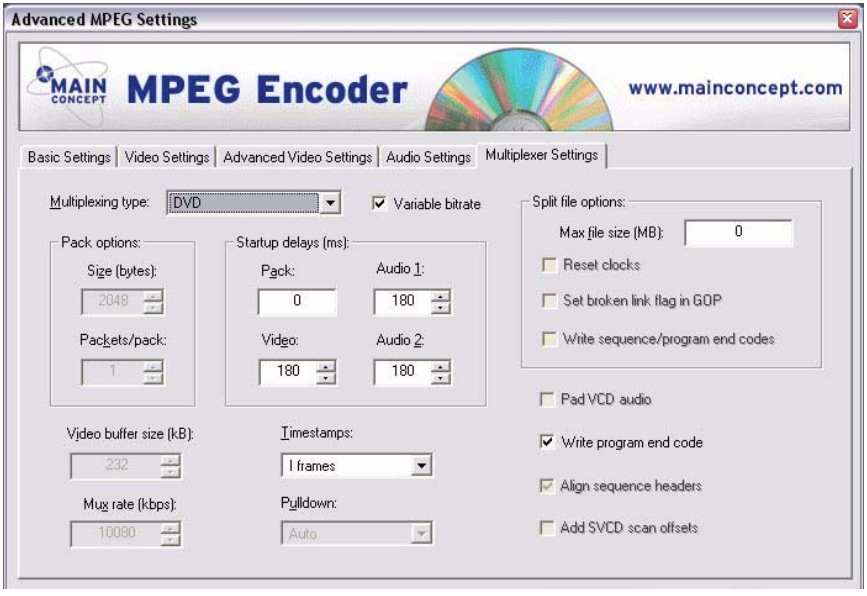
Emphasis (48 KHz only): Flag to the player whether emphasis is to be applied to all audio samples from the start of the audio stream.

Dynamic range control: The option is a recommended gain value which can be applied to all audio samples decoded from the first access unit. Ticking the checkbox enables the **Dynamic range control**. The setting does not affect the encoding of the audio at all. It is simply a value decoders may use when playing the audio.

Gain (dB): The Gain value (**X** and **Y**) is a recommended gain value to be applied to all audio samples by the player, where: Gain = 24.082 - 6.0206 * X - 0.2007 * Y.

The Multiplexer Settings Pane

In this pane you can control whether your exported MPEG files will be multiplexed (also referred to as "muxed"). Multiplexed output means that the video and audio are exported in a single file. This pane also offers some more professional settings for muxing.



In general, the basic settings for this pane and the other advanced panes are set by the options in the **Output format** section of the main window.

Here are the **Multiplexer Settings** in detail:

Multiplexing Type:

The drop-down menu offers the options **MPEG-1, VCD, MPEG-2, SVCD, DVD, TS** (transport stream), **None** and many more parameters, such as **HDV HD1**, **HDV HD2**, **DVB** (which can also be used for transport streams) and **MircoMV**. The settings are usually defined by the parameters of the MPEG Encoder.

Variable Bitrate:

This option sets the muxing mode to variable or constant bitrate. If it is turned off (constant bitrate), the output data stream will contain padding packets (if needed) to maintain the constant bitrate. In variable bitrate muxing no padding packets are added.

Pack Options:

Under this heading you find the options **Size (bytes)** and **Packets/Pack**. **Pack size** is the number of bytes in each pack (or sector); VCD and SVCD use 2324 bytes, DVD uses 2048 and general MPEG-1/2 can use up to 4096 bytes (4096 is our limit, not MPEG's limit). The muxed bitstream is broken up into these 'packs' with a pack header starting each one and they contain 1 or more PES (= Program Elementary Stream) packets (chunks of the video

or audio stream). The **Packets/Pack** setting specifies the number of PES packets that are placed in each pack. VCD, SVCD and DVD always want 1 PES packet per pack.

Startup delays (ms):

The **Pack** value specifies the starting timecode of the muxed stream (this can be different than the starting timecode of the video stream). It is the starting SCR (= System Clock Reference) in ms of the program stream. The **Video** and **Audio** delays are respective to the **Pack** delay

For example, if you set the **Pack** delay to 500 ms, and the **Video** as well as the **Audio** delays to 300 ms, the first SCR of the stream would be 500 ms, and the first video and audio PTS (= Presentation Timestamps) would be 800 ms.

If you make the **Pack** delay five seconds (5000 ms) and the **Audio/Video** delays 400 ms the first SCR would be 5000 ms and the first audio/video PTS would be 5400 ms.

The **Video, Audio1** and **Audio2** delays actually specify the starting time of the respective stream (relative to the pack delay). If these settings do not match, the streams will start at different times. Normally they are the same, but say you have a video stream and an audio stream where you know the audio actually starts 500 ms after the video, you would set the video delay to some value and set the **Audio1** delay to **Video** delay + 500, this would then synchronize the two streams when played.

For example, if you specify the **Pack** delay as 0 ms (the normal case), the **Video** delay as 200 ms and the **Audio** delay as 300 ms, the first SCR will be 0, the first video PTS would be 200 ms and the first audio PTS would be 300 ms. This would shift the audio/video synchronization, so the audio is 100 ms behind the video.

Video Buffer Size (kB):

These settings specify the size of the buffers needed to decode the video. If it is too low, you will get buffer overflows, which could show up as stuttering video. Usually it is set to the same size as the video VBV buffer (although the VBV units are half these units), DVD specifies 232 for the video buffer. Software decoders usually ignore the buffer sizes, but most hardware players will have problems if the buffer size is not correct.

VBV is the abbreviation of *Video Buffering Verifier*. It is a hypothetical decoder with a buffer whose size is specified by the Video Buffer Size. Encoded pictures from the MPEG stream are placed into the buffer (hypothetically) and removed from the buffer at regular intervals. The MPEG video stream is supposed to be constructed by varying the size of the encoded frames such that the buffer does not underflow (i.e. becomes empty where there are no frames in the buffer when it is time to decode one)

or overflow (i.e. becomes full where no space is available for more encoded pictures).

Mux. Rate (kbps):

The **Mux Rate** is the total bitrate, i.e. video bitrate plus audio bitrate plus muxing overhead bitrate. This option specifies the bitrate of the multiplexed program stream.

Pulldown:

This option contains four parameters: **None, 2:3, 3:2** and **Auto**. When pull-down is present in the video stream, the multiplexer must adjust the PTS/DTS timestamps to account for the extra fields displayed. This option should be set to the same value as the video pulldown setting (or to **Auto**).

Timestamps:

You find **All frames, I & P frames** and **I frames** in this menu. Here you can choose which frames in the stream have a timestamp attached. The timestamps are needed for synchronization of video and audio. In general, it is enough to set this option to I Frame. For particular formats the values are clearly defined.

Split File Options:

Max. file size: You enter the value (in MBs) here, from which a further file shall be written.

Reset clocks: If **Reset clocks** is enabled, the SCR, PTS and DTS clocks are reset to the 'startup delay' values (the starting values) when starting a new file. This would make the timecodes in each of the files start with the same values. If disabled, the clocks are not reset and the timecodes would be continuous from one file to the next.

Set broken link flag in GOP: This option has to do with the way MPEG compresses frames. Usually a GOP consists of 1 I frame and several B and P frames. I frames are not dependent on any other frames, P frames are normally dependent on the preceding P or I frame, and B frames are normally dependent on the preceding and successive I or P frames.

A standard GOP (the default settings) are 15 (maybe 18) frames long and they look like this (in the order the frames are displayed):

B B I B B P B B P B B P B B P, B B I B B P B B P B B P B B P, ...

Here the first two B frames are dependent on both the I frame after them and the last P frame of the previous GOP. The *Broken link* flag in the GOP header is there to inform decoders that some kind of action was taken such that the preceding P frame is not present and the first 2 B frames cannot be decoded correctly (the decoder may then ignore them). When splitting files, the files are split on a GOP boundary so that the pre-vious P frame of the

first few B frames is not present in the new file (it is in the previous file). If the files are played one after another, and the last P frame of the first file is kept by the decoder, the decoder can correctly decode the first few B frames of the second file.

The *Set broken link* setting just allows one to specify whether the *Broken link* flag is set or not, and it depends on whether you intend to play the files one after another or separately.

Write sequence/program end codes: When enabled, sequence and program end codes are written to the old file when switching to a new file. If the files are meant to be played one after another, the streams should not be terminated. This option only applies to the files that are split; it does not apply to the last (or only) file generated.

Pad VCD Audio: Some VCD burning programs require this flag to be set and some do not. VCD video packs are 2324 bytes long, but the audio packs are only 2304 bytes long. When the data is written to a VCD disk, the audio packs are put in normal 2324 byte sectors. Some VCD burning programs deal with the extra 20 bytes themselves, while others require the extra 20 bytes to be present. When this setting is enabled, the audio packs are padded with 20 zero bytes so they are 2324 bytes long, if not enabled the audio packs are only 2304 bytes long. This setting is only meaningful for VCD.

Write program end code: When enabled, a program end code is written at the end of the file. This setting only applies to the last file if the splitting option is enabled, or if there is only one file generated.

Align sequence headers: When enabled, the sequence headers present in the video stream are placed at the beginning of a PES packet, this makes it easier to find the sequence headers and the start of a GOP. When a sequence header is aligned, it is possible that the previous video PES packet will need to be padded to make it the correct size, so this option can consume a little of the total bitrate. This option is required for SVCD and DVD.

Add SVCD scan offset: SVCD defines some navigation information that is put into the video stream to help players jump back and forth or skip ahead easily. The info is called scan offsets, this option is normally required for SVCD. This option also consumes a little of the video bitrate. Note: this option will be ignored if the user mux rate is set higher than allowed for SVCD.

Technical Support

MainConcept Support

If you want more information about the MainConcept MPEG Encoder, visit their website at **www.mainconcept.com**. Visit the **Support** section for a variety of resources.

If you need additional assistance, the MainConcept Technical Support team is standing by to help. Send an e-mail to **support@mainconcept.com**, and they will assist you as quickly as possible.

Telephone technical support is also available. Check the MainConcept website for details. Charges may apply from some areas.

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