Autodesk®
Inferno® 2009
A Discreet® Systems product

New Features Guide

Autodesk®

Autodesk® Inferno® 2009, Autodesk® Flame® 2009, Autodesk® Flint® 2009, Autodesk® Smoke® 2009, Autodesk® Backdraft® Conform 2009

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111 McInnis Parkway
San Rafael, CA 94903, USA

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Title: Autodesk Inferno 2009 New Features Guide

Document Version: 1

Date: April 09, 2008

Contents

Introduction

Topics in this chapter:

Welcome to Inferno

The Autodesk®Inferno®online visual effects and compositing system is an Academy-Award®winning solution that offers superior HD performance for faster compositing, advanced motion graphics and interactive client-driven design. Inferno delivers the fast feedback required for client-assisted production and quick turnaround on time-critical projects. Inferno provides artists with a powerful 3D compositing environment and industry-leading tools for high-definition multi-format post-production, from video and HDTV to 2K digital cinema. Inferno tools include Action, the unique Autodesk 3D visual effects design environment, 3D tracking, Motion Estimation, and the powerful Colour Warper™ and Modular Keyer functions.

Using the New Features Guide

This New Features Guide describes the new and updated features for this release of Inferno. For a quick look at the New Features, see What's New on page 7. Some of the major features also have more information in this guide — just follow the links from the What's New chapter.

Notation Conventions

A number of style conventions are used throughout this guide. These conventions and examples of their use are shown as follows.

Convention	Example
Text that you enter in a command line or shell appears in Courier bold. Press the Enter key after each command.	**`install rpm -qa`**
Variable names appear in Courier, enclosed in angle brackets.	`<filename>`
Feedback from the command line or shell appears in Courier.	`limit coredumpsize`
Directory names, filenames, URLs, and command line utilities appear in italics.	*/usr/discreet*

Related Documentation

This release has documentation that helps you install, configure, and use the software, available from your product DVD, on the Autodesk web site, and installed with the product (as PDF files and as an HTML Help system).

For a list of all the documentation available to you, visit *http://www.autodesk.com/inferno-documentation*. From this page, you can access the complete documentation library.

You should also refer to your product's release notes for all late-breaking release information.

Accessing Online Help

Included with Inferno is an HTML Help system that is displayed in a Web browser. The Help automatically installs on the Inferno system and is accessible anywhere within Inferno.

The Help is best viewed using Firefox® 2 or Internet Explorer 7.

To start the Help from Inferno:

1. Start Inferno.
2. On the bottom-right of the screen, click Help.

   You can also click Preferences to display the Preferences menu and click Help.
3. A browser launches to display the Help.

TIP Press **Ctrl+=** to open the Help from anywhere in Inferno.

Learn how to use the Help by reading the "Using the Help" appendix, available only in the Help.

To copy the Help to another system:

1. Copy the *Documentation/help* folder from the product DVD to the new location on another system.

   It is recommended to keep the help files locally on any system they are accessed from. Otherwise, browser errors may occur when navigating through the different areas of the Navigation pane. If an error does occur, refresh the browser.
2. To start the Help after copying the Help folder, open the *help/index.html* file.

PDF Documentation

The documentation set is also available in PDF (Portable Document Format) for online viewing or printing.

You can access PDF documentation files in one of the following ways:

- From the product DVD on a Windows® or Macintosh® or Linux® workstation
- From the documentation library at *http://www.autodesk.com/inferno-documentation*
- Directly from the Preferences menu in the application

Because of some current PDF viewer limitations on Linux workstations, for best results, it is recommended to view PDF documentation on a Windows or Macintosh computer.

Accessing PDF Documentation from the Product DVD

You can use Adobe® Acrobat® Reader™ to view and print PDF documentation files on Windows or Macintosh computers. On Macintosh, you can also use Preview, included in OS X.

PDF documentation is located in the *Documentation* directory at the top level of the Inferno DVD.

Copy the PDF files from the documentation directory to a Windows or Macintosh computer.

To view the PDF files on the product DVD from a Linux workstation:

1. Go to the *Documentation* directory on the DVD. In a shell, type:

   xpdf `<filename>`

   and press **Enter**.

Accessing PDF Documentation from Inferno

PDF files are installed in the Inferno *documentation* directory when you install Inferno. You can use commands in a shell to browse to the PDF files. You can also access them directly from the *usr/discreet/<product home>/documentation* directory by selecting the PDF file from the PDF Documentation box in the Preferences menu.

The options in the PDF Documentation box dynamically reflect the contents of the *documentation* directory. You can add any other PDF files to this directory in order to enable access to them from Inferno.

To access the PDF files installed on your hard drive:

1. Click Preferences to display the Preferences menu.
2. Select a document from the PDF Documentation box.

   The document opens automatically in Xpdf on Linux workstations.

TIP You can access other PDF documents from here by copying them to the */usr/discreet/<product home>/documentation* directory.

Contacting Customer Support

For a list of contact information for Autodesk Media and Entertainment Customer Support, consult your release notes, or visit *http://www.autodesk.com/support*.

Customer support is also available through your Autodesk reseller. To find a reseller near you, consult the reseller look-up database at *http://www.autodesk.com/resellers*.

What's New

2

Topics in this chapter:

New Feature Overview

This section provides a quick overview of the main features for this release. Follow the links for more information about the features. In some cases, you

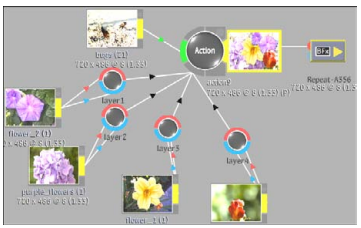
can read even more detailed information about major features, provided in the following chapters.

General Work more efficiently with updates to the Player, LUTs, Resize, Colour Source, and Autosave. See What's New in General on page 9.

Importing and Exporting Media New features and enhancements for media import and export provide better support for MXF (including P2), QuickTime® (soft-import and codec profiles), Broadcast Wave, MP3, and OMF®. See What's New in Importing and Exporting Media on page 11.

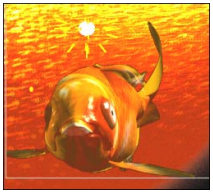
Batch Use the new Timing View in Batch to adjust timing and edit clips as you would in the clip timeline. See What's New in Batch on page 15.

Batch FX Use this new type of effect to apply Batch setups to multiple timeline segments at one time. See What's New in Batch FX on page 15.

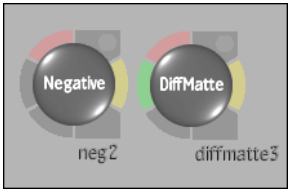


Batch Nodes Improvements have been made to many nodes, such as the RGB Blur node, as well as the addition of Auto Stabilize and Glow nodes. See What's New in Batch Nodes on page 16.

Editing Enhancements have been made to dissolves and wipes and soft effects, such as turning lights on directly in the Axis editor. See What's New in Editing on page 17.

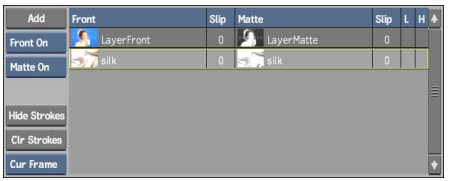


Effects New features include floating point (OpenEXR) support for the Difference and Negative tools, as well as improvements to drawing splines in Distort. See What's New in Effects on page 18.



Action Enhancements and new features include floating point support, camera menu availability, auto 3D tracker updates, and new entering options. See What's New in Action on page 19.

Batch Paint Updates have been made to the Sources list, brush strokes, and painting on multiple frames. See What's New in Batch Paint on page 23.



Infrastructure Important changes have been made to Wiretap™, Stone® and Wire®, and the **vic** utility. See What's New in Infrastructure on page 23.

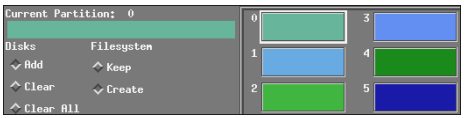


Image courtesy of Quietman

What's New in General

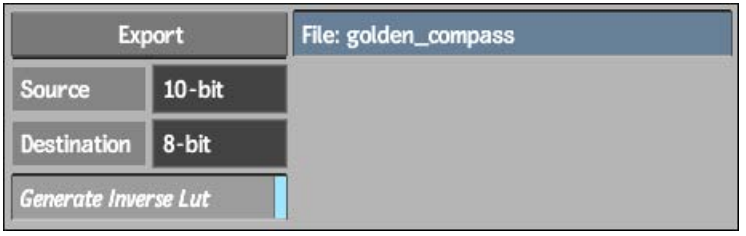
The following features have been added or updated in this release.

3D LUT List

You can initialise 3D LUTs for use in Inferno by importing them into the LUT Preferences menu. See LUT Preferences on page 27.

LUT Editor

The LUT editor now includes a Generate Inverse LUT button in the Export LUT menu. It is enabled by default.



See Exporting LUTs on page 28.

The parameters for each LUT type are now retained in memory during your session. For example, if you work with a LUT type, then select another option, when you return to the first LUT type, the settings are restored.

Player

The Player now features tabs to more easily navigate between menus. The Player Options tabs replace the Player Options box.

Resize

There is a new filter option available for Resize, accessible from the Resize Filter box. The new Lanczos filter option gives best results when resizing a clip to a lower resolution. It uses the Lanczos algorithm, which is an iterative algorithm particularly useful for finding decompositions of very large sparse matrices.

Colour Source

When creating a colour source, such as colour bars or noise, you can now select a frame depth of 16 bits floating point.

Autosave

You can now set two intervals in the Autosave fields to specify how often all clips currently loaded on the Desktop are saved. You have options for setting a soft autosave, which you can cancel, and a hard autosave. See Autosave on page 29.

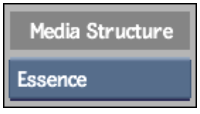
What's New in Importing and Exporting Media

There are a number of new features and enhancements involving media files and EDLs.

Importing and Soft-Importing MXF Media Files

You can now import and soft-import MXF media files, either as single essence files or as P2-structured clips containing video and audio files. The currently supported codecs are DV25 (NTSC), DV25 (PAL), DV50 (NTSC), DV50 (PAL), and DVCPro HD. See Importing and Soft-Importing Video Files on page 31.

The MXF Options are: Essence, for single essence files, and P2, for structured clips containing video and audio files.

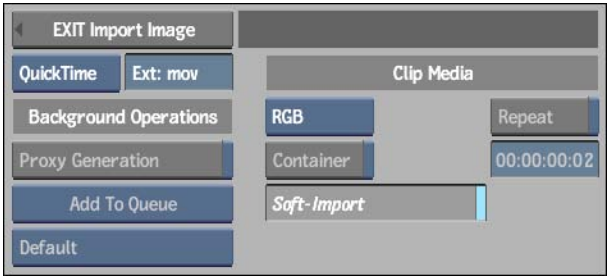


Importing and Exporting QuickTime Media Files

Inferno supports the following new features for working with QuickTime files.

QuickTime Soft-Import

QuickTime files can now be soft-imported into Inferno as individual files. See Importing and Soft-Importing Video Files on page 31.



QuickTime files can also be soft-imported into a Inferno timeline when working with Final Cut Pro® XML files. See Relinking to File-based Media on page 34.

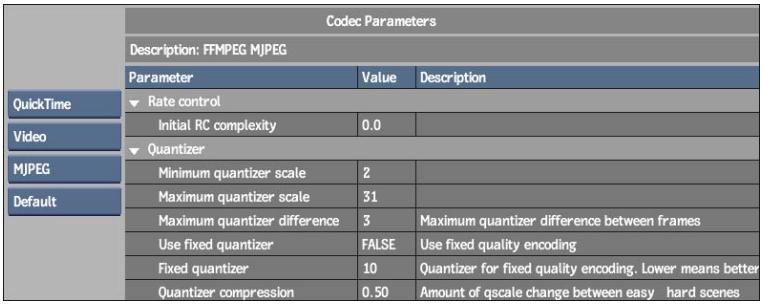
Improved FCP Recapture Workflow

You can now import a full Final Cut Pro timeline instantly, while referencing the native media through soft-import (without actually importing any of the media). See Relinking to File-based Media on page 34.

Inferno reads XML files exported from FCP and assembles a timeline accordingly. In this case, you are only transferring the metadata between FCP and Inferno, as contained in the XML file. Media used during the offline edit in FCP can be referenced directly. However, you may need to recapture the media from the source tapes or relink from files in a separate procedure.

New Configurable QuickTime Codec Profiles

You can now create, save, and reuse customisable codec profiles.

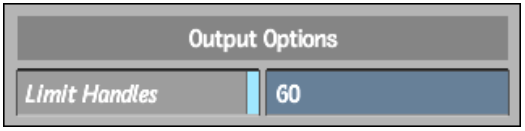


You can create a custom profile for a particular codec that can be used for specific jobs. Using the Codec Profile Editor, you can customize parameters (such as compression settings) and create a library of different codec settings that you can use anytime. The codec profiles appear only for the codec for which the profile was created. You can also delete any codec profile, or load codec profiles created in another Visual Effects andFinishing application.

See Working with Codec Profiles on page 36.

Exporting OMF Files

There are new parameters for exporting OMF files. You can use Limit Handles to export the source clip with a specified maximum number of frames before and after. Use the Limit Handles field to specify a value for the number of frames used before and after the edit.



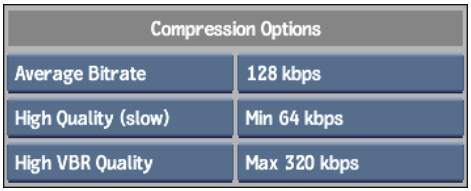
Importing and Exporting Broadcast Wave and MP3 Audio Files

You can now import and export Broadcast Wave and MP3 audio files.

The Broadcast Wave audio file format contains embedded timecode metadata that facilitates audio conforming. This allows for easier import and export of audio files for use in post-production sound studios.

Exporting MP3 Audio Files

If you are exporting MP3 files, you can now set any of the available MP3 export options to be used for encoding.



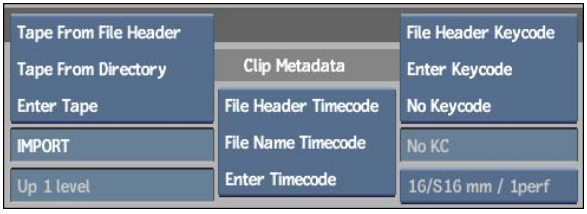
When encoding MP3 audio files, you can select the type of bitrate encoding to be performed. Constant Bitrate encoding uses a single, fixed bitrate for the entire file. Variable Bitrate encoding is a two-pass process of analyzing and then compressing movies to an optimal data rate. Average Bitrate encoding is similar to Variable Bitrate encoding except that it works within a set minimum and maximum bitrate.

You can also adjust the quality of the encoding algorithm (which affects the speed of the encoding), and the number of bits used in the encoding as a factor of quality level (which affects the encoded file size).

User Interface Changes

There are a number of User Interface changes in the Importing Files menu.

In the Clip Metadata group: DPX Tape is renamed to Tape From File Header, DPX Timecode is renamed to File Header Timecode, and DPX Keycode is renamed to File Header Keycode.



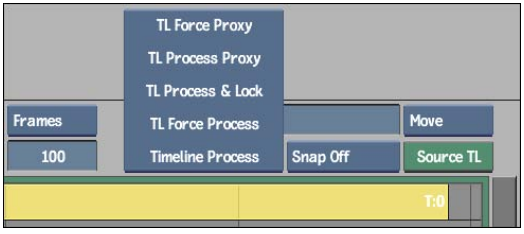
JPEG Performance Improvement

There is a performance improvement for JPEG image conversion to and from RGB. The result is a threefold increase in performance when reading and

writing JPEG images. This performance improvement allows HD images to be captured in real time.

Process Functions

There are new process functions available when processing Batch FX in the timeline. These include: TL Force Proxy, TL Process Poxy, TL Process & Lock, TL Force Process, Timeline Process, and Timeline Burn™. See Processing Soft Effects and Batch FX on page 38.



What's New in Batch

In Batch, the Timing View displays the relative position of Batch clips in time. This view can be accessed at any Batch FX level or from the main Batch timeline. This allows you to view timing information of all clips in the current level at once, and adjust the timing of clips. You can perform basic editing operations within this view. You can offset clips, slip, slide, trim, and move segments within a clip as you would in the clip timeline.

See Offsetting Clips with the Timing View on page 41.

What's New in Batch FX

Segment effects have been redefined to include more functionality. This new type of effect—Batch effect (FX) —allows you to apply Batch setups to multiple segments at one time. You are no longer restricted to applying Batch FX to individual segments.

See Batch FX on page 47.

What's New in Batch Nodes

The following changes and additions apply to Batch Nodes.

Auto Stabilize Node

The new Auto Stabilize node is used to rectify stabilization issues after analysing the movement of a clip.

You can perform a two-dimensional analysis, which creates stabilization curves for X and Y position, rotation, and scaling. A three-dimensional analysis creates these curves and four perspective stabilization curves.

See Auto Stabilize Node on page 95

Glow Node

Use the new Glow node to create a glow effect on a clip. This node includes settings for RGB blur type, blending mode, colour correction, matte restriction, and RGB channel offsets.

See Glow Node on page 98

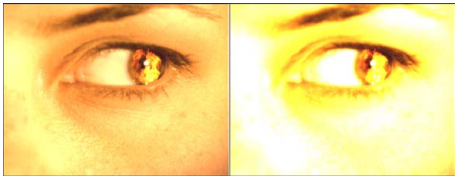


Image courtesy of Casablanca

RGB Blur Node

In addition to the Gaussian and Box blur filters, you can now use the RGB Blur Batch node to apply Directional and Radial blurs.

This node supports floating point (OpenEXR) data as input.

See RGB Blur Node on page 98.

Batch Duration

You can now apply the duration of an Output node, Export node, or Import node to the Batch duration, in the same manner as you apply it from a clip. Hold down **T** and click the node with the duration you want to apply to the Batch duration.

Batch Frame Processing

A new field has been added to the menus of the Add Pulldown, Remove Pulldown, Compound, Deal, Interlace, and Deinterlace nodes.

The First Processed Frame field sets the value at which output is processed from the node. When using the Compound node, frames earlier than the entered value are included in the output but display the first processed frame. For all other nodes, unprocessed output does not display any media.

What's New in Editing

The following changes apply to editing.

Soft Effects

You can create Axis, Wipe, Sparks®, CC, and Text soft effects from the Batch timeline in addition to the Timewarp, Blend, and Resize soft effects available previously. With full soft effect support in Batch, clips are more compatible between Autodesk Visual Effects & Finishing products.

All soft effects have a corresponding editor for refining the soft effect. Within most editors, you can immediately see your changes to the current frame by

previewing your soft effects. Preview mode is useful if you have many unrendered soft effects or complex vertical edits that cause frames to be dropped during playback. You can also use Context View to monitor your soft effect in the context of other layers back on the timeline.

If proxies are set for your project, you can toggle between Proxies and Full Res mode as you work from the soft effect editors in Batch.

See Soft Effects on page 103.

Enabling Lights in the Axis Editor

You can now turn on lights directly from the Axis Editor without having to go into the Channel Editor to modify the light channel.

To turn on the light from the Axis Editor, access the Light menu and click Enable. The light is off by default.

Dissolves and Wipes

You can create wipes and axis transitions from the Batch and Player timelines. See Dissolves and Wipes on page 145.

What's New in Effects

The following changes apply to effects.

Difference Module and Node

The Difference Desktop module and Difference Matte node now support floating point (OpenEXR) data as input.

Negative Module and Node

The Negative Desktop module and node now support floating point (OpenEXR) data as input.

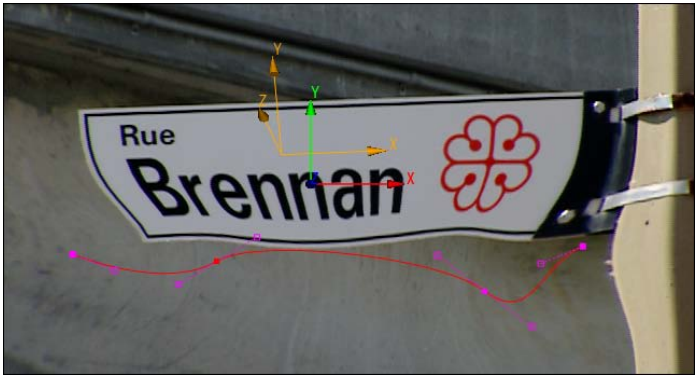
Processing Colour Frames

Previously, when creating a coloured frame from the Processing menu, you could only add two audio tracks to it. You can now add up to eight audio tracks to a coloured frame.

Distort Open Splines

In previous versions of Inferno, you were limited to creating closed splines in Distort. Even if you did not really need a closed spline, you had to take the time to draw extra vertices to close the spline. You can now draw single-point and open splines, saving time by drawing fewer vertices, and having more precision on the exact area you want to warp or morph.

See Drawing Splines on page 173.



What's New in Action

The following changes now apply in Action.

Floating Point Support

16-bit floating point OpenEXR clips are now supported in Action. This file format has advantages over other formats such as a high dynamic range and high-quality colour resolution. You can perform almost all Action operations with 16-bit floating point clips, except for entering other modules from within Action, such as the Colour Corrector or Keyer.

See Using Floating Point Images on page 177.

New Surface Blending Mode

You can use a new mode from the Blend Mode box in the Surface menu. The Add Trans mode is similar to the Add mode, but also uses the transparency of the media being blended.

Action Entering Options

There are two extra options in the Input Mode box when entering Action: None and Clear All. These options provide more flexibility and save time because you do not have to manually perform the operations.

See Accessing the Action Module on page 175.

Cropping in the Media List

Once you set a value in one of the Crop or Softness fields (Top, Bottom, Left, or Right), a checkmark indicates that Crop or Softness is enabled.

Crop	Top	Bottom	Left	Right
	0	0	0	0
C ✓	5	5	10	10
S ✓	0	0	85	52
C	0	0	0	0
S	0	0	0	0

Loading DVE Layer Objects

You can now load multiple DVE Layer Objects to the Action schematic at the same time, as you can with other surface nodes. For example, you can select three front and matte columns in the Media list, then double-click the DVE Object node to add a DVE Layer Object node for each media.

Priority Editor for DVE Layer Objects

When using DVE Layer Object re-entry, you can change the drawing order of the main scene, or the Front or Matte source of your re-entered DVE Layer Object.

See Reordering Surfaces with Re-entry on page 178.

Camera Menu Update

You can now easily access your result camera in the Object menu. A special Camera tab appears in orange, and is always visible in the Object menu to allow you to easily access it without losing your place in the scene.

See Selecting Objects and Populating Menu Tabs on page 179.

3D Camera Tracking Improvements

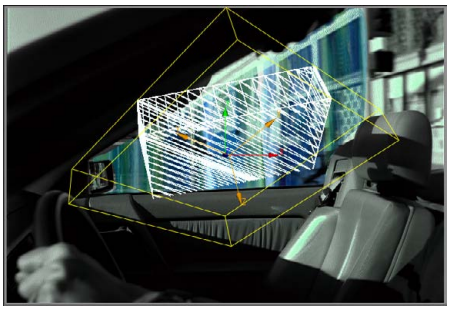
Along with algorithm optimizations to improve the precision of 3D auto tracking, the following improvements also apply to 3D auto tracking:

- You can set the camera type, focal length, and film back size of the camera used to shoot the scene.
- 3D points can be viewed in 3D in all views in Action (Side, Front, Top, or Camera) to help you position objects in the reconstructed scene.
- A synchronized camera is generated (called *Camera_3dt_sync*) when an analysis is performed. This camera, along with the converted axes, is updated automatically when any changes or refinements are made after the initial auto tracking.

See Auto 3D Tracking on page 184.

Garbage Masks as 3D Geometry

You can now import saved garbage mask setups into Action as 3D models, and specify 3D properties such as depth and beveling. This saves you time by not having to use a different application to create basic geometries. You can also attach a texture or deform node to your GMask geometry to create effects.



See Using Garbage Masks as 3D Geometry on page 183.

What's New in Batch Paint

In the Batch Paint menu, the Sources list now displays the front clip and matte clip as its first entry. Each entry in the Sources list includes a Slip field. The Slip values can be set to offset the front, matte, and sources when they are overlaid as reference images and used with the Reveal operation. See Using Sources on page 195.

Clone and Reveal operations now retain their individual Paint Mode settings after changing media.

You can now use the options in the Paint On box to apply strokes to the current frame, all frames, or the current frame and all frames that follow it.

You can access the Node Setup menu to set scaling options for brush strokes associated with the Paint node. By specifying the previous resolution of an input clip before it was resized, the brush strokes applied to the clip can also be scaled based on these settings. See Scaling Brush Strokes on page 196.

What's New in Infrastructure

The following are new and updated infrastructure features for this release of Inferno.

Wiretap

Wiretap allows client applications remote access to Stone FS and standard FS file systems. The following changes apply to Wiretap.

Server-Side Video Media Conversion

Earlier versions of the Wiretap server did not convert video media read from the standard filesystem (Standard FS). It delivered standard formatted frames (such as DPX, SGI) as-is, requiring the Wiretap client to perform the media conversion. With Wiretap 2009, the server now converts formatted frames and returns raw uncompressed RGB data with no header (raw RGB is the Stone FS video format). As a result, Wiretap clients no longer have to implement their own decoders, and automatically handle all formatted video formats supported by Visual Effects and Finishing applications.

Support for Soft-Importing Streaming Media Files

The Wiretap server now allows streaming media files to be soft-imported. Soft-importing means referencing, rather than copying, media to the Wiretap server.

Resolved 'Mixed' Format Timeline Limitation

A 'mixed' clip contains media of different storage formats. Typically, this type of clip contains media from a Stone FS framestore and media soft-imported from a Standard FS framestore. In earlier versions, these clips could not easily be used by Wiretap clients without an explicit stonifize or publish from within the Visual Effects and Finishing application. As a result of server-side video media conversion, this is no longer necessary. Note that mixed clips are now presented as raw RGB—not "mixed".

Access to Library and Volume Metadata

Wiretap clients can now read framestore library and volume metadata. For libraries, returned metadata includes the name, write compatibility (true/false), locked state (true/false), and modification date. For volumes, it includes the name, state (mounted/unmounted), capacity, and available space. In both cases the metadata is read-only.

For more information, see the Wiretap documentation.

vic

The *vic* utility can now identify clips that contain lost frames. Use the *vic* utility in repair mode (with the **-r** flag) to do this automatically. This option enables *vic* to search the media library and replace missing frame ids with a LOST frame label. In the library, the names of impacted clips appear red. When these clips are loaded into the record timeline, the names of the affected segments also appear red. Lost frames are displayed with the LOST label over them. The flag set on clips is not permanent, so resaving the clip will remove the red from the names.

Stone and Wire Improvements

Stone and Wire offers several improvements for this release of Inferno.

Bandwidth Reservation

Stone and Wire provides a mechanism to reserve storage bandwidth for Visual Effects and Finishing applications and tools that use a local mount point to a standard filesystem residing on a DAS volume or on a SAN volume. This ensures that your application gets the bandwidth it requires and that real-time playback on the local system is not jeopardized by requests from concurrent processes, including access from remote hosts.

Optimized Standard Filesystem Performance

Stone and Wire offers optimized Standard Filesystem performance for the recommended configuration: the XFS filesystem on Stone Direct XR-series arrays.

Media Pre-allocation

To prevent clip fragmentation and increase playback performance, Stone and Wire offers media pre-allocation mechanisms for standard filesystems. The pre-allocation mechanisms reserve the necessary disk space for your workflow before media files are actually written to disk.

General

3

Topics in this chapter:

LUT Preferences

Use the LUT preferences to import and list the 3D LUTs you can use in Inferno. For more information on using 3D LUTs, see the Colour Management with LUTs chapter in the Help.

3D LUT list Displays the list of 3D LUTs that you imported for use in Inferno.

TIP You can use a hot key to switch between the first ten 3D LUTs in the list. Press **Shift+Ctrl+1** for the first LUT, **Shift+Ctrl+2** for the secondLUT, and **Shift+Ctrl+0** for the tenth LUT in the list.

Import button Opens the Import LUT browser. Navigate to the 3D LUT file you want to use, and select it to load it to the 3D LUT list.

Delete button Deletes the selected LUT from the 3D LUT list.

Delete All button Deletes all LUTs from the 3D LUT list.

Exporting LUTs

Once you complete your custom LUT, you can use it to convert images. To do so, you must first save or export it. Saving a LUT preserves its menu settings and automatically creates an invert LUT. A LUT's menu settings include values for its basic curves, as well as its advanced editing curves. Exporting combines the basic curves and the advanced editing curves into a single set of curves. However, exporting provides the opportunity to change the bit depth of the LUT. Both saved and exported LUTs are applied to an image sequence or a clip in Batch in the same manner.

When you export a LUT, the settings that correlate with the basic curves and the advanced editing curves are merged to create a single set of RGB conversion curves and the independence of these settings is lost. Whether you load or import the LUT afterwards, it appears as a basic conversion curve only. However, like all basic LUT types, you can then alter it, for example, by using the advanced editing curves.

Exported LUTs serve as a good interchange format for colour consistency between Autodesk and non-Autodesk products.

Exporting is useful when you want to change a LUT's bit depth. If you develop a LUT for importing 10-bit logarithmic film data, for example, you can easily convert it to work for 12-bit logarithmic data. When exporting a LUT, you can scale both the input and output bit depths.

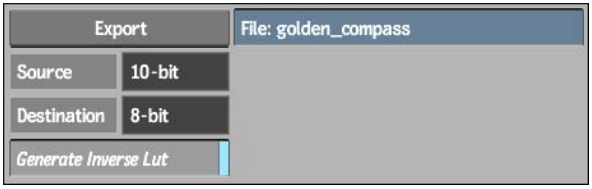
To export a LUT:

1. Access the LUT Editor.

   If you accessed the LUT Editor from a node in Batch, select the node and display the LUT editing menu with which you created the LUT.

2. Click Export.

The Export LUT menu appears.



3 Set a location for the LUT.

4 Select the source and destination bit depths for the exported LUT.

5 Enable Generate Inverse LUT to create an inverse LUT along with the normal lut. You can apply an Inverse LUT to restore original LUT settings.

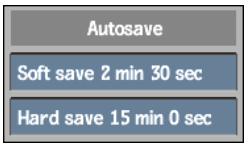
6 Click Export.

The LUT is exported to the specified location.

Autosave

New for this release: In the General section of the Preferences menu, you can set two different autosave delays.

Use the Autosave fields to specify how often all clips currently loaded on the Desktop are saved. If your work session terminates due to a software or hardware failure, you can recover all the work done up to the last time an autosave was performed.



Soft Save field Set the time until a soft autosave performs. A small red icon appears indicating a two second delay before a soft autosave occurs. To abort this autosave, move anywhere within the application (in this case, the next autosave occurs at the interval you set in the Soft save field). The maximum interval is 30 minutes 0 seconds. The default value is 2 minutes 30 seconds. Enter a value of 0 minutes 0 seconds to disable the Autosave function.

Hard Save field Set the time until a hard autosave performs. A hard autosave occurs at the specified time regardless of any user intervention. If a soft autosave occurs, the hard autosave is also reset. The minimum interval for the hard autosave is the same as the time you enter for the soft autosave (in this case only hard autosaves occur). The maximum interval is 30 minutes 0 seconds. The default value is 15 minutes 0 seconds. Enter a value of 0 minutes 0 seconds to disable the Autosave function.

Importing and Exporting Media

4

Topics in this chapter:

Importing and Soft-Importing Video Files

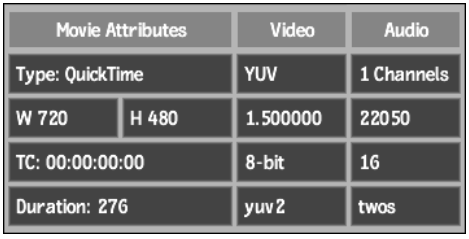
Use the Import Image menu to import or soft-import one or more QuickTime movies or MXF media files to the current clip library. Both video and audio tracks are supported.

Audio files that are not 48 KHz are automatically resampled to 48 KHz on import. For video files that contain an alpha channel, you can maintain the alpha channel in the imported clip for use in compositing.

Before importing any MXF P2 content, ensure that the P2 recording devices that are used are set to record clip metadata in Type 2. This allows important metadata, such as the User Clip Name, to be assigned properly in the MXF file.

Note that you cannot import or soft-import MXF P2 content that contain 2:3 or 2:3:3:2 pulldown, or variable framerates (such as from Varicam cameras).

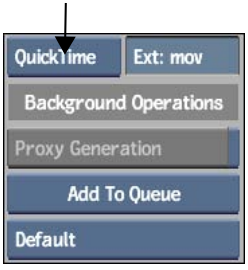
A QuickTime or MXF video file can be encoded with any of a number of different codecs. During import, the codec flag and other detected metadata for a supported movie appears in the Movie Attributes area. Note that there are some codecs that will display, but are not supported. Otherwise, a message appears indicating that the movie cannot be imported.



NOTE To import files created using unsupported video file formats or codecs, you can use Cleaner XL to encode the files into a supported format. For example, use Cleaner XL to import video as a sequence of compatible still images. See the guide, *Using Cleaner XL with Autodesk Visual Effects and Finishing Applications*.

To import or soft-import a QuickTime movie or MXF media file:

1. From the Library menu, click Import Image and select a destination reel.
2. From the File Format box, select the format of the clip that you want to import.

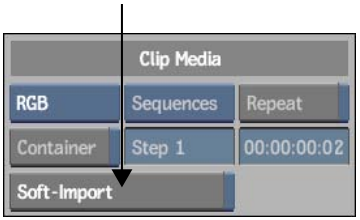


3. Browse to the directory containing the video files that you want to import, and then select the files.

TIP If the files that you want to import do not use the default extension, they do not appear in the browser. Enter the extension of the files in the Ext: field and they will appear in the browser. To view all files in the current directory, enter a blank extension.

4 Optional: Enable Scan Subdirectories to display all the subdirectories and their contents.

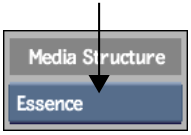
5 Enable Soft-Import if you want to import a reference to the media, but you do not want to store the media on the local storage.



NOTE Certain options are disabled if you choose to soft-import the media.

6 If you are importing MXF files, select whether you want to import only a single file or the entire P2 content.

P2 content includes all of the associated audio files, which are embedded in the timeline. To import audio only select Essence from the MXF Options box. Use the P2 option only when importing the entire structure.

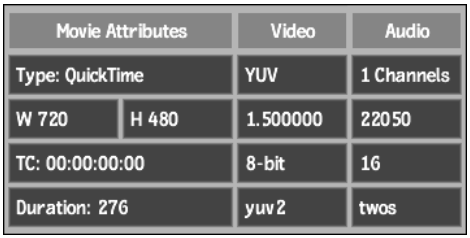


7 Adjust any other properties in the Clip Media, Clip Metadata, or Processing groups.

NOTE A clip that is imported using an unsupported frame rate is converted to the frame rate specified for the current project. This causes the clip to appear out of sync with its audio. A comment specifying the original frame rate is added to the clip notes, providing the ratio needed if you choose to re-time the video.

8 In the Movie attributes area, ensure that the codecs used in the video file are displayed.

During import, the codec flags for video and audio, and other detected metadata for a supported movie appears in the Movie Attributes area.



9 Click Load.

The video files are imported to the desktop and to the specified library reel.

Relinking to File-based Media

If, in Final Cut Pro, you edited sequences using file-based media, such as QuickTime movies, you can then relink the exported XML to these files in Inferno.

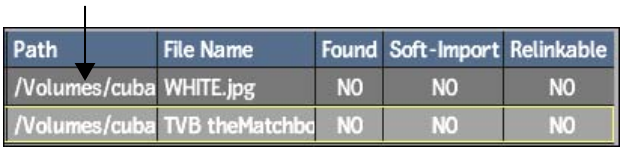
Verify that the files you are relinking to are supported in Inferno. See Supported File Formats in the Importing Media Files chapter.

You can relink imported FCP XML files to file-based video or audio media.

If you are importing FCP XML with Varicam support, it will be identified as such in the Source Type box.

To relink FCP XML to file-based media:

1 Ensure that the path to your media files is correct. To change the path, drag to select the media segments in the list, and then click in the Path field.



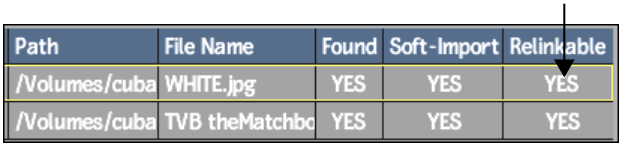
Once the path is correct, the Found field will display YES for each segment found.

2 If you want to soft-import the media files, drag to select the segments in the list and then, in the Soft-Import column, drag left or right to toggle between NO and YES.

Note that not all files can be soft-imported (for example, audio files at 44.1 kHz).

3 Click Import All Files.

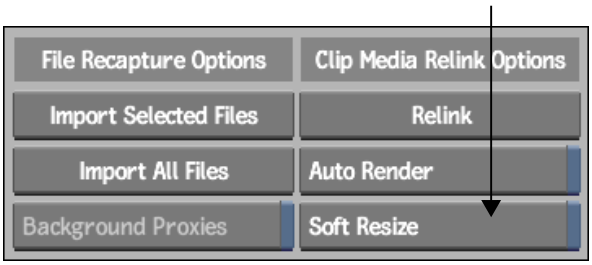
All the files are now imported or soft-imported but not yet relinked. The Relinkable column displays whether the file is relinkable.



4 Ensure that all media files are relinkable. Click the Relinkable header to sort the list and group any NOs at the top.

Some files that are not relinkable may only need to be resized so as to be compatible. For example, the Soft Resize feature allows you to import Quicktime files, included with the FCP XML, at 720x480 instead of the usual NTSC 720x486.

5 Select the files that are not relinkable, enable Soft Resize, and then click Import Selected Files.



If the files are still not relinkable then they cannot be soft-imported. Try to import the files normally, or check with your system administrator.

6 Click Relink.

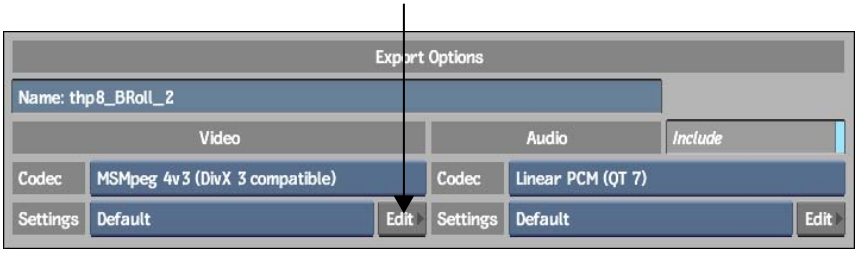
A new reel with the XML filename is created in the clip library for each imported XML file. The assembled clip in the new reel has the same name as the original FCP sequence.

Working with Codec Profiles

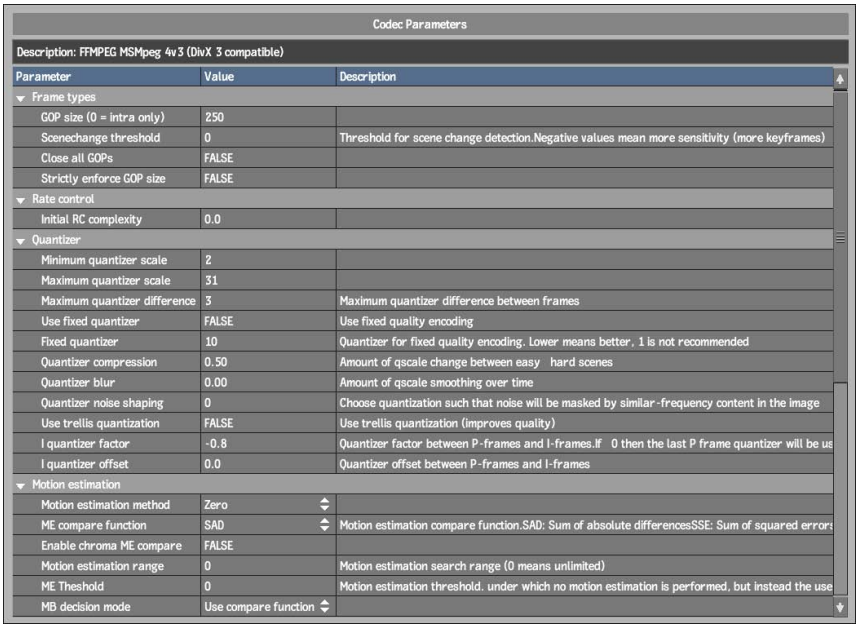
You can create a custom profile for a particular codec to use for specific jobs. Using the Codec Profile Editor, you can customize parameters, such as compression settings, and create a library of different codec settings that you can use anytime. Depending on the codec, the settings of some parameters may be dependent on others. In some instances, a particular field may, therefore, revert to its original setting. The codec profiles appear only for the codec for which the profile was created. You can also delete any codec profile, or load codec profiles created in another application.

To edit or create a new codec profile:

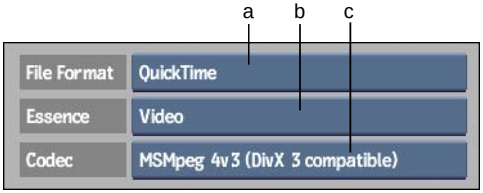
1. Open the Export Image menu and, from the File Format box, select QuickTime.
2. Click the Edit button for the video codec or audio codec that you want to modify.



The Codec Profile Editor appears.



3 If needed, select a different codec, switch between audio and video codecs, or edit a codec profile that you previously created.



(a) File Format box (b) Essence box (c) Codec box

4 In the Codec Parameters list, make any changes that you need to the parameters for your specified codec.

5 When your modifications are done, enter a new name in the Name field, and then click Save.

Your new codec profile is saved. It appears in the list of available codec profiles when you select the codec for which the profile was created.

6 Click Exit Movie Presets to go back to the Export Image menu.

Processing Soft Effects and Batch FX

There are new process functions available when processing Batch FX in the timeline. These include: Timeline Force Proxy, Timeline Process Poxy, Timeline Process & Lock, Timeline Force Process, Timeline Process, and Timeline Burn.

Processing is a convenient means of ensuring real-time playback when creating complex effects. If you are not achieving real-time playback, you can selectively process elements in the timeline (or the whole timeline) to restore it. Unlike committing, the effects remain editable after processing. If you have a Burn license, you can Burn clips containing soft effects, timewarps, and dissolves and process them on a remote rendering system.

To process soft effects or Batch FX in the timeline:

1 Select the tracks or elements that you want to render.

2 From the TL Utility box, select a process option.

Select:	To:
Timeline Force Proxy	Force the processing of a proxy on Batch FX that need to be refreshed.
Timeline Process Proxy	Process proxies only, not the corresponding high-resolution images. An amber outline appears on the timeline segment to indicate the state of the processing.
Timeline Process & Lock	Process an element and lock it. This prevents elements from being recognized by the system as no longer valid.
Timeline Force Process	Force a process on Batch FX that need to be refreshed. Use this to force a process on a locked element, or when Inferno fails to recognize that a processed clip is no longer valid. For example,

Select:	To:
	if you change a layer in a complex vertical edit, you may need to force a process to update all the layers in the stack.
Timeline Process	Process the selected tracks or elements. This is the standard option.
Timeline Burn	Process selected tracks or elements using Burn on a remote rendering system.

The selected elements are rendered.

Batch 5

Topics in this chapter:

Offsetting Clips with the Timing View

Use the Timing View to display the relative position of Batch clips in time. You can perform basic editing operations on segments, such as offsetting clips and trimming segments within a clip as you would in the timeline. Timing View can be accessed from any Batch FX level or from the main Batch timeline. It allows you to view timing information of all clips in the current level at once and adjust the timing of clips.

Use the Timing View to select a Batch clip to slip, slide, or trim. You can also move a segment within a clip (but not between clips).

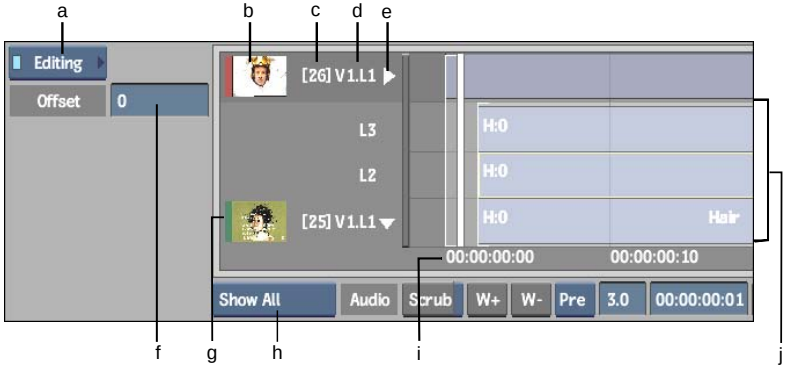
Edit a clip gesturally or use hot keys as you would on the record timeline.

To access the Timing View:

1. In Batch, click Timing.

   The Timing View appears. All clips in the current Batch schematic are represented in the Timing View by a clip proxy and primary video track.

Gaps are displayed based on No Media settings, which are set in the clip's Basic menu in Batch.



(a) Menu Priority box (b) Batch clip proxy (Record clip, red) (c) Clip number (d) Track and layer number (e) Expand/Collapse button (f) Offset field (g) Batch clip proxy (Source clip, green) (h) Filter button (i) Frame/timecode number (j) Track

Images courtesy of Das Werk and The House

Batch clip proxy Represents the clip associated with the track. The Source and Record clips are indicated by a proxy with a green and red bar, respectively. Select a clip's Batch timeline to set it as the Source or Record Focus. Double-click a clip proxy to display its Batch timeline.

Clip number Displays the number assigned to the Batch clip when it is brought into Batch. Each track displays the corresponding clip number in square brackets. This number indicates the order in which clips were brought into Batch and allows you to differentiate similar clips.

Track Each clip in the Timing View is represented by its primary track. If the track has multiple layers, the display can be expanded to show all layers, or collapsed to display only the focus layer.

The primary track is set in the clip's timeline.

Filter button Limit the type of clips that are displayed in the Timing View.

Select:	To:
Show All	Display all clips in the Batch schematic.
Show Tree	Display all clips in the selected processing tree.
Show Branch	Display all clips in the current node branch.

Select:	To:
Show Selected	Display all clips and nodes selected in the Batch schematic.

Swipe bar Alternate between the standard view and a larger Timing View by holding down the **Ctrl** key as you swipe.

Frame/timecode number Displays time values. Change time settings in the General section of the Preferences menu.

Selecting Clips and Segments

You can select clip proxies and segments separately in the Timing View.

To select a clip in the Timing View:

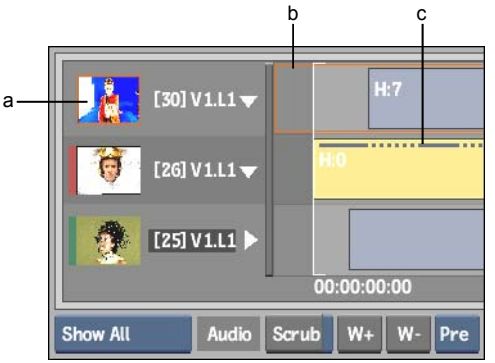
1 Do one of the following:

- Click the clip proxy in the Timing View.
- Press **Ctrl** and click clip proxies in the Timing View to select multiple clips.
- Click the lower left corner of the Timing View to select all clips.

The clip's proxy and track in the Timing View are highlighted by an orange bounding box.

Select a segment by clicking on it in the Timing View. When you select a segment in a track, it is highlighted in yellow.

Different types of selections can occur simultaneously in Timing View. You can select a segment and you can select a clip. The segment selection can be in a different clip than the clip selection.



(a) Proxy of selected clip (b) Clip selection (c) Segment selection

Image courtesy of Das Werk and The House

Offsetting Clips

Adjust the timing of clips by offsetting them in the Timing View. When you offset a clip, you simultaneously offset all of its segments on each layer. Multiple clips can be offset simultaneously.

You can view the timing of all clips in the current Batch schematic

To offset a Batch clip:

1 Click the clip proxy.

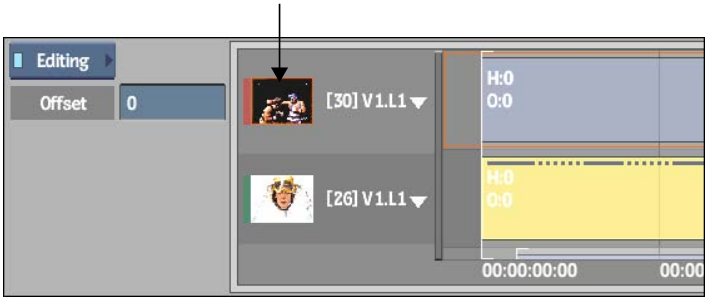


Image courtesy of Das Werk and The Post Group

NOTE To select multiple clips, **Ctrl**-click subsequent clip selections.

A bounding box highlights the track.

2 In the Offset field, set the value to adjust the number of frames by which the clip should be offset. If you offset multiple clips simultaneously, the value is reset to 0 once the offset is complete.

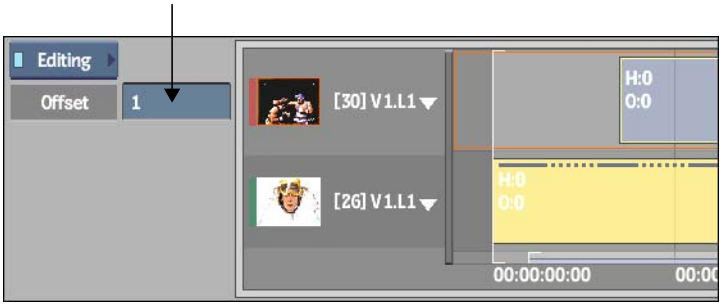


Image courtesy of Das Werk and The Post Group

Batch FX

6

Topics in this chapter:

About Batch FX

A Batch effect (FX) is a setup applied directly to one or more segments on the Batch timeline. Batch FX include effects of any module accessed from the Batch node bin. Creating a Batch FX allows you to take a selection of timeline segments into a Batch flow graph environment for procedural compositing. When you create a Batch FX, you perform procedural compositing yet remain in a

timeline-based environment. You can edit and reorder any Batch FX node without affecting anything else in your pipeline.

Each time you create a Batch FX, you enter a new setup for the selected segments. Segments can, therefore, have several levels of nested effects. You can use the BFX View to access a schematic hierarchy of all levels of nested Batch FX and their sources relative to the main Batch timeline. Alternatively, you can expand Batch setups to bring the setups nested inside a clip back to the same BFX level.

Although you can also create soft effects on the Batch timeline, their order in the pipeline is fixed. As well, you can apply soft effects to only one segment. Batch FX give you access to more effects modules than soft effects. Creating soft effects is useful when you want to remain on the timeline and do not need to be in a modular pipeline environment. If you started with soft effects on your timeline and later decide you need the flexibility of the Batch pipeline, you can convert the soft effects to nodes.

You apply a Batch FX to a source or to a source after it has been modified with soft effects. To apply a Batch FX to a source, you enter a Batch setup from a segment's timeline with the Pre option. To apply a Batch FX to multiple sources or to a source modified with soft effects, you enter a Batch setup with the Post option. If you bring multiple layers into a Batch setup and want to apply a separate Batch flow graph to each layer, you can split the layers and create one clip per layer.

When creating Batch FX, you can save the modified clip to the desktop or to the _Edited library.

Creating Batch FX

A Batch FX is created by bringing a selection of timeline segments into a BFX level. You enter a BFX level from the main Batch timeline or from the timeline of the clip in the current BFX level. You can bring segments with their soft effects into a BFX level. Batch FX are applied on top of the segments and their soft effects. Or, you can enter a BFX level with a single segment's source, leaving its soft effects intact on the timeline one level up. A Batch FX is applied to the source before anything else affects it.

To apply a Batch FX to segments and their soft effects, you enter a BFX level with the Post option. You can enter with a contiguous selection of horizontal or vertical segments. Bringing in multiple segments is useful for continuing work that was done in context of a timeline or for bringing a selection of segments into the same Batch FX level.

To apply a Batch FX to a source and not its soft effects, you enter a BFX level with the Pre option. You can enter with only one segment. Bring in only a source to make changes such as removing pulldown that you want to do before the soft effects. When you go back to the main timeline, the soft effects are reapplied to the modified source.

A clip can have multiple nested Batch setups. Each time you access a Batch setup, you enter another BFX level. Whether you enter a BFX level from the main timeline or from the current BFX level, you can still enter with the Pre or Post option.

To enter a BFX level with a segment's source:

1. Select the timeline segment whose source you want to modify or move the positioner's focus point over the applicable segment.
2. Click Pre.

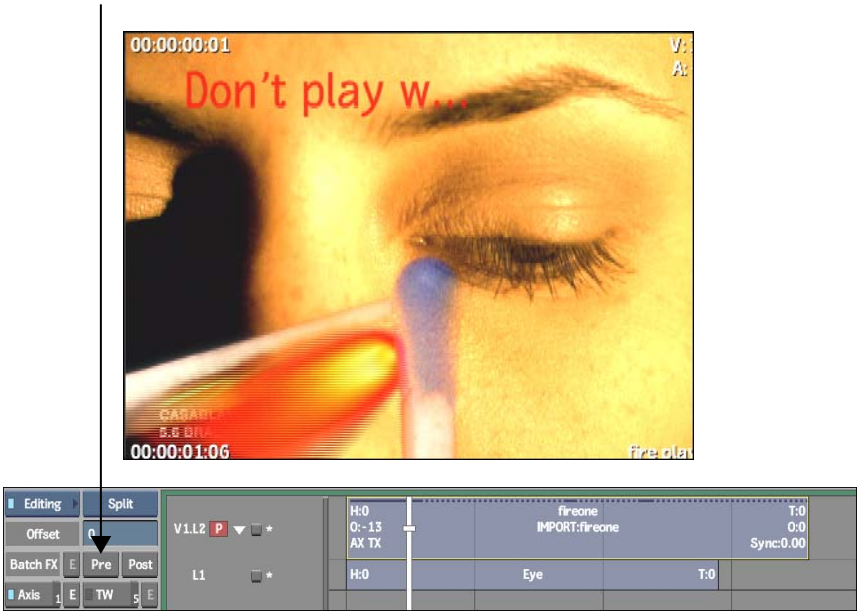
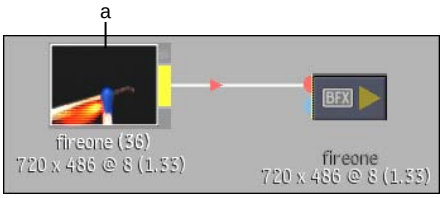


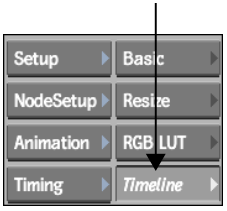
Image courtesy of Casablanca

The segment's source is loaded as a clip in a new Batch setup. In this example, the source segment is brought into a Batch setup without its Axis Key and Text soft effects.

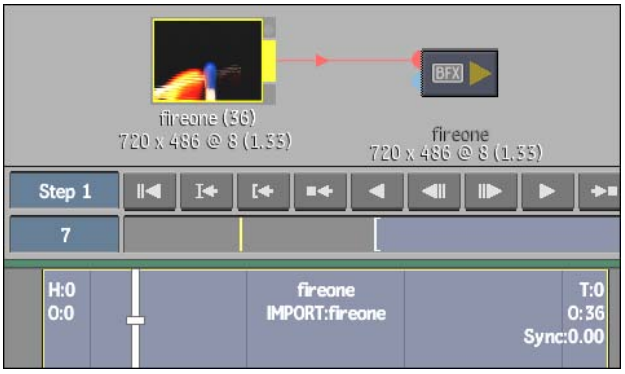


(a) Source segment brought into a Batch setup with the Pre option.

3 To display the clip's timeline, select the clip in the schematic and click Timeline. If you do not see the Timeline button, swipe the left side of the screen or double-click the clip.

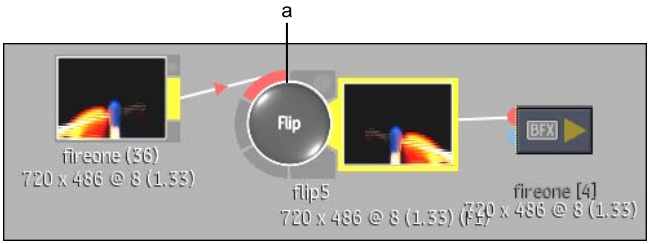


The Axis Key and Text soft effects are not brought into the Batch setup.



4 To modify the source, drag a node to the process tree and adjust the settings.

In the following example, a Flip node is applied to the source.



(a) Flip node added to source

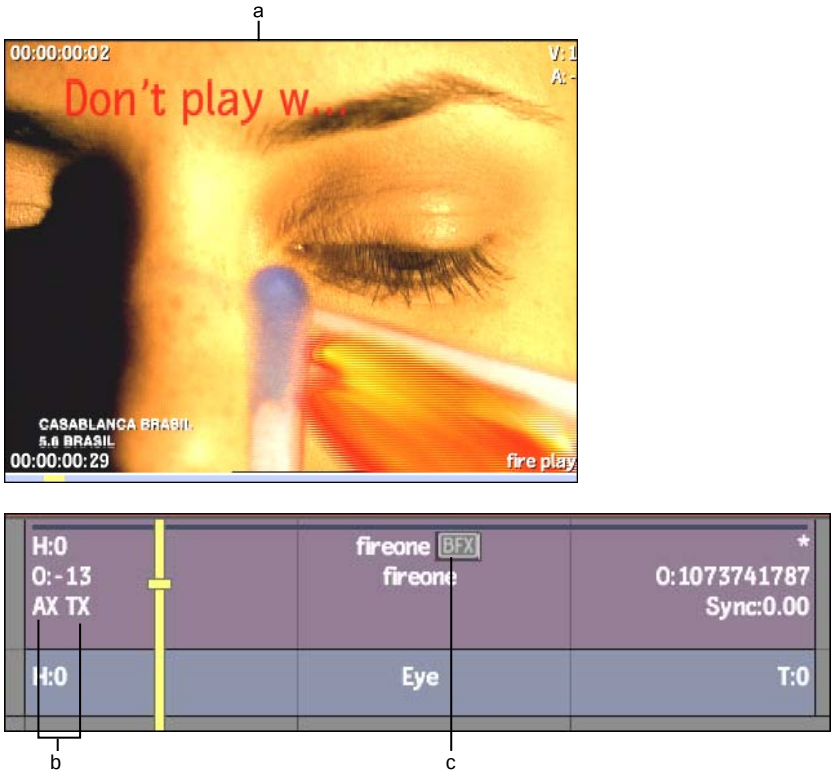
TIP To see an updated proxy of the result for a node, enable Auto Update in the Batch Setup menu.

---

5 When you are finished working with the setup, exit to the timeline and process.

Only the source segment brought into the BFX level is modified with the Flip Batch FX. The Axis Key and Text soft effects are reapplied on top of the modified source.

The timeline segment is pale magenta, replacing the original timeline selection. A white BFX icon indicates that a Batch setup is applied exclusively to a source.



(a) Result clip (b) Axis Key and Text soft effects (c) BFX icon

Image courtesy of Casablanca

Creating Batch FX is an iterative process. Each time you bring a source into a BFX level with the Pre option, the most recently modified source is loaded.

In the following example, the Flip effect is part of the new source segment. If you bring the segment into a new BFX level with the Pre option and create a Batch FX, the setup is applied to the modified source.

(a) New source segment

In addition to applying a new setup to a modified source, you can continue to edit the current Batch setup. See Editing Batch FX on page 81.

To enter a BFX level with a segment's soft effects or with multiple segments:

1. Select the timeline segments that you want to bring into a BFX level or move the positioner's focus point over the applicable segment.

   You can select multiple segments or a specific segment. If you select multiple segments, they must be contiguous horizontally or vertically to enter a BFX level with the Post option. However, it is not necessary to select an entire stack of vertical layers.

2. Click Post.

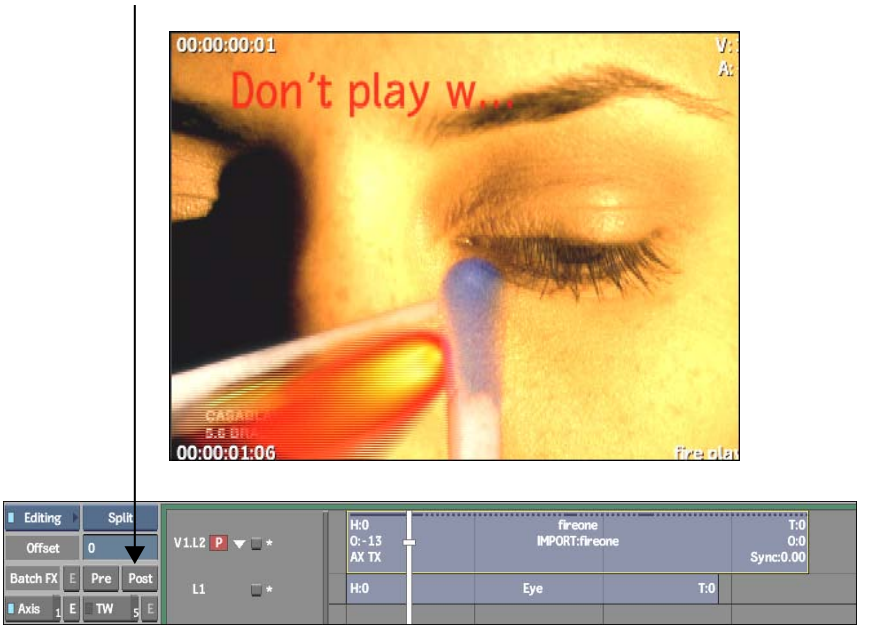
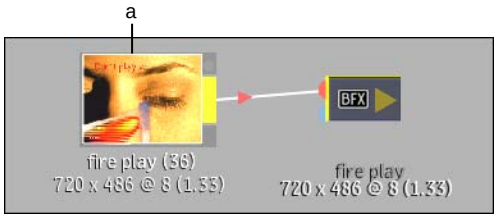


Image courtesy of Casablanca

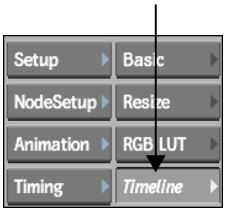
NOTE If you did not select all the layers of a vertical edit, a message appears stating that vertical compositing may be lost.

The segments along with their soft effects are loaded as a clip in a new Batch setup. In this example, the Axis Key and Text soft effects are brought in with both layers from the main timeline.



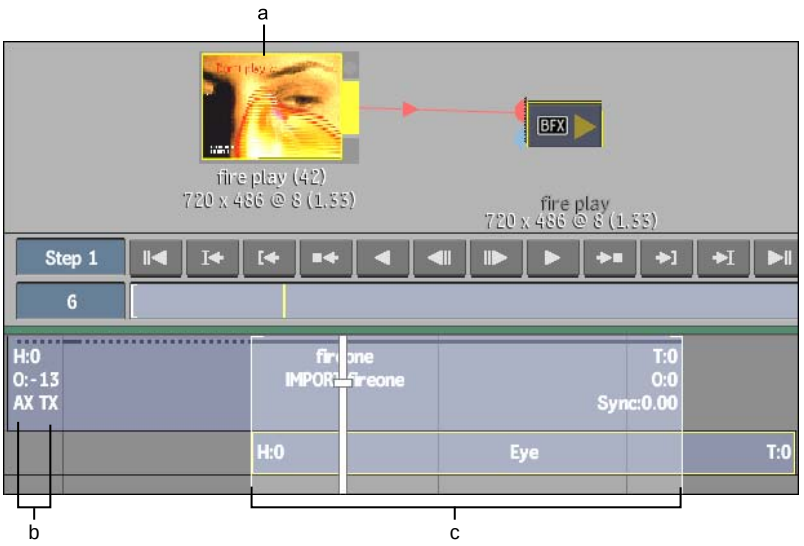
(a) Source segment and applied soft effects brought into a BFX level with Post option

3 To display the clip's timeline, select the clip and click Timeline. If you do not see the Timeline button, swipe the left side of the screen or double-click the clip.



If you did not make an explicit selection on the main timeline and in and out points were set, all segments on all layers between the in and out points are brought in. If in and out points were not set, only the segment under the positioner's focus point is brought in. Head and tail frames are displayed for reference.

The timeline contains the soft effect indicators.

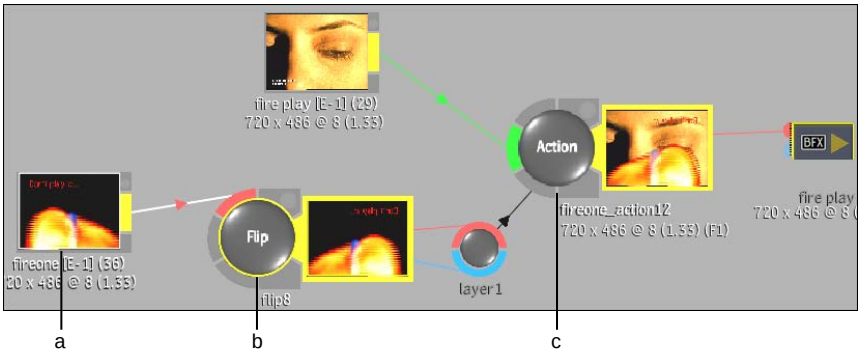


(a) Selected clip (b) Axis Key and Text soft effect indicators (c) In and out points on clip layers

To modify the source and its soft effects, drag nodes to the process tree and adjust the settings.

To recreate the vertical compositing of the main timeline as a Batch flow graph, convert soft effects to Batch nodes. In the following example, a

Flip node is applied on top of the original front segment and its Text soft effect. When the Axis Key soft effect is extracted from the timeline, it is automatically converted to an Action node and connected to its corresponding front and back clips. See Converting Soft Effects to Batch Nodes on page 60.

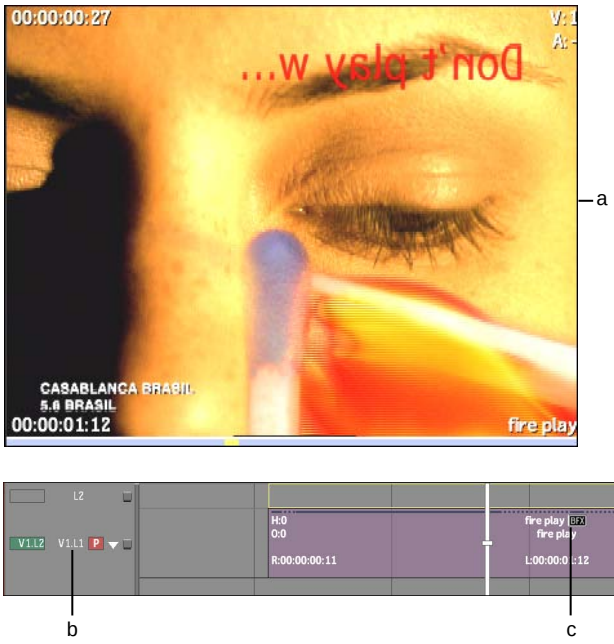


(a) Clip with Text soft effect (b) Flip node (c) Action node

4 When you are finished, exit to the timeline and process.

The Flip Batch FX is applied on top of the original front segment and its Text soft effect. The segment is pale magenta indicating that a Batch setup is applied to the clip. A black BFX icon indicates that the Batch setup is also applied to the clip's soft effects. The soft effect indicators are not displayed because a Batch setup has been applied on top of the soft effects. Enter the Batch setup to access the soft effects.

If you entered Batch with more than one layer, the layers are collapsed into one segment on the bottom layer of the original selection. The segment takes on the length of the original selection or the length defined by the selection's in and out points.

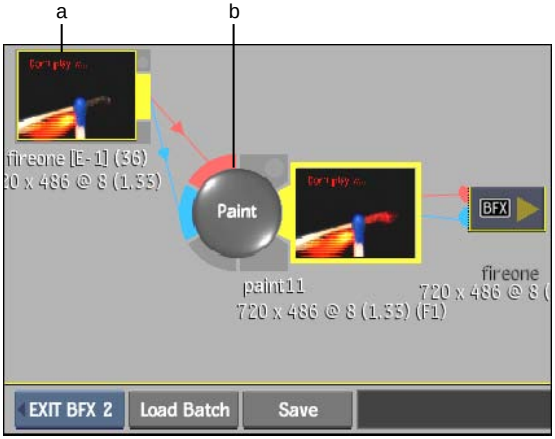


(a) Flip Batch FX applied to clip and Text soft effect (b) Layers collapsed on bottom layer (c) BFX icon

Image courtesy of Casablanca

NOTE You can apply a soft effect on top of a Batch FX segment.

Creating Batch FX is an iterative process. You can apply a Batch FX to a segment in any Batch level. In the following example, the segment with the Text soft effect is brought into a new setup (BFX 2) with the Post option. A Paint node is applied to the clip and its Text soft effect.



(a) Clip with Text soft effect (b) Paint node

In addition to applying a new setup to a modified source and its soft effects, you can continue to edit the current Batch setup. See Editing Batch FX on page 81.

NOTE For a visual representation of all nested levels of Batch FX, use the BFX View. See Navigating Batch Setups on page 82.

Creating One Clip Per Timeline Layer

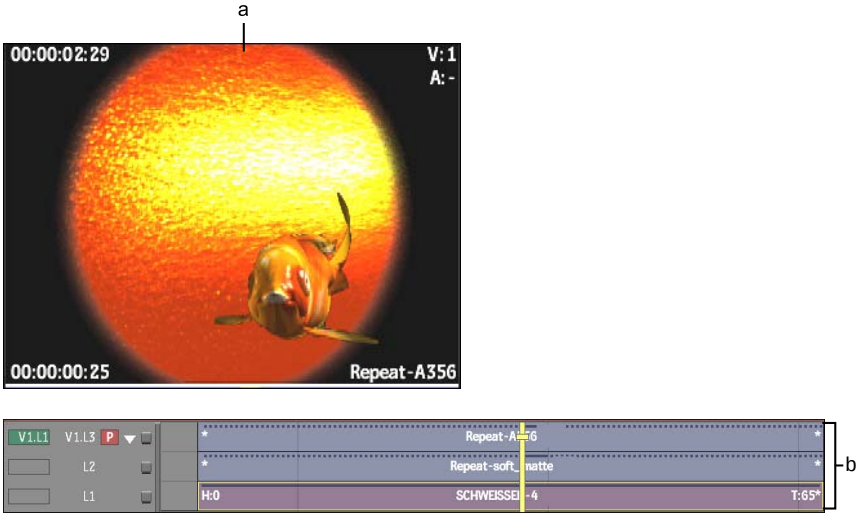
If you bring multiple layers into a Batch setup and want to apply a separate flow graph to each layer, you can split the layers and create one clip per layer. If you want to work with the clips in an Action setup, and they are not affected by vertical compositing from the original timeline layer, you can have have each split layer automatically converted to an Action node.

Each clip created from a layer has its own timeline. However, you no longer have access to the timeline of the original clip loaded into the BFX level.

You can split both layers and tracks into individual clips.

To create one clip per layer:

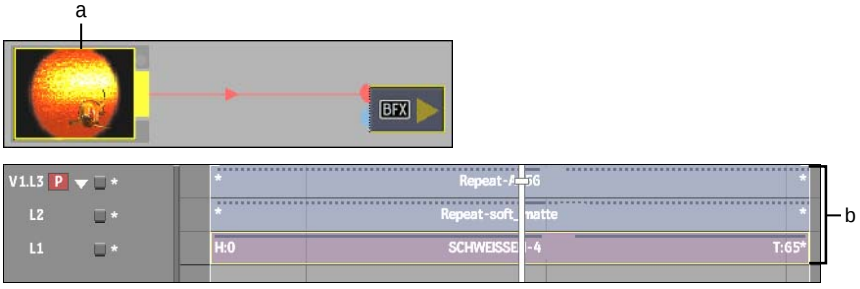
1 Load a multi-layer clip into a BFX level.



(a) Clip (b) Clip layers

Image courtesy of Quietman

The clip is loaded in a Batch setup with all its layers preserved.



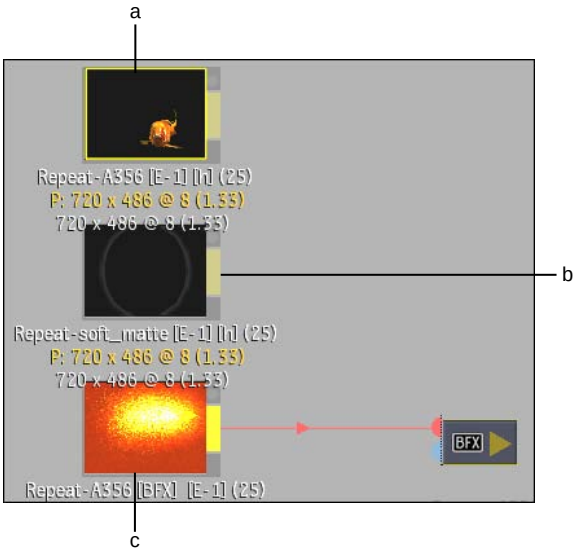
(a) Original clip (b) Layers of original clip

2 Select an option from the Split Layer option box.

Select:	**To:**
Split Layers	Create one clip for each timeline layer.

Select:	To:
Split+Action	Create one clip for each timeline layer and have each clip connected to an Indirect layer of an Action node. Note that any visual result from soft effects may be lost in this operation.

Clips are created for each layer and are connected in the Batch flow graph. The following example shows the result of the Split Layers option.



(a) Clip from layer 1 (b) Clip from layer 2 (c) Clip from layer 3

3 Add nodes to each clip to create your process tree.

Converting Soft Effects to Batch Nodes

You may have begun compositing in the context of a timeline but would like to continue the work in the modular pipeline environment of Batch. To do this, you can extract or copy the soft effect setups from the timeline to the schematic.

In this workflow, you enter a BFX level with selected segments and their soft effects using the Post option. You then extract the soft effects from the clip's

timeline. The soft effects are automatically converted to corresponding Batch nodes and the nodes are connected to their clips.

If you convert soft effects that are composited on multiple layers on the timeline, vertical editing between the layers is reproduced.

You can edit any of the converted node setups as well as reorder nodes in the process tree.

Soft effects are converted to the following nodes.

Soft Effect	Corresponding Batch Node
Soft CC	Colour Corrector
Soft Text	Text
Timewarp	You cannot convert a Timewarp soft effect. To modify the settings, use the editor.
Wipe	Action Keyer, with Garbage Mask setup. Depending on other effects that are part of the extracted segment, the wipe visual results may not be the same as before the extraction. However, the Wipe settings and timing are still loaded into the extracted node.
Spark	Sparks
Blend	Mix
Resize	Resize
Soft Axis	Action, with an Indirect layer
Gap effect	Gap effects are converted to their corresponding Batch node and the extracted layer is converted to an Action node.
Transitions	Dissolve transitions are converted to Action nodes with an Indirect layer. However, dissolves create unexpected results after conversion.

Examples of Soft Effects Converted to Nodes

When you extract a soft effect, segments or other soft effects may also get extracted so that vertical editing from the timeline is maintained. Some of these scenarios are illustrated in the following examples.

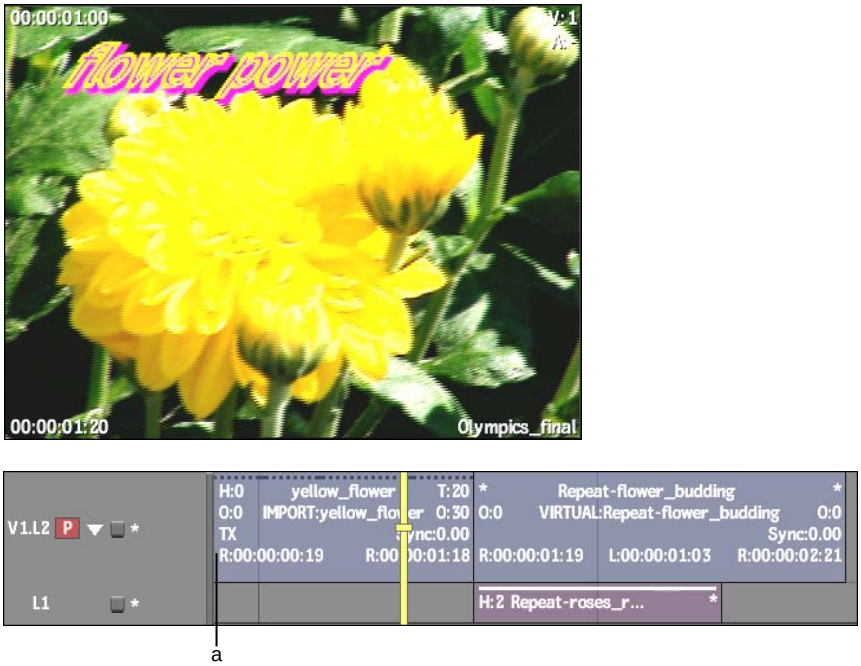
The resulting schematics in the examples may vary depending on the RGB and Matte Key settings of the Text soft effects.

If a clip contains only one segment and it is not part of a vertical edit, only the soft effect is extracted and its corresponding node is automatically connected to the original clip.

Example 1: Extracting a Text soft effect from a segment not part of a vertical edit:

1 Select the timeline segment with the soft effect that you want to extract.

In the following example, the selected segment is not part of a vertical edit. The segment has a Text soft effect.



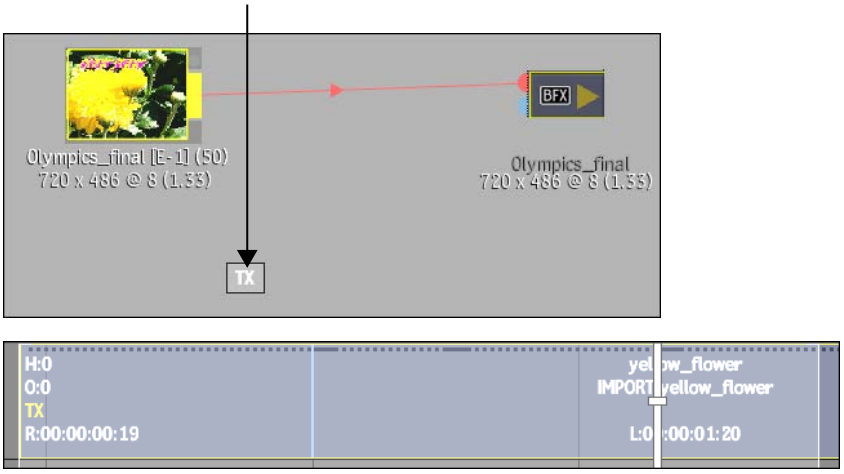
(a) Selected segment with Text soft effect

2 Bring the segment into a BFX level with the Post option.

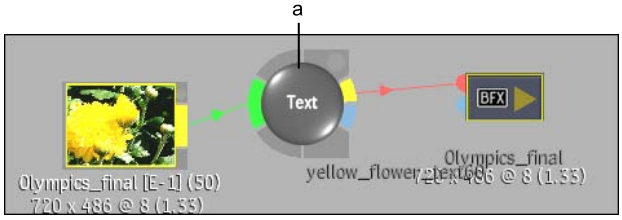
The segment you selected is loaded as a clip in a Batch setup. All applied soft effects are brought in with the clip.

3 To display the clip's timeline, select the clip and click Timeline. Then **Ctrl**-drag the Text soft effect indicator from the clip's timeline to the schematic.

NOTE If you do not see the Timeline button, swipe the left side of the screen or double-click the clip.



The Text soft effect is converted to a Text node. The node is automatically connected to the clip brought into the BFX setup.



(a) Text node converted from Text soft effect

4 Use the Text node to modify the Text setup or to connect to other clips.

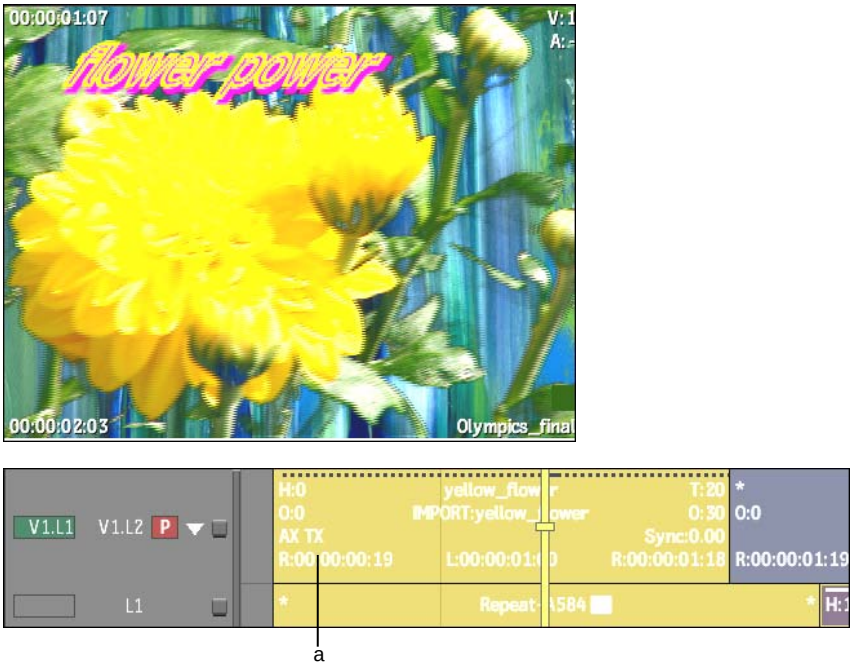
If you enter a BFX level with all segments that make up the vertical edit and then extract soft effects, the corresponding segment becomes a new clip and is automatically connected to the extracted soft effects.

Only the selected soft effects get extracted if there are no other soft effects affecting the vertical edit.

Example 2: Extracting soft effects on segments that make up a complete vertical edit:

1 Select the segments making up the vertical edit on the timeline.

In the following example, the front layer on the timeline is keyed over a background layer with an Axis soft effect. The front layer also has a Text soft effect.



(a) Axis and Text soft effect indicators

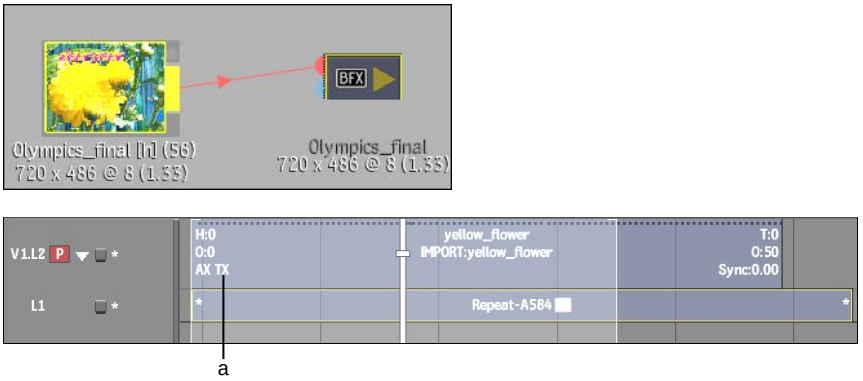
2 Bring both segments into a BFX level using the Post option.

Both segments are loaded in a Batch setup as a single clip with their soft effects.

3 To display the clip's timeline, select the clip in the schematic and click Timeline.

NOTE If you do not see the Timeline button, swipe the left side of the screen or double-click the clip.

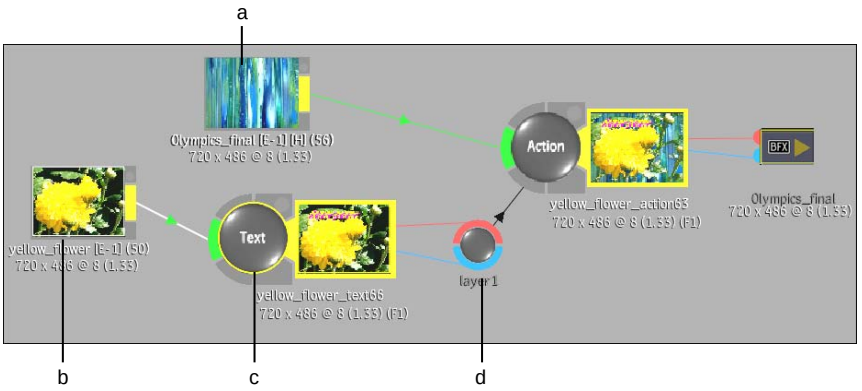
The imported timeline layers and their soft effects are preserved.



(a) Axis and Text soft effect indicators

4 **Ctrl**-drag both soft effect indicators from the clip's timeline to the schematic.

5 The extracted soft effects are converted to nodes and their corresponding segment becomes a new clip. The nodes are connected together in the order of the soft effects pipeline.



(a) Original clip (b) New clip (c) Text soft effect converted to Text node (d) Axis soft effect converted to Action node with indirect layer

NOTE In this example, if you extracted only the Text soft effect, you would get the same result. The Action node would also get extracted because its segment is part of a vertical edit.

6 Use any of the nodes to modify the setups or to connect to other clips.

If you extract a soft effect from a segment that is part of a vertical edit, everything above the extracted segment is also extracted so as to preserve the same visual result. In this workflow, you enter a BFX level with all segments that make up the vertical edit.

Example 3: Extracting soft effects on segments that are part of a vertical edit:

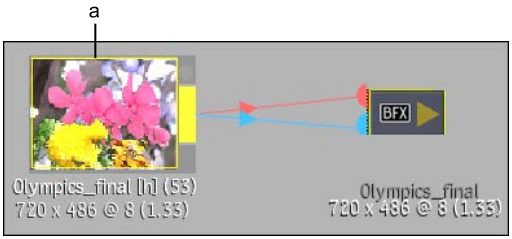
1 Select all the segments making up the vertical edit on the timeline.

In the following example, layer 4 has an Axis and a CC soft effect, layer 3 has an Axis soft effect, and layer 2 has an Axis and a CC soft effect.

(a) Layer 4 (b) Layer 3 (c) Layer 2

2 Bring the segments into a BFX level using the Post option.

The segments you selected are loaded as a clip in a Batch setup. All applied soft effects are brought in with the clip.

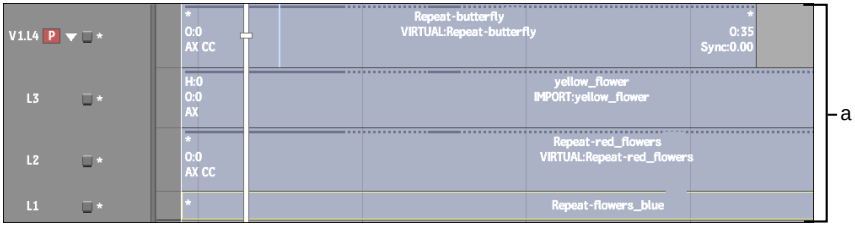


(a) Clip with soft effects

3 To display the clip's timeline, select the clip and click Timeline.

NOTE If you do not see the Timeline button, swipe the left side of the screen or double-click the clip.

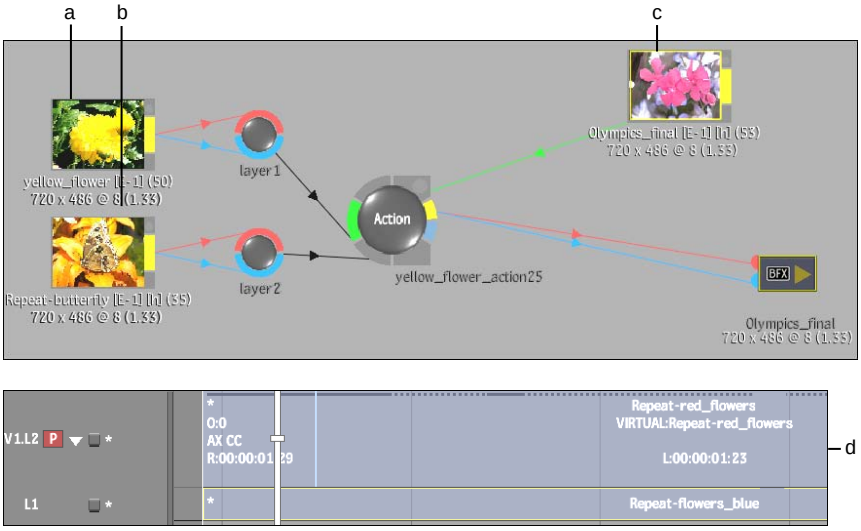
All applied soft effects are preserved on the imported segments.



(a) Clip layers and soft effects

4 **Ctrl**-drag the soft effect indicators to the schematic.

In the following example, the Axis soft effect from layer 3 is extracted. Layer 3 is affected by the compositing of the soft Axis from layer 4. As a result, extracting the soft effect of layer 3 automatically extracts the segments of both layers 3 and 4 to rebuild the visual result in an Action setup. The CC soft effects remain on the layers.



(a) Clip from layer 3 (b) Clip from layer 4 (c) Original clip (d) Timeline of original clip

5 Use any of the nodes to modify the setups or to connect to other clips.

Copying Soft Effects to a Batch Setup

To apply the setups of a soft effect to another Batch clip, copy the soft effect from a BFX segment to the Batch schematic. Only the soft effect is converted to the corresponding node. The original segment and soft effect remain unchanged on the timeline.

To copy a soft effect setup to the schematic:

1 Press **Ctrl+Shift** as you extract the soft effect from a Batch segment to the schematic.

The copied soft effect is converted to its corresponding node. The original soft effect and all segments remain unchanged on the timeline.

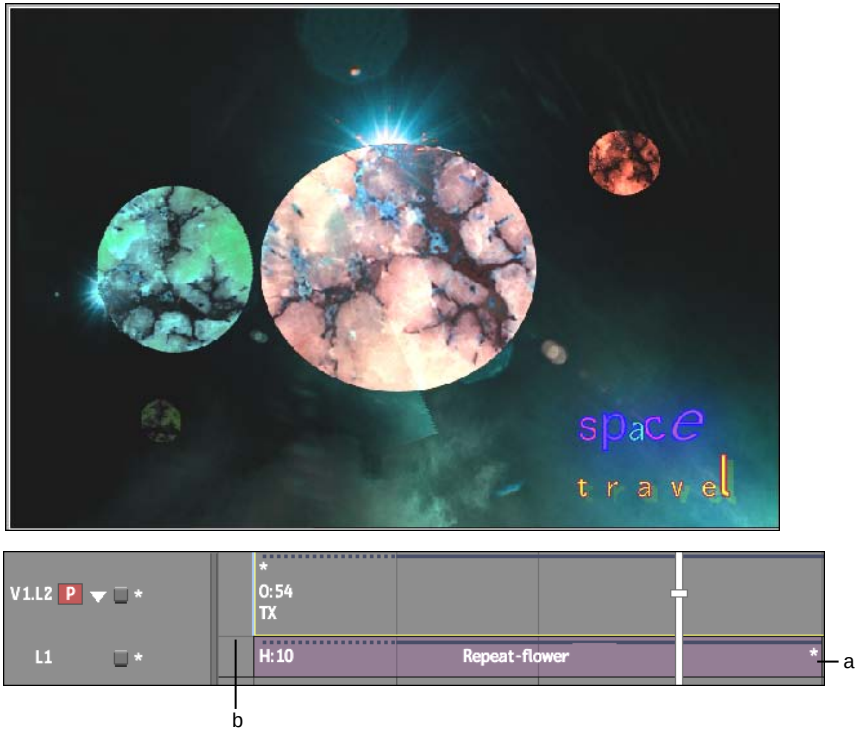
2 Link the corresponding node to a clip in the process tree.

Viewing Batch FX in Context

View the current Batch FX in context of other setups applied to the clip. You can display the result of the current Batch FX in context of the vertical editing one level up in the pipeline. You can also display the result of the current Batch FX in context of your final output.

The following example illustrates context views for two levels of Batch FX.

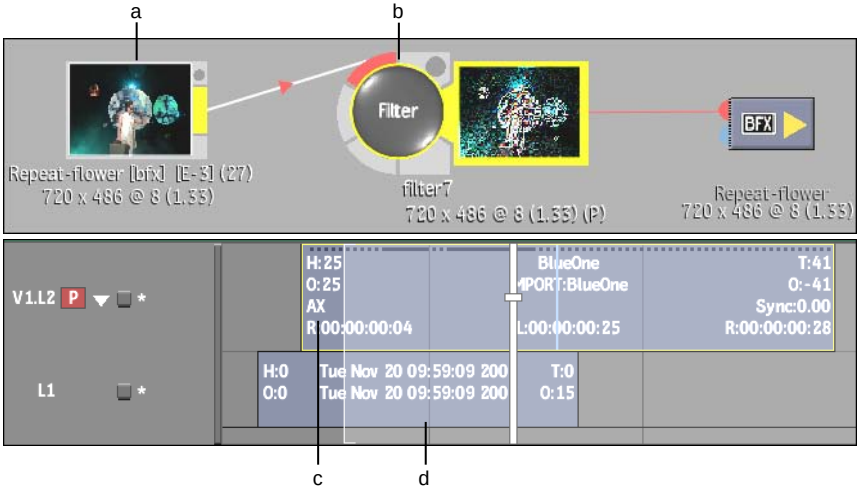
In the following illustration, the main timeline has two layers. The top layer contains a gap with a Text soft effect.



(a) Text soft effect indicator (b) Bottom layer

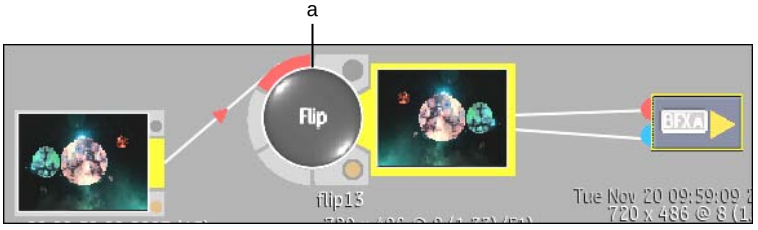
Image courtesy of Das Werk

In the following illustration, the bottom layer from the main timeline is brought into a BFX level with the Pre option. Next, a layer is added to the clip's timeline on V1.L2. An Axis Key soft effect is then added to V1.L2. A Filter node is connected to the clip in the BFX setup.



(a) Clip with original layer and new layer (b) Filter node (c) New layer with Axis Key soft effect (d) Original layer

In the following illustration, the bottom layer from the clip in BFX 1 is brought into a second BFX level with the Pre option. A Flip node is then added to the clip.



(a) Flip node

The following illustration is of BFX level 2 with the C: Main level context view selected. C: Main level displays the entire output back to the main timeline. You see the results of the Flip node from BFX 2, the Filter node from BFX 1, the new layer with its Axis Key from BFX 1, and the Text soft effect from the main timeline.

NOTE To display C:Main level context view, select C:Main level from the View box (or press **Alt+Shift+1**).

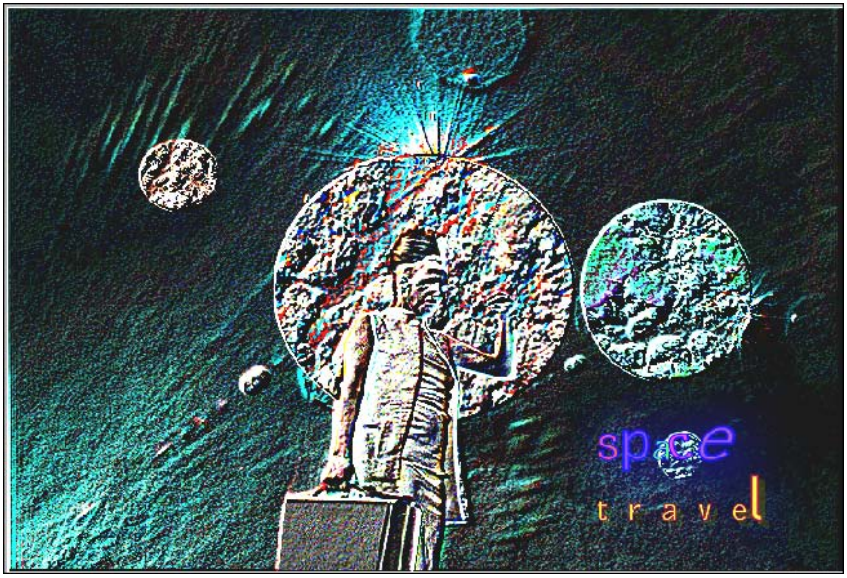


Image courtesy of Behavior Communications Inc., Das Werk

NOTE To see the entire output, the focus point of the timeline positioner must be on the topmost layer in the main timeline.

The following illustration is of BFX level 2 with the C: Level-up context view selected. C: Level-up displays the result of the current setup in context of vertical editing one level up. You see the results of the Flip node in the current setup and the new layer with its Axis Key soft effect in the timeline one level up.

NOTE To display C:Level-up context view, select C:Level-up from the View box (or press **Alt+Shift+2**).

Image courtesy of Behavior Communications Inc., Das Werk

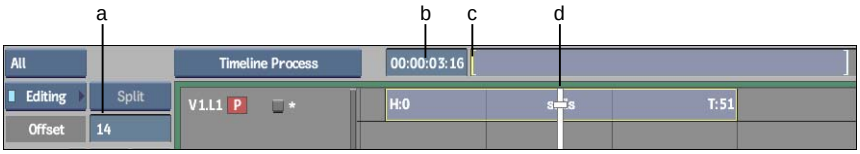
NOTE The focus point of the timeline positioner must be on the topmost layer in the timeline one level up to see the results.

When you exit back to BFX 1, Level-up view is not available because it provides the same visual result as Main level.

Offsetting the Starting Frame of a BFX Clip

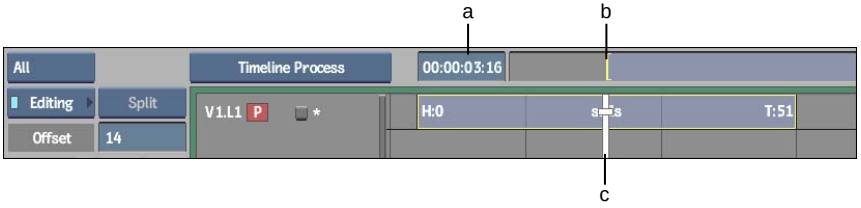
When you load a clip in a BFX level, its timecode automatically keeps the timecode of the main timeline. Both the clip timeline positioner and the Batch timeline positioner represent the main timecode for the current frame. If the clip brought into a BFX level has head frames, they are loaded as negative frames in the Offset field. You can offset the starting frame of a clip using these extra frames.

You can set the Batch timeline to display or hide negative frames. In the following example, a clip with 14 head frames is brought into a BFX level at timecode 00:00:03:16. The Batch timeline does not display negative frames.



(a) Head frames (b) Timecode of clip from main timeline(c) Batch timeline positioner at frame 1 (d) Clip timeline positioner at frame 1

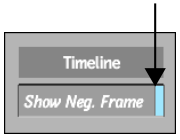
In the next example, the Batch timeline is set to display negative frames. The Batch timeline positioner changes location to take into account the negative frames. Display negative frames if you need the extra frames for editing.



(a) Timecode of clip from main timeline (b) Batch timeline positioner at frame 1 (c) Clip timeline positioner at frame 1

To set the Batch timeline to display negative frames:

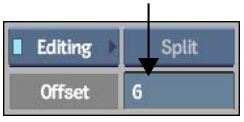
1 In the Batch Setup menu, enable Show Neg Frame.



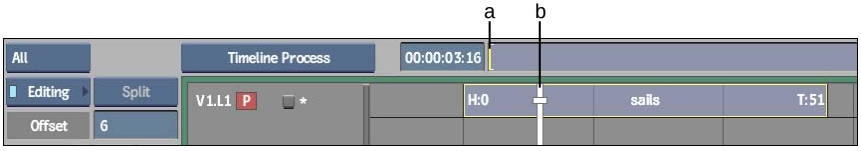
To offset the starting frame of a clip:

1 Select a clip in the Batch schematic.

2 Enter a value in the Offset field for the starting frame of your clip.



The clip changes location on the timeline based on the new starting frame. The offset is also reflected in the Offset field in the Timing view.



(a) Batch timeline positioner at frame 1 (b) Clip timeline positioner at new frame 1

Outputting from a BFX Output Node

Output both matte and RGB results from a BFX output node to the timeline. Use the matte output results with Axis and Sparks soft effects for vertical compositing.

Using the dual inputs of the BFX output node, work in parallel with both front and matte clips from a BFX level. You can create a matte using any Batch node, in any order. You can also output the matte to the desktop for use in other applications or modules.

You can output a matte from a BFX level entered with the Pre or Post option. If you extract a soft effect from a matte segment, the Batch FX containing the matte setup is also expanded.

Outputting a Matte to the Timeline

Output a matte in addition to the RGB result from a BFX output node. You connect the RGB result to the front input of the BFX output node, and the alpha result to the matte input of the BFX output node. Both results are fed directly to the timeline. To enable the matte, you apply an Axis or a Sparks soft effect to the segment.

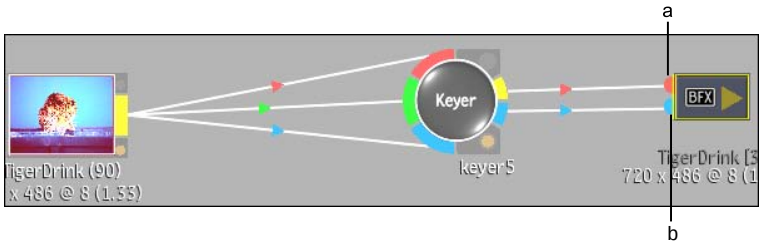
Alternatively, you can have an Axis soft effect automatically added on output. Enable the Add Axis On Matte Output button in the Timeline section of the Preferences menu.

To output a matte from a BFX output node:

1 Enter a BFX level and create a matte. Connect the RGB and alpha outputs to the BFX output node.

In the following example, a basic matte is created with a Keyer node. The blue tab on the BFX output node receives the alpha result and the red

tab receives the RGB result. The background is not considered when you output the matte back to the timeline.



(a) RGB result goes to front input tab (b) Alpha result goes to matte input tab

2 Select the BFX output node and press **F4** twice to display the matte and refine as needed.

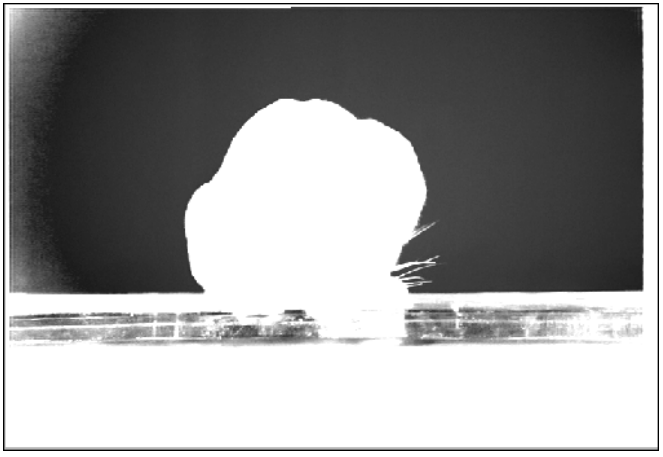
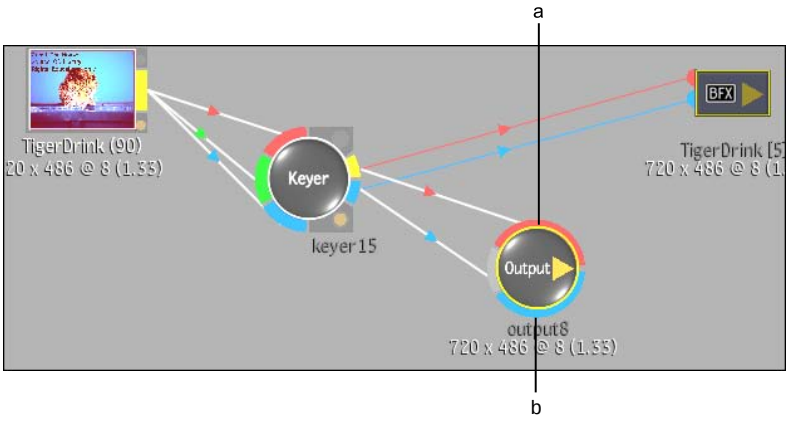


Image courtesy of The House

3 If you want to output the matte to the desktop in addition to the timeline, add an Output node. Connect the Keyer outputs to the red and blue tabs of the Output node.

NOTE

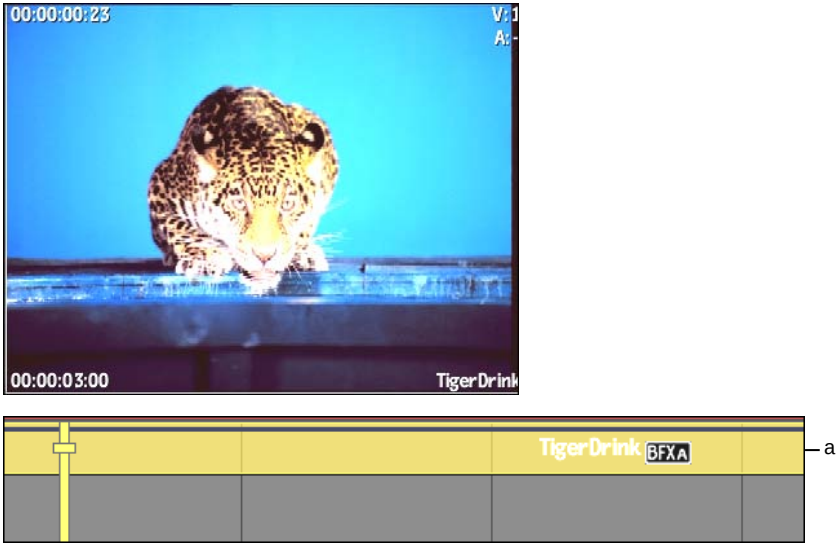
The matte input of the BFX output node outputs the matte only to the timeline.



(a) Front input tab of Output node (b) Matte input tab of Output node

4 Exit back to the timeline.

The BFXA icon indicates that the segment contains a matte. In the following example, the matte is not yet enabled (the Add Axis On Matte Output button is not enabled in the Preferences menu).



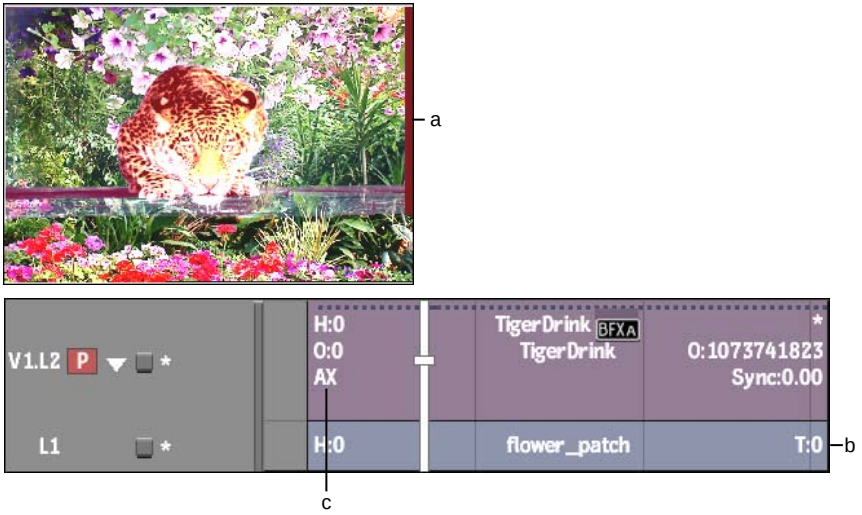
(a) Matte BFXA icon

Image courtesy of The House

5 Add a soft Axis to the matte segment and a background layer to the timeline.

NOTE To have the Axis soft effect automatically added when you exit back to the timeline, you can enable the Add Axis On Matte Output button in the Preferences menu at any time.

The matte output results from the BFX output node are composited over the background layer of the timeline.

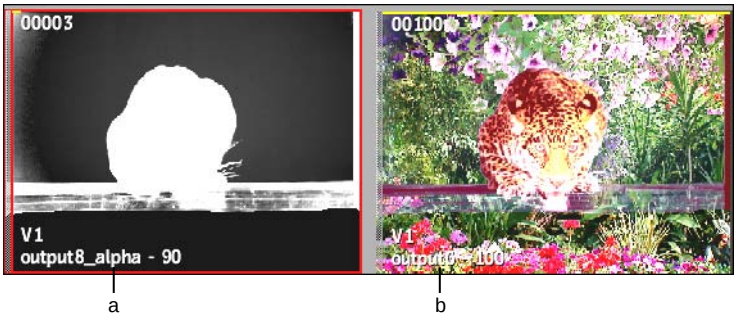


(a) Result of matte from BFX output node keyed over timeline background layer (b) Timeline background layer (c) Axis soft effect

Image courtesy of The House

6 Process and exit to the desktop.

The matte clip and the result of the matte composited over the timeline background are processed from the Output node to the desktop. The matte clip has _alpha appended to the clip name.



(a) Matte clip (b) Result clip

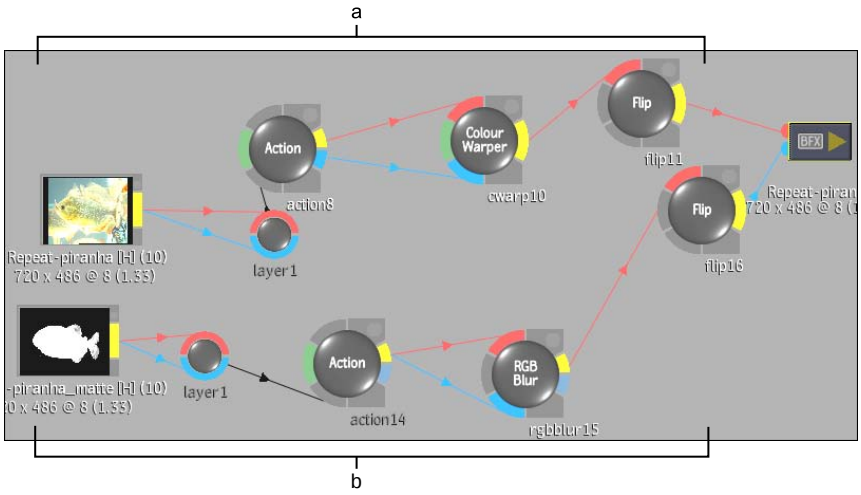
Image courtesy of The House

Example: Working with a Matte and RGB Result in a BFX Level

The following example illustrates how you can work with both a front clip and matte clip at the same time in a BFX level.

First, create the setups for the front clip. Attach the process tree for the RGB clip to the front input tab of the BFX output node.

When you are finished the front clip, copy the applicable nodes and attach them to the matte clip. There is no need to recreate the setups for the matte. Add nodes to the matte for the required effect. Attach the process tree for the alpha clip to the matte input tab of the BFX output node.



(a) Process tree for front clip (b) Process tree for alpha clip

As you work with your setups, press **F4** once to see the RGB result.

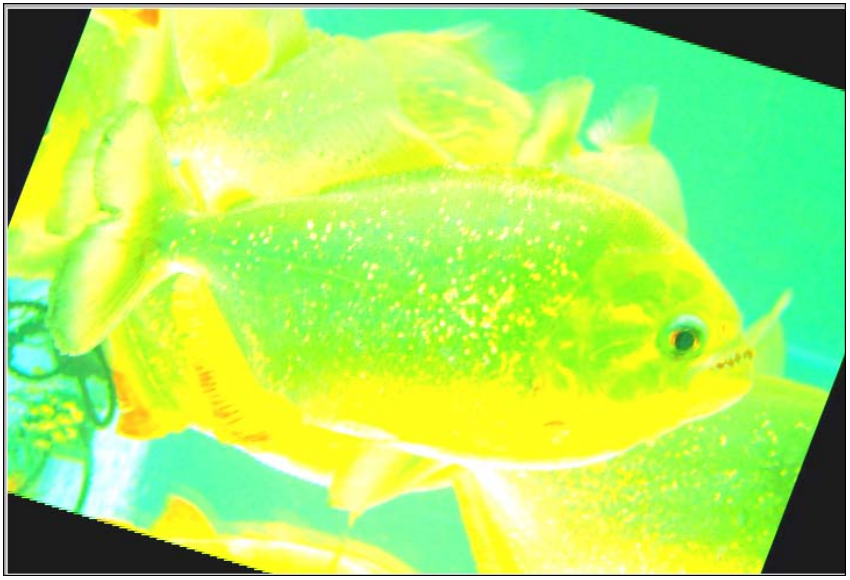
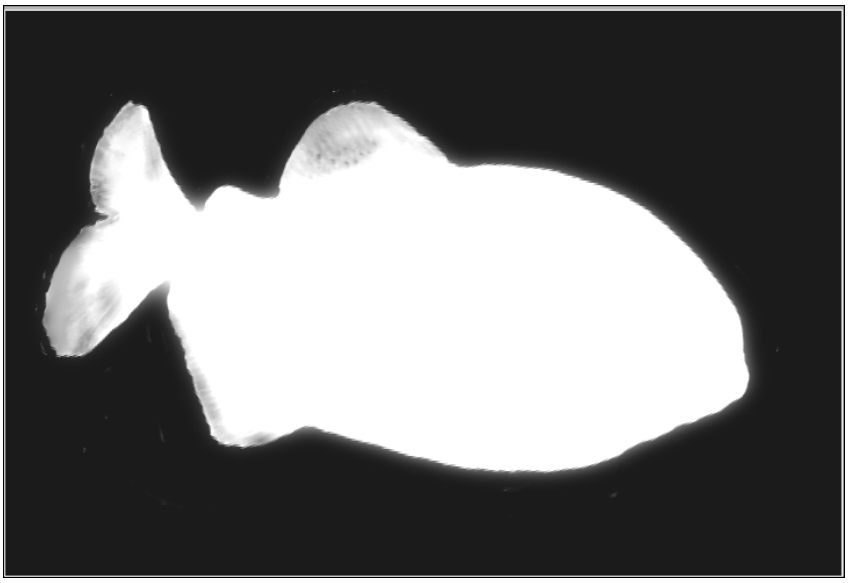


Image courtesy of Technicolor (formerly Toybox)

Press **F4** a second time to see the alpha result.



Back at the timeline level, add an Axis soft effect to the RGBA clip that is output from the BFX output node. The RGBA clip is composited over the timeline's background layer.

NOTE To have the Axis soft effect automatically added when you exit back to the timeline, you can enable the Add Axis On Matte Output button in the Preferences menu at any time.

Image courtesy of Technicolor (formerly Toybox), Digital Lab

Editing Batch FX

You can edit any Batch FX until it is committed by accessing its setup. Access setups in the following ways:

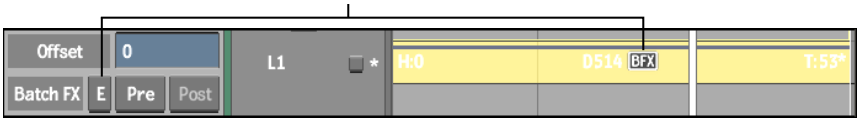
- Directly from the timeline to edit the Batch FX of the current clip.
- From the BFX View to see the hierarchy of the BFX levels and the clips in each level. See Navigating Batch Setups on page 82.

You can edit a Batch setup applied to a source or you can edit a Batch setup applied to a source and its resulting soft effects.

To edit the Batch setup applied to the current clip:

1. From the clip's timeline, double-click the segment with the BFX icon or select the segment and click E.

NOTE If you are already in a Batch FX level, double-click the clip in the schematic to display its timeline.



The Batch setup appears. If the BFX icon on the selected segment was white, the source is loaded. If the BFX icon was black, the source modified by the applied soft effects is loaded.

2 Edit the settings, exit, and process.

Navigating Batch Setups

Batch FX supports nesting of BFX levels. When you create a Batch FX, you can be in any nested BFX level. The BFX View provides an overview of the source clips and different levels of Batch FX applied to a segment, allowing for quick access to any Batch setup.

With the BFX View, you do not have to remember at which level a Batch FX is nested. You have access to all nested levels relative to the main Batch timeline directly from the BFX View schematic. If you create new setups or add clips to a setup, the BFX View automatically updates to reflect these changes. To help keep track of your work, you can rename setups and source clips within the BFX View.

The BFX View is reset if you process a BFX segment through a desktop module.

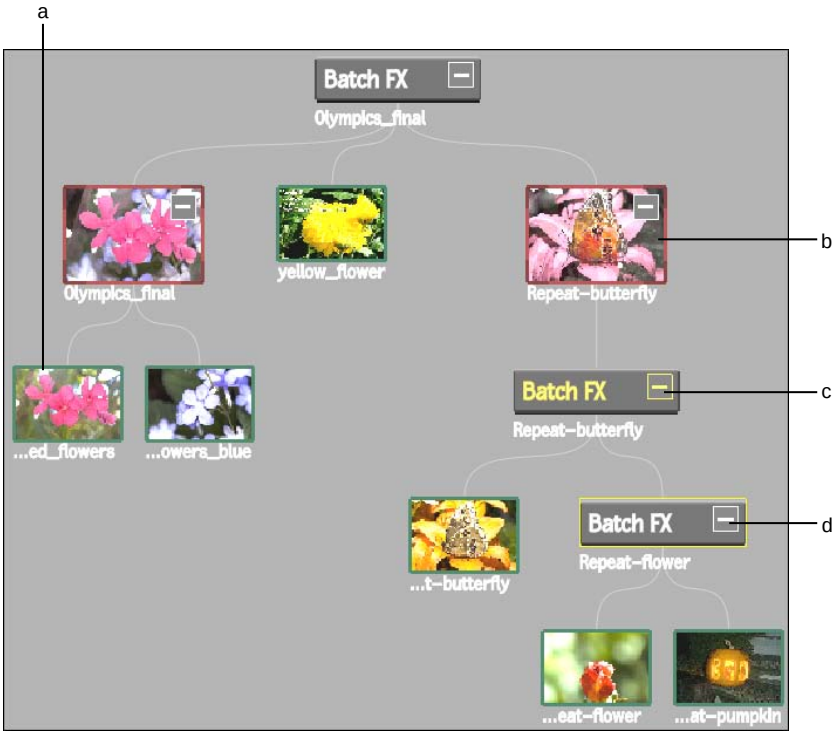
You can also match any source clip used in a BFX segment from the BFX View without having to go to the actual Batch FX setup.

To navigate Batch setups:

1 Select a BFX segment on the timeline and click BFX View.

The BFX View displays a schematic of the Batch FX and clips belonging to the BFX segment. Each Batch setup is represented by a Batch FX icon. Yellow Batch FX letters represent the current setup. An orange border around the icon represents the selected setup or clip.

An icon with a red border represents a record clip, which may contain multiple soft edits and multiple layers. An icon with a green border represents a source clip.



(a) Source clip (b) Record clip (c) Current Batch setup (d) Selected Batch setup

---

NOTE Batch FX in containers are grayed out because you cannot access them through the BFX View.

---

2 To access the setup of a Batch FX, do one of the following:

- Double-click a Batch FX icon.

NOTE If the BFX View is crowded, click the minus sign (-) to collapse one of the BFX levels. You can also **Ctrl**+swipe the bottom of the screen to enlarge the BFX View.

- Select the Batch FX icon and then click Edit Batch FX.

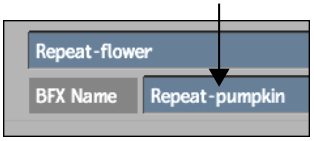
The Batch setup appears.

3 When you have finished making changes, click EXIT BFX (n) to return to the previous BFX level, or select EXIT Batch.

The BFX View displays any new setups or source clips.

To rename a Batch setup or source clip in the BFX View:

1. Select a Batch FX icon or source clip in the BFX View.
2. Enter a name in the BFX Name field.



To locate a clip in the BFX View from the schematic:

1. **Alt**+click the clip in the schematic.
   An orange border appears around the corresponding clip in the BFX View.

NOTE To display the BFX Name field of the clip in the BFX View, click the clip inside the BFX View.

Matching and Copying Sources from BFX View

In the BFX View, you can match sources used in any BFX level without navigating to the actual Batch FX setup. You can also quickly copy sources used in one BFX level to any other level.

You bring sources into a BFX level from Batch timeline segments.

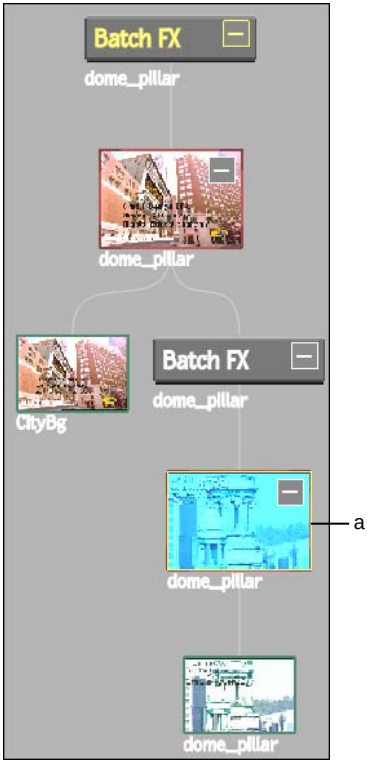
When you copy a source, the timing of the segment on the record timeline is kept as well as any soft effects applied to the segment.

When you match a source, the timing of the segment on the record timeline and any soft effects applied to the segment are not copied. Only the actual source is matched.

To copy a source:

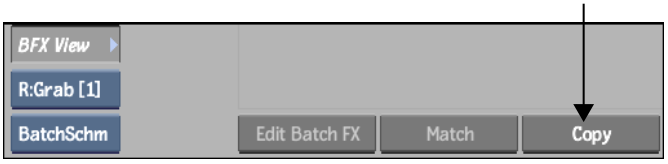
1. Select the source clip to copy from the BFX View.

NOTE You cannot select clips within containers.



(a) Selected record clip with soft effects

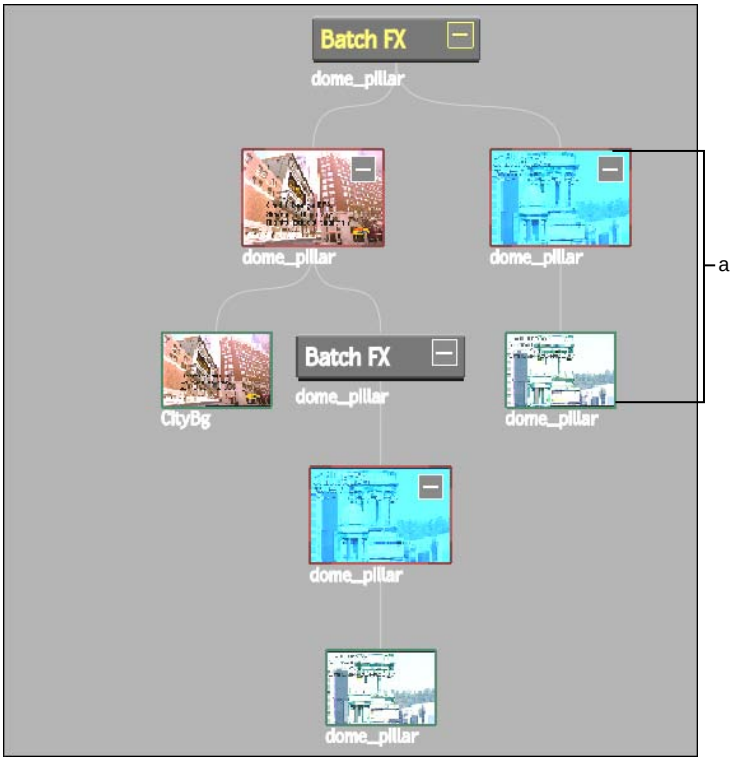
2 Click Copy.



If you accessed the BFX View from a BFX level, a copy of the source clip, including any soft effects applied to its timeline segment, appears in the Batch schematic and in the BFX View at the current BFX level.

If you accessed the BFX View from the main Batch timeline, a copy appears only in the schematic.

The copy keeps the timing of the segment on the original timeline.

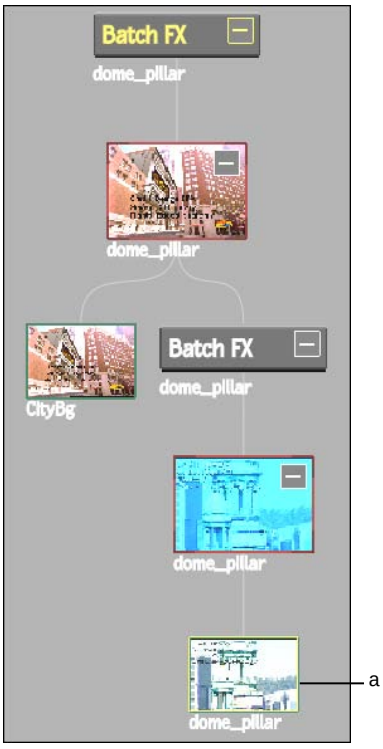


(a) Copied clips with soft effects in BFX View

To match a source:

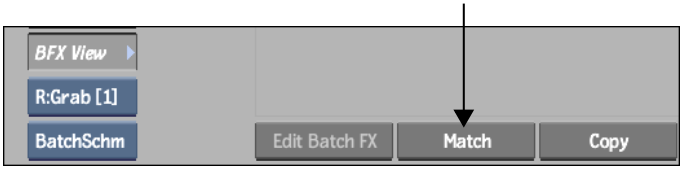
1. Display the BFX View.
2. Select the source clip to match from the BFX View.

NOTE You cannot select clips within containers.



(a) Source clip to match

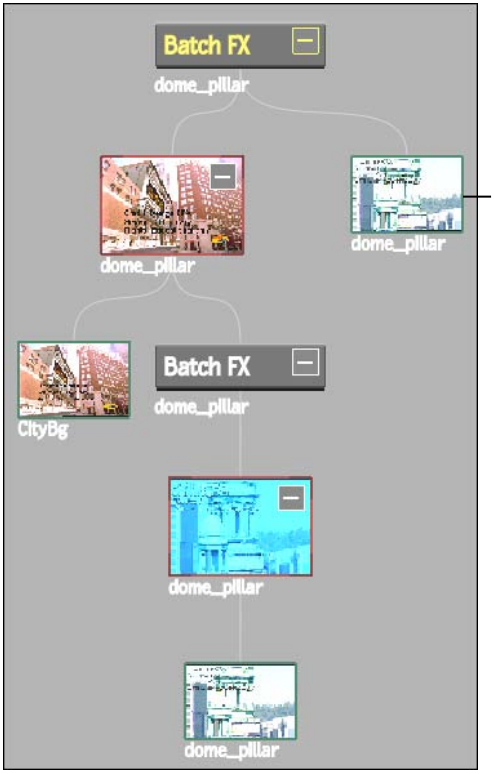
3 Click Match.



If you accessed the BFX View from a BFX level, a copy of the source clip with its original timecode appears in the Batch schematic and in the BFX View at the current BFX level.

If you accessed the BFX View from the main Batch timeline, a copy appears only in the schematic.

Soft effects are not copied with the source.



(a) Matched source clip in BFX View

Expanding Batch FX

Expand Batch FX to bring setups nested in a clip to the current level. Having setups at the same level allows for quick access to any setup. You no longer have to keep track of multiple nested setups.

You do not have to render Batch FX to expand them. However, when you expand a Batch FX, the associated clip is transformed into a setup. You can no longer perform editing functions such as trimming on the clip.

You can bring all setups nested in a clip to the current level or only the first setup nested in the clip.

You can expand the Batch setups of only one segment at a time. If a clip contains multiple segments, you must extract the segment to the schematic before expanding it.

The timing of the original timeline is preserved when you expand a setup. The frame numbering matches that of Batch.

If segments have soft effects, they are converted to the corresponding nodes when you expand the setups.

NOTE Segments with timewarps cannot be expanded.

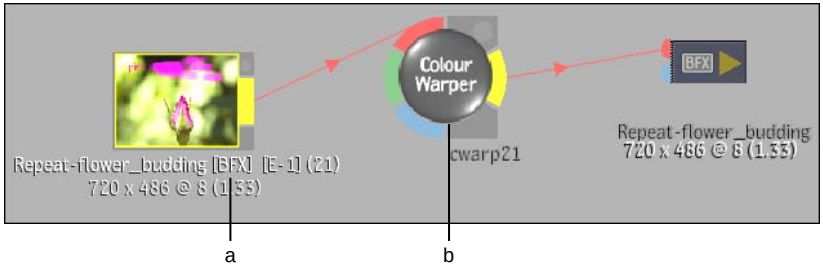
If you expand a Batch setup containing nodes that change the duration of a clip, for example, Interlace, Deal, and Pulldown, the visual result may not be the same as before the expansion.

Expanding a Batch FX does not expand the history contained in clips within a BFX level.

To expand Batch setups:

1 Make sure that you are at the applicable BFX level and select the clip in the schematic.

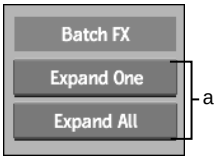
In the following example, the selected clip is in BFX 2.



(a) Uppercase BFX indicates single segment (b) Colour Warper node in BFX 2

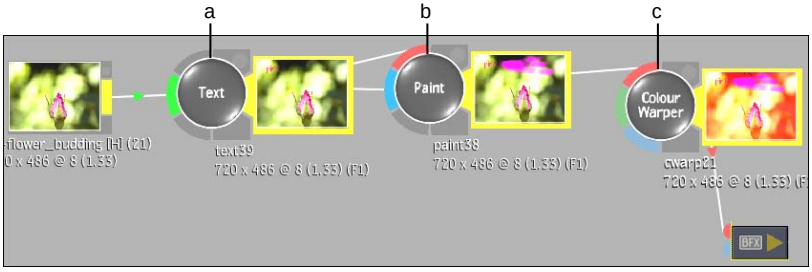
NOTE If the icon is lowercase bfx, the clip has more than one segment. Extract the segment to the schematic and then select it.

2 In the Basic menu, click Expand One to bring the setups that are one level down to the current level. Click Expand All to bring all nested setups to the current level.



(a) Expand buttons

In the following example, Expand All was used. All setups nested inside the clip are added to the current setup. Setups from BFX 1 remain in BFX level 1.



(a) Text setup from BFX 4 (b) Paint setup from BFX 3 (c) Colour Warper setup from current BFX 2

3 Access any node to modify the setups. If you add another Batch FX to the clip, you enter a new Batch setup (BFX 3).

Copying Batch FX

If you want to reuse a Batch FX, you can copy it as follows:

- From the timeline to the Batch schematic for use in the current setup
- From one segment to another for use in the same timeline

You can copy Batch FX as long as they were created with the Pre option. When you copy Batch FX, the Batch process tree is copied to the destination. Only the selected Batch FX is copied; nested setups are not copied.

You can also copy a node, branch, or process tree in the current setup.

You cannot copy Batch FX created with the Post option.

To copy a Batch FX to another segment:

1. Display the timeline of the segment with the Batch FX that you want to copy.
2. Resize the video track and **Ctrl**-drag the BFX icon to the appropriate segment.

   The Batch FX is copied to the segment.
3. Double-click the segment to enter the setup of the copied Batch FX.

To copy a Batch FX to the current setup:

1. Display the timeline of the segment with the Batch FX that you want to copy.
2. Resize the video track and **Ctrl**-drag the BFX icon to the schematic.

   The Batch setup and the corresponding segment are copied to the schematic.

Deleting Batch FX

You can gesturally delete Batch FX created with the Pre option from the timeline. You cannot delete Batch FX created with the Post option.

You cannot mute any type of Batch FX on the timeline.

To delete a Batch FX from the timeline:

1. Resize the video track and **Ctrl**-drag the BFX icon from the timeline to the bottom of the screen.

   The Batch FX is removed from the clip and the icon from the timeline.

Previewing Batch FX

You can preview unrendered Batch FX outside of Batch. While you scrub the Player timeline, you can trigger a Batch FX render at pen-up. Batch setups are loaded and rendered at pen-up based on a timing preference you set. This preference determines how long the software will attempt the render before displaying an “Unrendered Frame” message.

Although you can preview soft effects by rendering while you scrub, Batch FX can only be rendered at pen-up.

Memory usage is optimized as much as possible so that all necessary Batch setups can be loaded into memory for the render of the current frame.

Any frames rendered are not rendered again as long as the Batch setup is not changed.

To preview Batch FX:

1. Display the Preferences menu and click Timeline. In the Batch FX group, enter the number of seconds in the Interactive Max field that you want the system to attempt a render.
2. Bring the clip with the unrendered Batch FX into the Player timeline and select Preview FX from the Preview option box.

3. Scrub the timeline positioner.

   The Batch setups are rendered based on the timing preference. If the setups cannot be rendered in the set time, an “Unrendered Frame” message appears.

   You can abort the render at any time by clicking outside the timeline.

Batch Nodes

7

Topics in this chapter:

Auto Stabilize Node

Use the Auto Stabilize node to rectify stabilization issues. For example, you remove camera jitter or lock an object's position over a sequence of frames to make it appear motionless. Attach a front clip to this node to analyse its movement. Matte input can be attached to this node to create an output matte, or to use black pixels on the matte to exclude areas from the stabilization algorithm. Use the parameters in the Auto Stabilize menu to refine the stabilization.

You can use the Revert feature to apply the inverse transformation to the input. For example, you can apply a stabilization analysis to a clip and connect the output to a Paint node to touch up a portion of it. You can copy the Auto Stabilize node and revert to the motion of the original input.

You can perform a two-dimensional analysis, which takes X and Y position, rotation, and scaling into account. You can select a three-dimensional analysis, which also analyses and compensates for perspective distortion. Select this

option to stabilize a flat object moving in three-dimensional space, or if you are stabilizing a pan or tilt camera movement.

The X-axis, Y-axis, rotational, and scaling stabilization curves are calculated during analysis. If a perspective analysis is performed, perspective curves are also calculated. The data from all or a selection of these curves can be applied to the final stabilization of the result clip and output matte.

(a) Analyse button (b) Stabilization Method box (c) Region of Interest button (d) Stabilization Parameter buttons

Analyse button Click to run the stabilization analysis.

Use Matte button Use the black areas of the matte input to exclude those areas from analysis on the front.

Stabilization Method box Provides options to perform a two-dimensional or perspective analysis.

Scene Flexibility field Determines the level of focus on rigid objects that move in the clip. If the analysis has no scene flexibility, the stabilization will focus on a single rigid object as it moves in the clip. If the value is set to 100%, all visible motion paths are analysed.

In and Out fields Displays the range of frames included in the analysis.

Region of Interest button Display a rectangle that can be resized to indicate the region to be analysed on the front clip.

Smoothness field Displays the level of smoothness of the stabilization curves generated by the analysis.

Amount field Displays the percentage of smoothness used in the final stabilization output.

Stabilization Parameter buttons Enable to include a paramter in the stabilization. Enable the Lock button to link the parameter value at the reference frame to all frames in the analysis.

Padding box Provides fill options to pad the empty portions of the frame with the last line of pixels, a repeated (rolled) image, a mirror image, or black pixels.

Set Reference button Makes the current frame the reference frame for the stabilization.

Revert button Enable to apply the inverted parameter values.

2D Transform Offset fields Displays the X and Y position, rotational and scaling offsets applied to the clip. The offset is applied independently of the analysis if the corresponding Stabilization Parameter button is disabled.

Perspective Offset fields Displays the perspective offsets applied to the clip. These fields are enabled after a three-dimensional analysis.

To analyse a clip:

1. Enable Use Matte if you want to use the matte to constrain region of analysis.
2. Select an option from the Stabilization Method box.
3. Enter a percentage in the Scene Flexibility field. The following range of values are recommended:

Select:	To:
0%-20%	Stabilize a pan, tilt, zoom, or the motion of a single rigid object that is visible during the entire analysis.
30%-70%	Stabilize objects that change their shape or depth, and exclude objects that are smaller or moving rapidly.
80%-100%	Stabilize all visible movements.

4. Enable Region of Interest (ROI) to display a rectangle that constrains the the region of analysis to the area inside the selected area. The rectangle can be resized and animated (use the colour pot to change its colour).
5. In the In and Out fields, enter the range of frames to analyse.
6. Click Analyse.

   When the analysis is finished, the stabilization can be customized further using the additional settings in the Auto Stabilize menu.

You can change the centre of rotation and scaling for the image. By default, the centre of rotation and scaling is the centre of the image, represented by a crosshair.

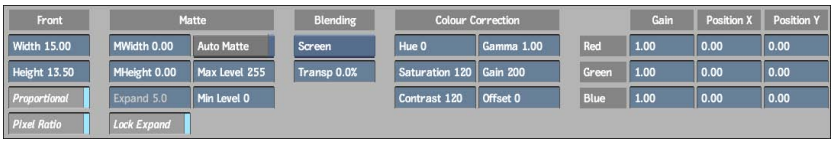
To change the centre of rotation and scaling:

1 Display the Front view (**F1**).
The crosshair that represents the centre of rotation and scaling appears.

2 Hold down **C** and click the new centre point.

Glow Node

Use the Glow node to create a glow effect on a clip. Customize the glow by selecting the RGB blur type and blending mode. The Glow Node accepts a front clip and matte clip as input. You can refine your glow further using colour correction, matte restriction, and RGB channel offsets.



Glow and Front Parameters Displays the controls to customize the glow's blur effect. In the RGB Blur Type box, select Gaussian, Box, or Directional to apply a blur and enter blur parameters for the front clip. See RGB Blur Node on page 98.

Matte controls Generate and control the matte's behaviour. Enable the Auto Matte button to generate matte values from the front clip. Set the value in the Expand field to enlarge the white area of the matte. Enable Lock Expand to make this value directly proportional to the Width value of the blur.

Blending controls Provides the logical operations that can be used to blend the front and the result. Use the Transparency field to set the percentage of blending when the result is composited on the front clip.

Colour Correction controls Displays colour correction tools to modify glow colour values.

RGB Channel controls Displays weighted value and offset of each blurred color channel.

RGB Blur Node

Use the RGB Blur node to apply a blur filter to a clip. You can animate a blur using the Channel Editor. This node accepts a front clip and a matte clip, and

outputs a result and output matte clip. The output matte clip can have a different level of blur than the result clip.

Apply the Regen button to update the image as you change blur settings.

This node supports floating-point (OpenEXR) clip input.

To blur a colour image:

1 In the RGB Blur Type box, select Gaussian or Box.

2 If you want the image to be equally blurred horizontally and vertically, enable Proportional or hold down the **Alt** key as you change a value. If Pixel Ratio is enabled, the image is blurred using the same proportion as its aspect ratio.

3 If you want to use pixels that are proportional to image aspect ratio, enable Pixel Ratio.

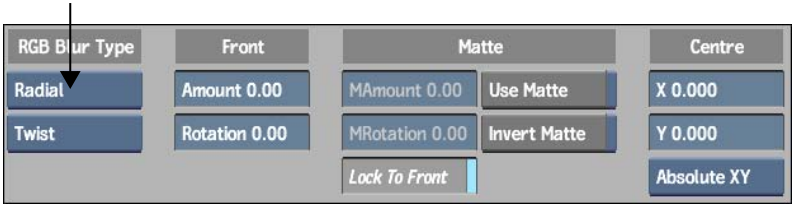
4 If you want to set the same values for the result and the output matte simultaneously, enable Lock.

5 Set the width and height of the blur. Increasing the blur increases the processing time.

6 If you want to set the width and height of the blur for the matte in the MHeight and MWidth fields, respectively, disable Lock and set the values.

To create a radial blur:

1 In the RGB Blur Type box, select Radial.



2 In the Radial Blur Type box, select Spin to blur pixels in a single direction, or Twist to blur pixels in two directions.

3 If you want to set the same values for the result and the output matte simultaneously, enable Lock.

4 Set the amount of the blur and the angle of rotation. Increasing the blur increases the processing time.

5 If you want to set the amount of the blur and the angle of rotation for the matte in the MAmount and MAngle fields, respectively, disable Lock and set the values.

6 Move the red circle on the image to set the centre of the blur. The position corresponds to the X and Y values in the Centre fields.

To create a directional blur:

1 In the RGB Blur Type box, select Directional.

2 If you want to set the same values for the result and the output matte simultaneously, enable Lock.

3 Set the radius amount and angle of the blur (at a default angle of zero, the blur is horizontal). Increasing the blur increases the processing time.

4 If you want to set the radius amount and the angle of blur for the matte in the MAmount and MAngle fields, respectively, disable Lock and set the values.

Restricting Blur

You can limit the area of the result image that is blurred using the matte controls.

Use Matte Limits the area where you want to apply the blur on the result image, based on the output matte. Disable to blur the entire image.

Invert Matte Inverts the matte selection, limiting the blur to areas outside the output matte.

Soft Effects

8

Topics in this chapter:

About Soft Effects

Soft effects bring the power of the Inferno effects module to the timeline. Unlike module effects, soft effects accelerate the creation and tweaking of effects because you apply the effect directly to the timeline. You can create soft effects on the Batch timeline as well as bring them in from Smoke. With the support of soft effects in Batch, clips are more compatible between products.

You apply soft effects to video and audio elements. You can also apply them to gaps in the timeline, including empty layers. Gap effects allow you to create an effect that spans more than one element.

If proxies have been enabled for your project, you can switch between full resolution and proxy mode in both the soft effects quick menus and the editors. Working with proxies speeds up processing time in projects with high-resolution images

Processing Order of Soft Effects

Soft effects have a fixed pipeline. Regardless of the order in which you create them, they are always processed in the same order, from Text to Axis:

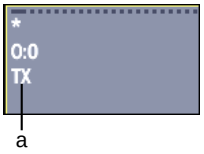
- Text
- Resize
- Blend
- Timewarp
- CC
- Sparks
- Wipe
- Axis

NOTE Not all soft effects can be added to a segment at the same time. For example, if you add an Axis soft effect to a segment with a Resize soft effect, the Resize effect is muted.

If you add both a Text and CC soft effect to the timeline, the soft Text is always affected by the soft CC regardless of the order in which they are added to the

pipeline. An Axis soft effect is always processed last so it is not affected by other soft effects in the pipeline. This is illustrated in the following example.

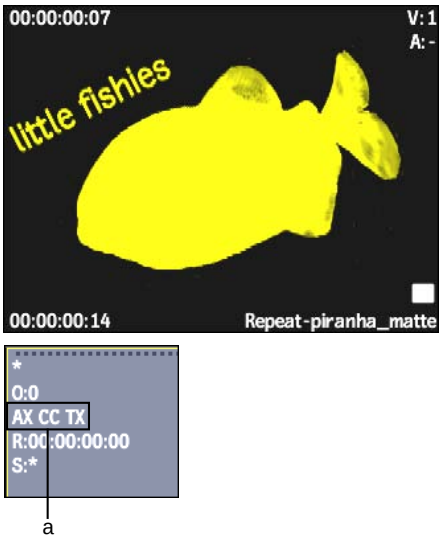
First a Text soft effect is added to a segment.



(a) Text soft effect indicator

Image courtesy of Technicolor (formerly Toybox)

Next a CC and Axis soft effect are added. The indicators are added to the timeline in the order in which the soft effects are processed. Because the soft Text is processed first, it is affected by both the soft CC and the soft Axis.



(a) Soft effect indicators listed in processing order

Image courtesy of Technicolor (formerly Toybox)

If you enter a BFX level and extract the soft effects, they are converted to nodes in the following order to maintain the same visual result.

Because the BFX pipeline is not fixed, you have the flexibility of reordering nodes. In the following example, the Text and CC nodes are reordered. Because the CC node is processed first in the pipeline, the Text node is not affected by the CC node. For more information, see Batch FX on page 47.

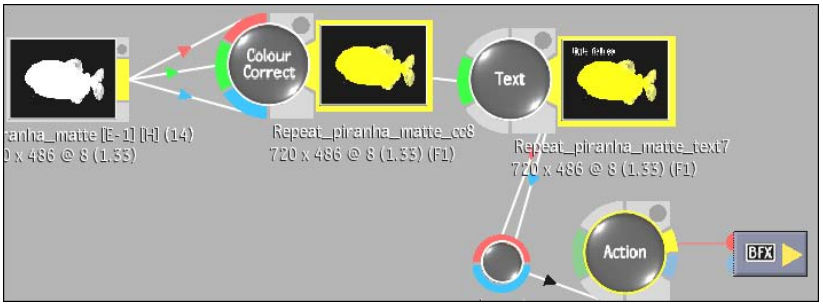


Image courtesy of Technicolor (formerly Toybox)

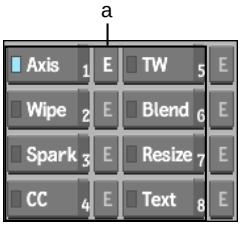
Creating Soft Effects

You apply soft effects to segments directly on a Batch timeline. You can apply soft effects to a clip either before or after Batch FX have been applied.

You create soft effects using either a soft effects quick menu or an editor. The quick menu provides access to the basic controls for each soft effect. For greater control and customization, use the editor.

To create a soft effect:

1. Display the Batch timeline of the segment where you want to add a soft effect.
2. Click the button for the soft effect you want to apply.

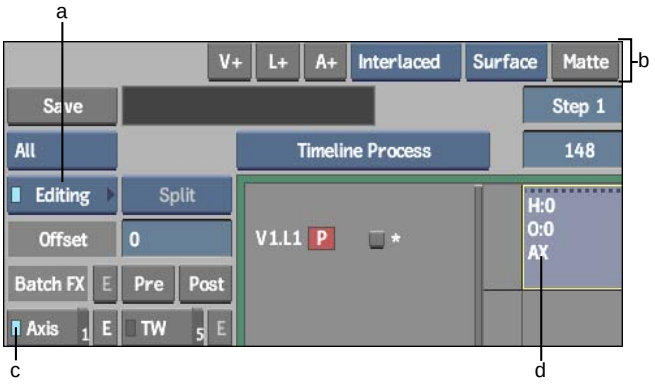


(a) Soft Effect buttons

Click:	To:
Axis	Work with the 3D X, Y, Z axis of layers and surfaces; create garbage masks, light sources, motion tracking, and 3D text. Also create chromo or self keys. See Creating Axis Soft Effects on page 114.
Wipe	Add wipe effects to layers. The incoming and outgoing shots exist on different layers of the timeline. See Creating Wipe Soft Effects on page 124.
Spark	Apply video Sparks to an element on the timeline. See Creating Sparks Soft Effects on page 125.
CC	Perform colour correction and colour warping to elements directly on the timeline, which are animatable on a segment basis. See Creating Colour Correction Soft Effects on page 126.
TW	Apply a timewarp to a clip on the timeline. See Creating a Timewarp Soft Effect on page 127.
Blend	Control the transparency of a segment, which enables parts of the background to be exposed through overall transparency. The blend occurs between different layers of the timeline. See Creating a Blend Soft Effect on page 128.
Resize	Edit a segment that was resized to fit the timeline resolution. Use Resize to correct blanking problems and add a soft letterbox. See Creating a Resize Soft Effect on page 129.
Text	Add text to a video element. See Creating a Text Soft Effect on page 130.

The soft effect quick menu is displayed, the LED on the soft effect button turns blue, and the soft effect indicator appears on the timeline segment.

NOTE If you do not see the quick menu, select and enable Editing in the Menu Priority box.



(a) Menu Priority box (b) Axis quick menu (c) Axis LED (d) Axis soft effect indicator

3 For more control of the soft effect, use the soft effect editor. See Accessing the Soft Effect Editors on page 110.

Editing with Soft Effect Quick Menus

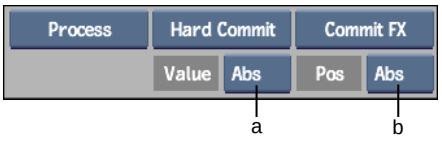
Access basic setups for a soft effect through its quick menu. If you applied the same soft effect to multiple elements, any changes you make to one element using the quick menu are applied to the other elements, as long as the elements are selected.

To reset quick menu values:

1 Click the name of the field or **Ctrl**-click inside a field.

To determine how soft effects are applied from the quick menu:

1 Select from the following options.



(a) Value box (b) Position box

Select:	To apply:
Value Abs	A value directly to all soft effects.
Value Rel	A relative change from the previous value. The change will apply to all soft effects.
Pos Abs	The change on all soft effects at the current position of the positioner.
Pos Rel	A change on all soft effects. The change is the frame difference from the start of the selected effect and the positioner. For example, if the positioner is at frame 10, all Resize soft effects will have a keyframe applied at frame 10.
Pos Prop	A change on all soft effects. The change is the proportional frame difference from the selected effect start and the positioner. For example, if the positioner is in the middle of the soft effect, all Resize soft effects will have a keyframe applied in their middle.

Accessing the Soft Effect Editors

Use the editors for greater control of soft effects. Soft effect editors are similar to those found in the full modules. For example, the Axis Editor is similar to Action but allows control of only one layer at a time.

For Axis, Sparks, and Resize, you must process the effect to see the final result in real time.

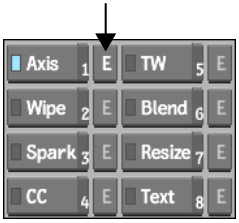
You can access a soft effect editor only after the corresponding soft effect has been applied to an element.

To access a soft effect editor:

1 Select an element on the timeline that has a soft effect applied to it.

2 Do one of the following:

- Double-click the timeline element.
- Click the Editor button (E) for the soft effect you want to modify.



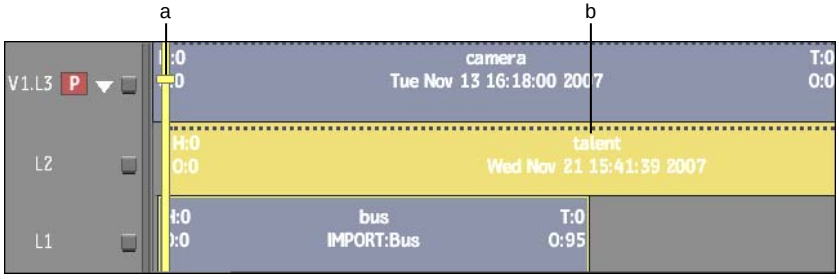
Previewing in Soft Effect Editors

Within most soft effect editors, you can immediately see changes to the current frame by previewing your soft effects. Preview FX mode is useful if you have many unrendered soft effects or complex vertical edits that cause frames to be dropped during playback.

Most soft effect editors also provide a Context view so you can monitor the soft effect in the context of other timeline layers. With Context view, you are not restricted to monitoring layers at or below the current soft effect only. The focus point of the timeline positioner determines what layers are taken into account.

To use a soft effect editor's Context view:

1 Apply a soft effect to a timeline layer and then move the positioner's focus point to the topmost layer that you want to view from the editor.



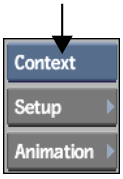
(a) Focus point (b) Layer with soft effect

2 Double-click the layer with the soft effect to access the soft effect editor.

The following example displays the results of Preview FX mode, You see the output of L2 and L1. You do not see L3.

Image courtesy of Casablanca, Behavior Communications Inc.

3 From the soft effect editor, select Context from the Preview Options box.



NOTE From the Blend, Timewarp, and CC editors in Batch, select Context from the View box in the lower-left corner. For Resize, enable the Context button.

All timeline layers, as indicated by the focus point of the timeline positioner, are displayed. In the following example, you now see the output of L3.

Image courtesy of Casablanca, Behavior Communications Inc.

TIP If you are in the Axis Editor, Context view disables the display of axis icons and control points, along with the ability to work with them gesturally. You can toggle between Preview FX and Context views to get the advantages of Context view without losing the interactivity with objects.

To preview a soft effect:

1 Select Preview FX from the Preview Options box.

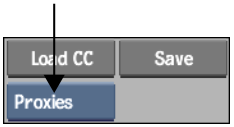
Batch Soft Effects: Generating Clip Proxies

If proxies are set for your project, you can toggle between Proxies and Full Res mode from the soft effect editors.

You set proxies either when you create a project or from the Preference menu if you are in an existing project.

To generate clip proxies from soft effect editors:

1 From a soft effect editor, select Proxies from the Playback Resolution box, or press **Ctrl+P**.



NOTE If the box does not appear, either proxies are not set for the project or proxies are set to conditional and there are none.

2 Toggle between Proxies and Full Res to view your results as you work.

Creating Axis Soft Effects

Use a soft Axis to create a single-layer effect directly on the timeline. For example, scale an element with a soft Axis to reveal an element on another layer. Adding a soft Axis to a soft Resize will mute the soft Resize.

To create a soft Axis:

1 Select an element on the timeline.

2 Move the focus point over the layer you want to use as the top of the vertical edit.

3 Click the Axis soft effect button.

The Axis quick menu appears.

(a) Rendering options (b) Layer Selection box

4 Set rendering options. You can set these options for both the result and the current clip. See Axis Rendering Options on page 122.

5 To define surface attributes, select Surface from the Layer Selection box and then set the softness, position, scaling, and rotation for the surface.

6 To add a matte, select Surface or Matte from the Layer Selection box, click Matte and load a matte.

NOTE To temporarily turn off a matte as you work, select Matte from the Layer Selection box and then Off from the Matte box.

7 To add a shadow, select Shadow from the Layer Selection box, select On, and then set the position, scaling, and rotation for the shadow.

Creating Matte Containers

Containers are a convenient way to group elements on the timeline. The elements, which can come from different layers, can be edited as a unit yet remain individually editable. A matte container is a container with the RGB portion of an image on one track and its matte on another. If the matte for a clip exists separately from it, you can add the clip and its matte to the timeline as a single element by creating a matte container for them.

For single-frame mattes and virtual sources, there are special considerations. If the matte consists of a single frame, it is automatically repeated to match the duration of the front clip. If both the front and matte clips are virtual sources, the matte container is created as a virtual source. You can trim, slip or slide it to any extent.

You can create a matte container in the following ways:

- Using the Axis soft effect quick menu or editor.
- By importing the RGBA file directly into a matte container. (This option does not repeat single-frame mattes to match the front clip.)

You can mute a matte from the timeline or from the Axis Editor.

To create a matte container using the quick menu:

1 Load your fill to the timeline.

2 Select the fill on the timeline and apply a soft Axis.

3 In the quick menu, click Matte.

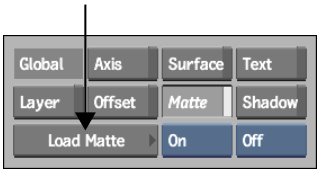
4 Select your external matte from the Desktop.

NOTE You cannot use a timeline element as your matte selection.

A matte container is created.

To create a matte container using the editor:

1. Load your fill to the timeline.
2. Select the fill on the timeline and apply a soft Axis.
3. Enter the Axis Editor.
4. Click Load Matte.



5. Select your external matte from the Desktop.

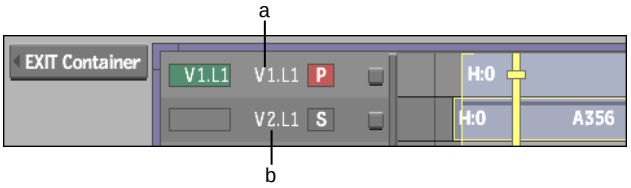
NOTE You cannot use a timeline element as your matte selection.

The matte container is created.

To enter a matte container:

1. Double-click the matte container or click E beside the Container button.

   The matte container contains two tracks: your fill on V1 and the external matte you selected on V2. You edit the contents of a matte container the same way as a normal container.



(a) Fill on V1 (b) External matte on V2

To mute a matte from the Axis Editor:

1. Select the matte container.

2 Enter the Axis Editor.

3 Select Off from the Matte box.

The matte is temporarily removed from the vertical edit.

To mute a matte from the timeline:

1 Click the Container button.

The LED turns yellow.

NOTE To unhide the matte, click the Container LED button so that it turns purple.

Axis Editor

Use the Axis Editor to create effects that include 3D text, motion tracking, and keyed components. The Axis Editor is similar to Action. However, you can only manipulate a single layer, and you cannot apply textures to 3D text.

This section discusses components specific to Axis soft effects. For complete information on menus and controls, see one of the Action chapters in the Help.

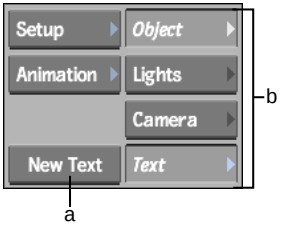
Settings defined in the Axis quick menu and Axis Editor are carried over to each other. For example, if you set Matte to On in the quick menu, it is set to On in the Axis Editor.

To use the Axis Editor:

1 Add a soft Axis to the element.

2 Double-click the element or click E beside the soft effect button.

The Axis Editor appears.



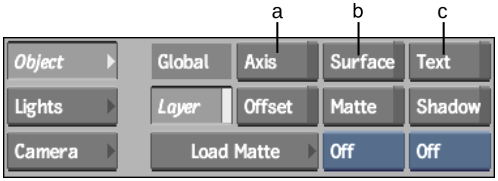
(a) New Text button (b) Axis menu buttons

3 Access any of the following Axis menus.

Menu	Description
Object	The Object attributes are similar to the corresponding attributes in Action. However, you cannot load additional layers from the editor; you can only transform the clip that has the Axis soft effect. As well, there is no 3D displacement.
Lights	The Lights attributes are identical to the corresponding attributes in Action. However, you only have access to one light from the editor.
Camera	The Camera attributes are identical to the corresponding attributes in Action. However, you only have access to one camera from the editor.
New Text	The Text attributes are identical to the corresponding attributes in Action with the exception of texture controls. To display the Text menu button, click the New Text button.

Working with Axis Soft Effect Layers

Working with global and axis transitions is different in the Axis Editor than in Action. Only one layer is available with the Axis soft effect.

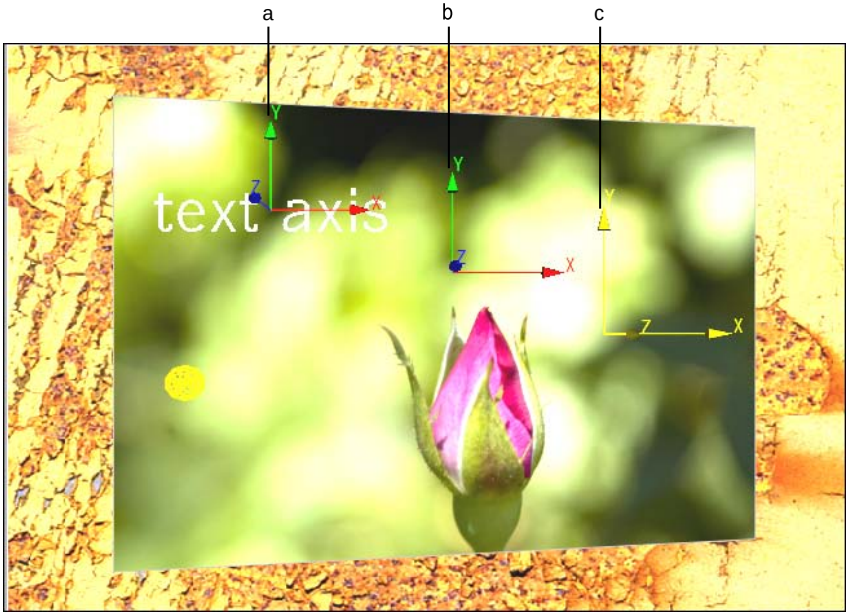


(a) Axis button (b) Surface button (c) Text button

To work with a specific axis:

1 Click Object.

2 Select the axis you want to modify, or click Surface, Text, or Axis.



(a) Text axis (b) Global axis (controls each axis in the scene) (c) Surface axis

3 Modify the attributes of the selected axis. You can modify attributes using the respective fields or select an option from the Edit Mode box and work directly in the image window.

To work with the layer:

1 Click Object.

2 Click Layer.

3 Click the border of the layer to select it.

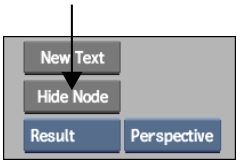
4 Modify the layer attributes, You can modify attributes using the respective fields or select an option from the Edit Mode box and work directly in the image window.

Hiding Nodes

You can hide the current axis. For example, enter the Axis Editor with a black source and add 3D text. Then hide the black source so that the only element used in the soft effect is the 3D text.

To hide a node:

1. Select an element on the timeline.
2. Apply a soft Axis and enter the Axis Editor.
3. Click New Text.
4. Type a text string and click Enter.
5. Click Create.
6. Select the image by clicking its border.
7. Click Hide Node.



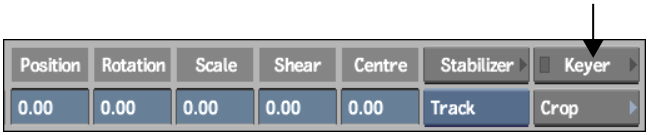
The image is hidden, and only the 3D text remains.

Axis Keyer

You can create chroma keys directly on the timeline using the Axis Keyer. When you enter the Axis Keyer, the clip loaded as the Front is the clip with the Axis soft effect, and the clip loaded as the Back is the next available layer on the timeline.

To use the Axis Keyer:

1. Build a multilayer timeline with a front layer and background.
2. Select the layer you want to key, and click Axis.
3. Double-click the element or click E beside the soft effect button.
4. In the Object menu, click Keyer.



The Axis Keyer appears.

The Front clip is provided by the clip with the Axis soft effect, and the Back is provided from the next available clip in the multilayer timeline.

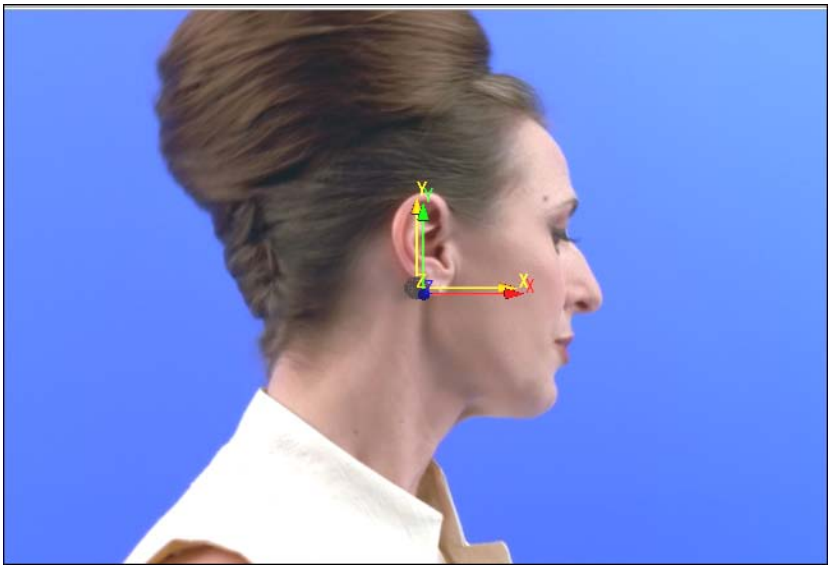


Image courtesy of Behavior Communications Inc.

5 Create the key. .

Image courtesy of Behavior Communications Inc.

Axis Rendering Options

When rendering a soft Axis, you can specify some render options for the image and others for surfaces in the Axis effect such as 3D text elements. You set these options from the Axis quick menu or from the Axis Editor.

To set the rendering options from the quick menu:

1 Select one of the following rendering options.

Select:	To render:
Interlaced	The surface and 3D text elements in fields.
Progressive	The surface and 3D text elements in frames.

To set the rendering options from the Axis Editor:

1 Click Setup.

2 Select one of the following rendering options.

Select:	To render:
Interlaced	The image in fields.
Progressive	The image in frames.

NOTE Each Axis soft effect can have its own rendering option.

Wireframe Mode

Use the Wireframe option in the Setup menu and in the Object menu to display a wireframe preview of your setup. You can also render a soft Axis in wireframe mode.

To render in wireframe mode:

1 Enter the Axis Editor.

2 Do one of the following:

- To view only the image in wireframe mode, click Object and enable Wireframe.

- To view the entire scene, including 3D text in wireframe mode, click Setup and enable Wireframe.

3 In the Setup menu, set the Resolution value for the wireframe.

4 Click Process.

Creating Wipe Soft Effects

Use the Wipe soft effect to create a vertical wipe between layers on the timeline. For more control of the Wipe soft effect, use the Wipe Editor.

To create a Wipe soft effect:

1. Select the element you want to use as the incoming shot of the vertical wipe.
2. Set the focus layer by moving the focus point over the layer you want to use as the top of the vertical edit.
3. Click the Wipe soft effect button.

   The Wipe quick menu appears.

(a) Pattern selection (b) Wipe options

4. Enter the wipe pattern number, or click Pattern and select an SMPTE wipe from the SMPTE wipe library.
5. Specify the wipe attributes for each option.

Select:	To adjust:
Position	The position of the SMPTE wipe.
Motion	The spin factor of the SMPTE wipe.
Softness	The edge softness of the SMPTE wipe.
Options	The scaling and blending options of the SMPTE wipe.

6. To access the Wipe Editor, double-click the element or click E beside the Wipe soft effect button. Edit the wipe as you would SMPTE wipe transitions. See Editing Wipes on page 147.

Creating Sparks Soft Effects

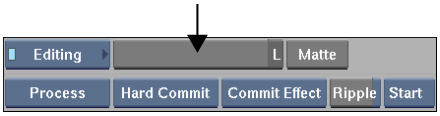
Use the Sparks soft effect to apply video Sparks to video elements on the timeline. Sparks soft effects are applied below Axis and Wipe effects. If you want to apply a Sparks effect to an element that contains an Axis or a Wipe effect, you need to contain it first if the result of the Axis or Wipe effect is required by the Sparks. Or, you can apply the Sparks soft effect to a gap above the element containing an Axis or a Wipe effect.

You can use Sparks that require up to four inputs, but you cannot use desktop Sparks. With desktop Sparks, you do not enter a module to create the effect. For example, the SparkBroadcast Sparks that is shipped with the system does not have an editor. It applies the effect directly to a clip you select on the Desktop and therefore cannot be used as a Sparks soft effect.

To use a Sparks soft effect:

1. Select the element to which you want to apply the Sparks soft effect.
2. If the Sparks you are using requires a matte, click Matte in the Spark quick menu and load the matte.

   A matte container is created.
3. Click the Spark button and load your Sparks.



TIP To change a currently loaded Sparks, hold **Alt** when you click the Spark button.

4. Set the input for each layer.
5. Click the Spark button again, or the E button next to the Spark, to enter the Spark Editor.

Preview FX in the Spark Editor

The Preview FX option works the same in the Spark Editor as in every other editor and on the timeline. However, if the element to which you are applying the Sparks also has an Axis or a Wipe effect, you will not see the result of the Axis or Wipe effect in the Sparks module while using Preview FX because these

soft effects are upstream of the Sparks effect. If you want to preview all effects, you must exit the Spark Editor and use the Preview FX option in the Player.

Creating Colour Correction Soft Effects

Use the Colour Correction soft effect to add colour corrections to elements directly on the timelin. You can also colour correct segments on the timeline using the Colour Warper™ tool

To create a Colour Correction soft effect:

1. Select the element to which you want to apply the colour correction.
2. Click the CC soft effect button.
   The Colour Correction quick menu appears.
3. Modify any of the values for contrast, offset, gain, saturation, or hue.
4. To display the Colour Warper quick menu, click CC.

Colour Correction Editor

If you want more control over the Colour Correction soft effect, use the Colour Correction Editor. The Colour Correction Editor is similar to the standard Colour Corrector; however, it does not accept a matte, background, or reference buffer. Only components specific to the Colour Correction soft effect are explained in this section.

To access the Colour Correction Editor:

1. Add a Colour Correction soft effect to the element.
2. Double-click the element or click E beside the soft effect button.
   The Colour Correction Editor appears.

Creating Colour Warper Soft Effect

Use the Colour Warper soft effect to colour correct elements directly on the timeline.

You can apply colour corrections with the Colour Warper tool from the Colour Correction quick menu or the Colour Correction Editor. Access the Colour

Warper from the Colour Correction quick menu to make basic colour corrections. Access the Colour Warper from the Colour Correction Editor for more control over the Colour Correction soft effect.

With the soft effect preferences, you can also define which colour correction tool (Colour Corrector or Colour Warper) is applied by default.

To access the Colour Warper from the Colour Correction quick menu:

1. Select the element to which you want to apply the colour correction.
2. Click the CC soft effect button.
3. Click CC.
   The Colour Warper quick menu appears.
4. Modify the values for black level, white level, hue, saturation, and gamma.

To access the Colour Warper soft effect from the Colour Correction Editor:

1. Select the element to which you want to apply the colour correction.
2. Click the CC soft effect button.
3. Double-click the element or click E beside the soft effect button.
   The Colour Correction Editor appears.
4. Click CC.
   The Colour Warper editor appears. In the Preferences menu, you can specify whether the Colour Corrector or the Colour Warper editor is shown by default in the Colour Corrector soft effect menu. Once a Colour Correction soft effect is applied, the selected menu will appear in the editor.
   Use the Basics, Selective, and Subsetups menus to apply colour corrections to the selected element. the Colour Warper chapter in the Help.

Creating a Timewarp Soft Effect

If you edit a clip to the Batch timeline so that the overall duration of the timeline does not change, a Timewarp soft effect is automatically created. You can change the timewarp settings with the Timewarp Editor. You can also apply a Timewarp soft effect to create effects that change the speed or direction of a clip.

NOTE To have timewarps automatically created when the framerate of the clip you are adding to the timeline is different from the framerate of the timeline, enable Framerate Converter in the Timewarp section of the Timeline Preferences menu.

To create a Timewarp soft effect:

1. Select the segment to which you want to apply a Timewarp soft effect.
2. Click the TW soft effect button.
   The TW quick menu appears.
3. Set the properties for the timewarp. See the Timewarps chapter in the Help.

Creating a Blend Soft Effect

Use Blend soft effects to adjust the transparency between layers on the timeline. Blend soft effects are similar to dissolve transitions except that the Blend soft effect occurs vertically across layers.

With Blend soft effects, intermediate clips are created. If you add a dissolve to a clip that has a Blend soft effect, the result of the blend will be used as the incoming source.

For more control of the Blend soft effect, use the Blend Editor. You can modify the shape of the blend curve for complex results.

To create a Blend soft effect:

1. Select the element you want to use as the incoming shot of the vertical blend.
2. Set the focus layer by moving the focus point over the layer you want to use as the top of the vertical edit.
3. Click the Blend soft effect button.
   The Blend quick menu appears.
4. Select a Blend mode.

Select:	To:
Fade In	Create a mix curve that starts at 100% at the first frame and ends at 0% at the end of the clip.
Constant	Create a constant mix value of 50% for the length of the blend.
Fade In/Out	Fade in to the incoming clip for the first 0.5 seconds and fade out for the last 0.5 seconds. Clips shorter than 1 second fade in for the first 25% of the clip, and fade out for the last 25% of the clip.
Fade Out	Create a mix curve that starts at 0% at the first frame and ends at 100% at the end of the clip.

5 Set the rendering and mix options.

6 To access the Blend Editor, double-click the element or click E beside the Blend soft effect button. Modify the animation channel for the Mix value until you get the desired result. .

Creating a Resize Soft Effect

If you edit two clips of different resolutions together on the timeline, a Resize soft effect is automatically created.

You can also apply a Resize soft effect directly to a segment to create effects such as a letterbox or to animate image position.

To create a Resize soft effect:

1 Select the segment that you want to resize.

2 Click the Resize soft effect button.

The Resize quick menu appears. Set the resize settings. See the Resize chapter in the Help.

Soft Resize Editor

The Soft Resize Editor has a two-Player display: source resolution (left) and destination resolution (right). This interface layout is useful for performing pan and scan. Press **Ctrl+Alt+M** on either Player to lock the view on the broadcast monitor. Using the lock feature can let a client monitor the final framing while you continue working on the source image.

Creating a Text Soft Effect

Text soft effects are an easy, flexible way to add graphics to the timeline. Most Text soft effects can be previewed in real time. You can add several, stacked Text soft effects to a timeline without significantly affecting performance. Text soft effects differ from the regular Text module in a few ways. Soft Text includes:

- The ability to create a text layer with or without a matte
- The ability to create a matte key
- The ability to add text to a gap effect. See Adding Soft Text to an Empty Layer on page 139.

NOTE Soft Text does not include logos. To work with logos, use the regular Text module.

You can also import XML files containing subtitles to a timeline, and edit attributes such as colour and font directly in the XML file.

For information on Text settings that are also available from the Text module, see the Text chapter in the Help.

Accessing Soft Text Controls

Use the Text editor to create text. Use the Text quick menu for making minor changes.

To access the Soft Text quick menu:

1. Select an element on the timeline and then click the Text soft effect button.
2. Select an option from the Soft Text Quick Menu box.

Select:	To access controls for:
Basic	Changing text attributes such as font size, and to determine whether a matte is created.
Layer Axis	Changing the orientation of the text layer. If you are working in proxy mode, the values correspond to the proxy.
Fill/Under	Changing the fill or underline attributes for the text.
Out/Shad	Changing the outline and shadow of the text.

3 To access the soft Text editor, double-click the element or click E beside the soft effect button.

Creating Text Layers

You can create a text layer with or without a matte. A text layer with a matte can be used to place a layer of text on a background. Create text layers with mattes when you are planning to use the text with a soft effect that requires a matte to composite a foreground on a background. You use the composited text as an input for Sparks or when adding an axis.

The transparency of the text's fill attribute receives special treatment when creating a text layer with a matte. By default, the transparency value is transferred to the matte. In the composite, this yields an image in which the text has the expected transparency.

To create a text layer:

1 Add a Text soft effect to a front layer on the timeline.

2 Add a background layer to the timeline.

3 Create text in the Soft Text editor.

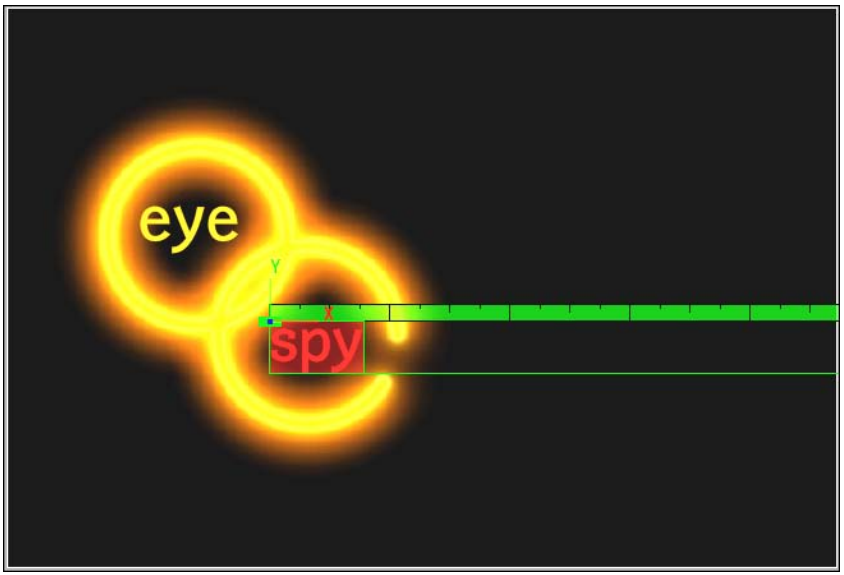
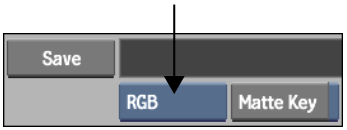


Image courtesy of Das Werk

4 Make a selection from the Alpha Processing Mode box to determine whether a matte is created from the text layer.



Select:	To:
RGB	Create a text layer that does not include a matte.
RGBA	Create a text layer that does include a matte.

5 Exit to the timeline and add an Axis key or Axis scale soft effect to the front layer.

In the following example, the text layer is created with the RGB option. The layer on which the text was created is output in the result, composited over a background layer.

Image courtesy of Casablanca, Das Werk

In the following example, the text layer is created with the RGBA option. Only the matte of the text layer itself is output in the result, composited over the background layer.

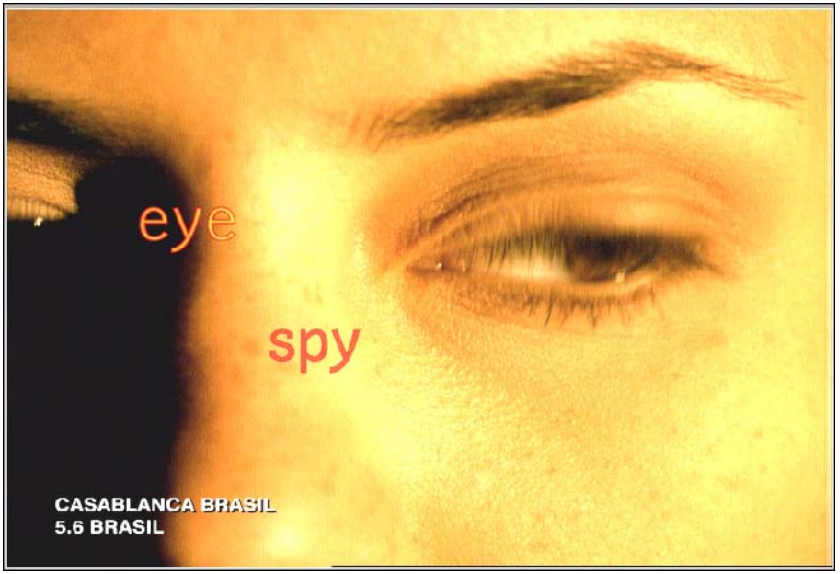


Image courtesy of Casablanca

TIP When you use the RGBA option with text to create a matte layer, select Context from the Preview Options box inside the Text editor to see the text layer with the matte.

Creating a Text Matte Key

A matte key allows you to create a text effect in which the text's fill is, in fact, a background clip. When used with an Axis effect (or a Sparks effect that takes a matte), it can be used to layer text made of one background on top of another background.

All static (non-animated) fill colours are set to a transparency of 0%.

In the following example, the front layer is used for the text's fill. The fill is then composited over the background layer with an Axis Key soft effect.

To create a text matte key:

1 Add two layers to the timeline.

2 Add a Text soft effect to the front layer and then create the text in the Soft Text editor.

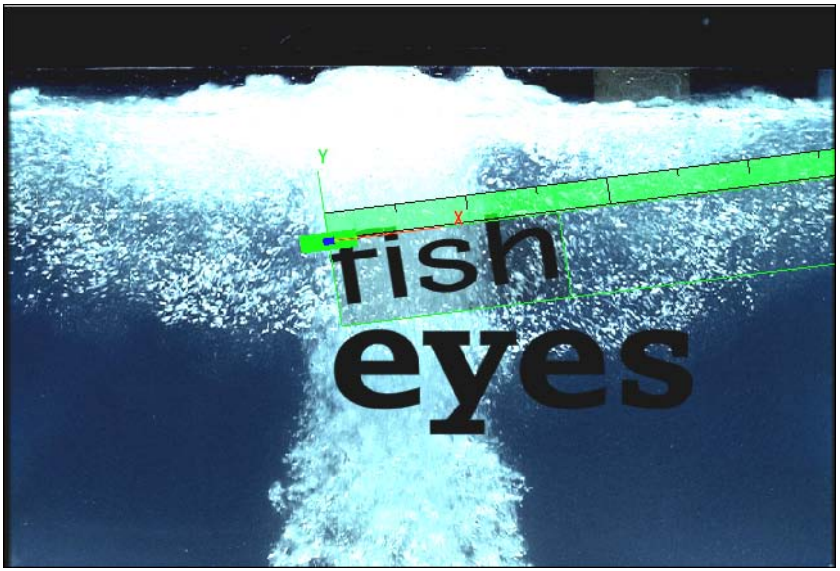
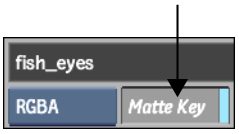


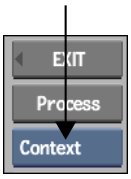
Image courtesy of Technicolor (formerly Toybox)

3 Enable the Matte Key button.



The Alpha Processing Mode box changes to RGBA and the Fill field resets to 0%.

4 Select Context from the Preview Options box to preview the effect.



The text fill is composited over the background layer. This text layer is then applied to the timeline background layer.

Image courtesy of Quietman, Technicolor (formerly Toybox)

Trimming Animated Soft Effects

When you apply animated soft effects to timeline elements, you have three trimming options. Access these options from the soft effect's Channel box. The selected option applies to all soft effects unless they are locked.

NOTE The trimming options do not apply to Timewarp soft effects.

(a) Soft Effect Channel box

Resize Channel Locks the animation relative to the element's duration. If you change the duration of the element by trimming, the animation and all its keyframes scale to fit the duration of the element after trimming.

Link Channel Links the animation to the media. When you trim, slip, or slide the element to which the soft effect has been applied, the animation moves with the media. Keyframes move with the media as well.

Unlink Channel Unlinks the animation and the media. When you trim, slip, or slide the element to which the soft effect has been applied, the media moves relative to the animation. In this case, keyframes retain their position relative to the beginning of the element. They do not move with the media.

Creating Gap Effects

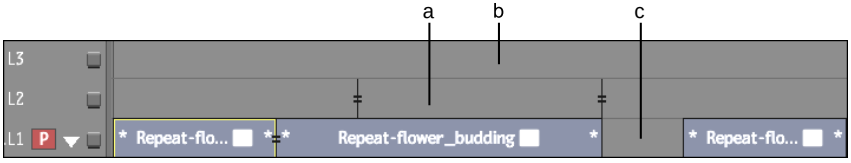
Gaps are the empty spaces between elements in an edit sequence. They can result from removing a portion of a clip with Ripple set to off, for example. To create a gap effect, apply a soft effect to a gap.

A gap effect is similar to a soft effect on an element with media. However, while a soft effect is restricted to the clip to which it is applied, gap effects are independent of all media. They affect the media under them. If you colour correct an empty layer, for example, the colour correction is seen on the layer beneath it. With gap effects, you can apply effects at a splice or transition, or add an effect to several clips at once. You can treat a gap effect like any other element, trimming and moving it, or copying it for use in another timeline.

NOTE Because a timewarp is closely tied to the media to which it is applied, you cannot apply a Timewarp soft effect to a gap.

Gaps can appear in different places in the timeline:

- The empty space between media elements on a video layer
- An empty video layer
- The space between splice points on an empty video layer. Splice points are useful for containing a gap effect applied to an empty video layer. The areas to either side of the splice points are also gaps.



(a) Space between splice points (b) Empty layer (c) Empty space between elements

Because a gap effect is not restricted by in points, out points, splices and transitions, it is easily trimmed, moved and duplicated. You can trim a gap effect over the entire duration of the video track regardless of the underlying splice points.

You can also freely edit splices and transitions between elements on video layers under the gap effect. You can splice an element, add a transition at the splice point, and then replace the incoming element without affecting the gap effect. In addition, gap effects can be treated as clips. They can be copied and placed over different media in the timeline, or copied to the schematic for later use.

To apply a soft effect to a gap:

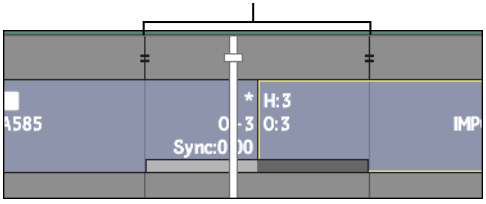
1. Determine the element to which you want to apply the soft effect. Do one of the following:
   - Move the positioner and its focus point over the gap.
   - Select the gap.
   - Select the entire video layer.
2. Click the appropriate soft effect button.

Creating a Soft CC over a Transition

Creating a gap effect over a transition has three advantages. First, like other gap effects, it keeps the effect separate from the underlying elements. You can modify the transition without interfering with the effect, and vice versa. Second, you only need to apply the effect once rather than to each element separately, greatly simplifying fine-tuning the effect. Finally, you can restrict the effect to just a portion of the underlying elements.

To apply a Soft CC to a gap over a transition:

1. Add an empty layer above a layer with a transition between two elements.
2. Move the focus point of the positioner to the empty layer.
3. Add splices before and after the start and end points of the transition.



4. Select the gap and create a CC soft effect.

You can trim the gap effect independently of the transition, or edit the animation of the Soft CC effect without being restricted by the relative location of the cut point or the start and end frames of the transition.

Adding Soft Text to an Empty Layer

Soft Text adds text to elements in the timeline. Creating a Soft Text effect as a gap effect adds additional flexibility. Assume you want to add the same text to several clips. With a simple Soft Text effect, you would have to duplicate the effect on each clip. By creating a gap effect, you create the effect once, on an empty layer above the clips.

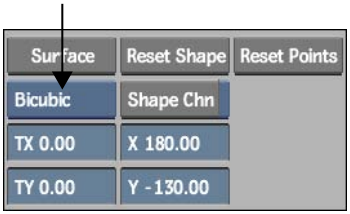
If you decide to put the text on a bicubic surface so that you can warp it, there is an additional consideration. To warp text, you must use the Axis soft effect, placing the text on a bicubic surface. By default, Axis soft effects use an RGB surface that contains the media of the current layer and all those beneath it. This is the case even when applying Soft Text as a gap effect. Thus, by default, warping the text will warp all the media beneath it. To restrict the warp, select the RGBA option. The RGBA option adds a matte to the gap effect, restricting the Axis effect to just the text.

To apply a Text soft effect to an empty layer:

1. Add an empty layer above the uppermost layer.
2. Select the layer and add a Text soft effect.
3. Enter the editor and create your text.

   The text layer appears for the duration of the timeline. You can easily trim the gap effect or add fade-in and fade-out transitions. You can also edit the media elements below the gap effect without affecting the text layer.
4. Click outside the text layer to remove the focus.
5. Add an Axis soft effect so you can work with the text graphic as a 3D surface.
6. Enter the Axis Editor.

   TIP If the Axis button is enabled, you can press ~ **(tilde)** to enter the Axis Editor.
7. From the Shape box, select Bicubic.



Four control points with tangent handles appear at the corners of the surface.

TIP If you do not see the control points and axis icons, select Preview FX from the Preview option box.

8 Use the control points to modify the shape of the surface.

By default, the Axis soft effect uses an RGB surface that contains the media of the current layer and all those beneath it. However, you only want to modify the shape of the text on top of the layers below it.

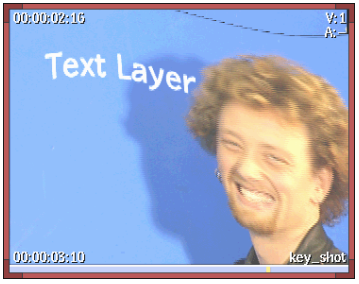
9 Exit the Axis Editor.

10 Enable Text to display the Soft Text quick menu.

11 From the Alpha Processing Mode box, select RGBA.

The RGBA option processes the Text soft effect using the text layers as an alpha channel. You can now modify and animate the text in 3D space independently of the video layers below it.

RGB option



RGBA option

Linking Soft Effects

You can link multiple segments in order to apply or edit several segments at once. For example, if you apply the same CC soft effect to multiple segments, you can apply changes to the CC soft effect on one segment to the CC soft effect on the linked segments.

To link soft effects:

1. Select multiple segments on the timeline.
2. Add a soft effect.
3. Edit the settings for the entire selection using the soft effect quick menu.

Copying Soft Effects

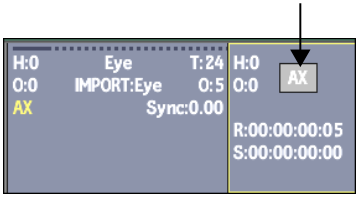
If you want to reuse a soft effect, you can copy it from one timeline segment to another.

If you are in a BFX level, you can also copy a soft effect to a Batch setup. See Copying Soft Effects to a Batch Setup on page 68.

To copy a soft effect:

1. Display the timeline of the segment with the soft effect that you want to copy.
2. Do one of the following:
   - Press **Ctrl** and drag the soft effect indicator to another segment.
   - With the positioner over the segment with the soft effect that you want to copy, press **Ctrl** plus the number on the soft effect button, for example, press **Ctrl+5** to select the timewarp soft effect indicator. Then drag the indicator to the appropriate segment.

NOTE Soft effect indicators turn yellow when selected.



The soft effect is applied to the segment.

Muting Soft Effects

To temporarily remove a soft effect from the vertical edit, mute it. To put the soft effect back into the vertical edit, simply un-mute it. Muted soft effects are indicated by yellow LEDs on the soft effect button.

NOTE You cannot mute Timewarp soft effects regardless of where they were created.

To mute a soft effect:

1. Select the element that has the soft effect you want to mute.
2. Click the blue LED.

   The LED turns yellow, and the soft effect is temporarily removed from the vertical edit.

To enable a muted soft effect:

1. Select the element that has the muted soft effect.
2. Click the yellow LED (or press the corresponding hot key number).

   The LED turns blue, and the soft effect is reapplied to the vertical edit.

Deleting Soft Effects

You can delete any soft effect from the timeline.

To delete a soft effect:

1. Do one of the following:
   - **Alt**-click the blue LED on the left side of the soft effect button.
   - Resize the video track and **Ctrl**-drag the soft effect indicator to the bottom of the screen.
     The soft effect is removed from the clip and the indicator from the segment.

Dissolves and Wipes

9

Topics in this chapter:

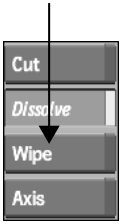
Creating Wipes

You can now create wipes from the Batch and Player timelines.

Inferno contains a number of predefined SMPTE wipe patterns. When creating a wipe, you can choose a wipe pattern from the file browser or enter the SMPTE pattern number in the Pattern Number field.

To add a SMPTE wipe:

1. Select the transition where you want to create the wipe.
2. Click Wipe.



The wipe specified in the SMPE Pattern Number field is added to the cut.

(a) Alignment box (b) Duration field (c) SMPTE Pattern Number field (d) Global Axis box

3 To change the wipe, click Pattern.

The file browser appears.

NOTE If you know the identification number of a specific SMPTE wipe, you can enter that number in the Pattern Number field to apply the wipe to the selected transition.

---

4 Select a pattern from the list of available SMPTE wipes. Selecting a pattern causes you to exit the file browser.

5 Select the alignment from the Alignment box.

6 Set the duration in the Duration field.

Adjusting the Global Axis of a SMPTE Wipe

After adding a wipe to the timeline, you can modify its position, rotation, scaling, and softness in its quick menu.

The global axis gives you control over all masks that are created for any given SMPTE wipe. If you create a wipe that requires two separate masks, you can adjust them both simultaneously in the viewport.

To adjust a wipe's global axis values from the Wipe quick menu:

1 Select the wipe icon on the timeline and display its quick menu.

(a) Alignment box (b) Duration field (c) SMPTE Pattern Number field (d) Global Axis box

2 Select an option from the Global Axis box.

Select:	To adjust:
Position	The position of the SMPTE wipe.
Motion	The rotation of the SMPTE wipe.
Softness	The edge softness of the SMPTE wipe.
Options	The scaling and blending options of the SMPTE wipe.

Editing Wipes

If the preset SMPTE wipes do not offer enough flexibility, you can create customized wipes with the Wipe Editor. Starting from one or multiple garbage masks of any shape, create wipes that, for example, follow on-screen motion or mimic the shape of an object in a clip.

Use the Wipe Editor to:

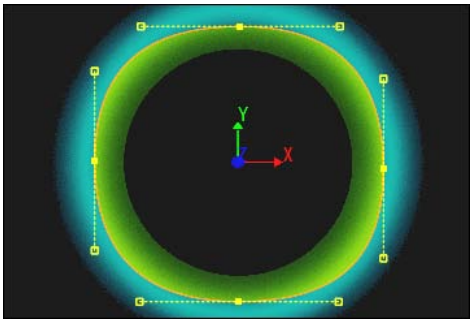
- Create wipes that follow the motion of an object as it uncovers the incoming clip.
- Create wipes that resemble shapes in your frames.
- Create wipes that act as complex dissolves.
- Modify existing SMPTE wipes.

To create or modify a customized wipe:

1. Add a SMPTE wipe to a transition on the timeline.
2. Set the transition duration.
3. Set the alignment.

4 Select the SMPTE wipe icon on the timeline and then click E beside the Wipe button.

A garbage mask in the form of the SMPTE wipe pattern is displayed over the outgoing and incoming clips in the Wipe Editor.



5 Modify the vertices of the garbage masks to change the wipe. See Altering a Mask's Shape on page 151.

6 Click Exit Wipe to return to Batch.

7 Process the wipe.

Creating Customized Wipes with Garbage Masks

Use masks on the incoming clip to create a customized transition that wipes into the outgoing clip. Depending on the type of wipe you are creating, perform some or all of the following procedures:

- Set the mask drawing options. See Setting the Mask Drawing Options on page 149.
- Draw the mask. See Creating a Mask on page 149.
- Adjust the mask's shape. See Altering a Mask's Shape on page 151.
- Set the mask effect. See Controlling a Mask's Effect on page 151.
- Adjust the position, rotation, and scaling of the mask. See Changing a Mask's Position, Rotation, and Scaling on page 154.
- Animate the mask parameters. See Animating Masks on page 157.

Setting the Mask Drawing Options

Before you create a mask, set how the points of the mask are drawn.

To set the drawing options:

1. From the Wipe Editor, click Setup.
2. Specify the setup options.

Enable:	To:
Auto Tangents	Create tangents for every new point you set.
Show Border	View the border defined in the Offset field of the Shape menu. The colour pot next to the Show Border button defines the colour of the border.
Invert	Reverse your wipe. For instance, if you originally create an expanding box wipe, enabling Invert creates a shrinking box.
Spline Keyframing	Allow animation of points on the mask.

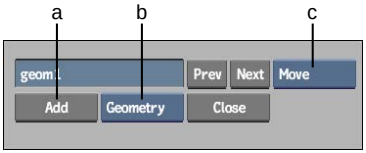
3. To change the colour of the mask's wireframe, colour points, or offset border, click a colour pot and pick a new colour.

Creating a Mask

Masks are controlled using the Wipe schematic. When you create a mask, an Axis node and Geom node are added to the schematic. The Axis node contains all the rotation, scaling, and position data, and the Geom node contains all the information about how the mask will affect the image (softness, opacity, alpha, axis offset).

To create a wipe mask:

1. From the Wipe Editor, click Mask.
2. Select Geometry from the Element box.



(a) Add button (b) Element box (c) Edit Mode box

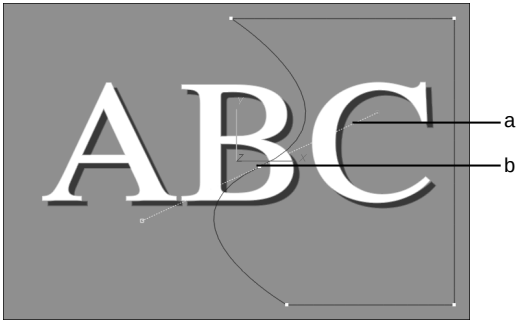
3 Click Add, or select Create from the Edit Mode box.

TIP You may want to display the outgoing or incoming clip while drawing the mask since the composite is created in Result mode.

4 Click the image to create the first point.

NOTE If you are drawing a mask freehand, press **Shift** and then press down on the cursor to draw the mask. When you release the cursor, the mask closes automatically.

5 Click again to draw the second point.



(a) Tangent (b) Vertex

NOTE If you are not in Auto Tangents mode, you can still create a tangent while setting a point by clicking and dragging the cursor.

6 To close the mask, click Close or click the first point.

Altering a Mask's Shape

You can manipulate points on a mask while displaying the incoming or outgoing clip.

Selecting Points

Select points using the Select option in the Edit Mode box. You can select individual points, individual tangents, or a group of points:

- To select a point or tangent, click it.
- To select additional points, press **Shift** and click the point. You can also press **Shift+Ctrl** and drag across a series of points.
- To select multiple points, press **Ctrl** and drag the selection box over a series of points.

Breaking Points

You can break or modify a tangent using the Break option in the Edit Mode box:

- Click a point to remove any tangents connected to that point.
- Click a tangent and hold down the cursor to edit it separately from its opposite tangent. You can also select the Move option to edit the tangent without editing its continuity. Click the tangent again and hold down the cursor to edit the continuity of the tangent. Click the tangent again and hold down the cursor to edit the continuity of both tangents.
- Click a point to remove any tangents connected to that point.

Calculating Tangents

Use the Auto option in the Edit Mode box to calculate the tangent for a point according to the curve the point is on. Select the Auto option and click a tangent.

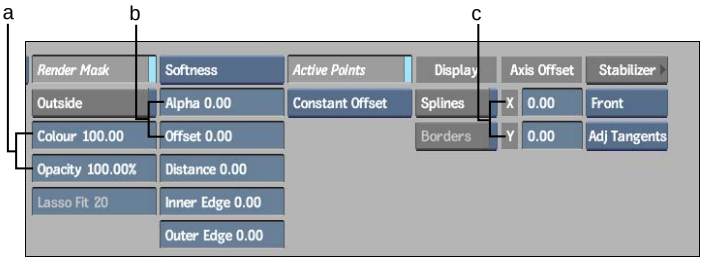
Controlling a Mask's Effect

The Geom node contains all the information about how a mask affects the final transition. You can change this information in the Mask menu.

To control a mask's effect:

1. Select Matte or Result.
2. Select the mask in the image window.
3. Click Mask.
4. Set the mask opacity in the Opacity field.

   The Opacity field defines the effect the mask has on the matte. A value of 100% means the inside of the mask is completely opaque. A value of 50% means the inside of the mask is 50% transparent. A value of 0% has no effect on the image.



(a) Colour and Opacity fields (b) Alpha and Offset fields (c) Axis Offset fields

Mask with 0% opacity

Mask with 100% opacity

5. Set the mask colour in the Colour field.

   The Colour field defines the blend between the outgoing and incoming image inside the mask. A value of 50% is a 50/50 blend between the

outgoing and the incoming clip. A value of 100% displays only the outgoing clip. A value of 0% displays only the incoming clip.

Mask with 25% colour and 100% opacity

Mask with 75% colour and 100% opacity

6 Set the mask softness. See Smoothening the Gradient of a Mask on page 153.

7 Set the axis offsets in the Axis Offset fields.

The Axis Offset fields defines how much a mask is offset from its axis.

8 Enable Outside if you want to apply the effect to the part of the image outside the mask shape.

Smoothening the Gradient of a Mask

You can adjust the softness gradient of a mask to smoothen the edges of your wipe. You can create a uniform gradient around the edge of the mask or use an advanced gradient to control the shape of the gradient at different parts of the mask.

To create a uniform gradient, you define how far you want the gradient to be offset from the edge of the mask and then set its transparency. To vary the shape of the gradient, you move vertices on inner and outer softness splines. The gradient will be based on how far each vertex point is offset from the mask.

For either type of gradient, you can smoothen the gradient towards the inside edge, the outside edge, as well as the area where the inside and outside adjustments have an effect.

To smoothen the gradient of a mask:

1 From the Wipe Editor, click Mask.

2 To create a uniform gradient around your mask, do the following:
   - If necessary, toggle the Advanced Gradient button to Softness.
   - Set the border of the softness gradient using the Offset field. Your gradient will be affected by how far the softness border is offset from the edge of the mask.
   - Set the transparency of the gradient using the Alpha field.

3 To change the shape of a gradient at different parts of the mask, do the following:
   - If necessary, toggle the Softness button to Advanced Gradient.
   - Adjust the distance of the inner and outer splines from the mask by adding and moving vertex points on the splines. If you do not see the inner and outer splines, enable Splines.

4 Use the Inner Edge field to smoothen the softness gradient towards the inside.

5 Use the Outer Edge field to smoothen the softness gradient towards the outside. Adjusting this value is especially noticeable if you are smoothening a transition from a black inside edge to a white outside edge.

6 Use the Distance field to modify the area over which the Inner and Outer Edge adjustments have an effect.

Changing a Mask's Position, Rotation, and Scaling

An Axis node contains all the rotation, scaling, and position data for the mask. You can change all this information in the Mask menu. The Axis controls are identical to those in the Action Axis menu.

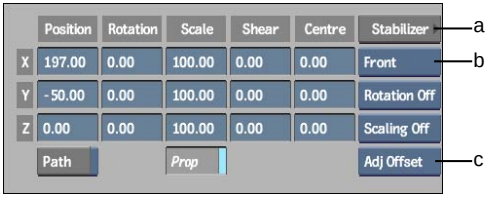
Tracking with Masks

You can track a point on your clip and apply that data to the axis of a piece of geometry or a hierarchy of objects. You can also track individual points on the mask.

NOTE The points in the mask are not affected by the tracking data. The tracking data is applied to the entire mask.

To track the entire mask:

1. After creating a wipe, access the Wipe Editor and click Mask.
2. Select the wipe's mask axis.
3. Select Front or Back from the Layer box to specify whether you want to track on the outgoing clip (Front) or the incoming clip (Back).



(a) S (Stabilizer) button (b) Layer box (c) Adjust option box

4. Select an option from the Adjust option box.

   Select Adjust Offset if the selected mask is parented to one axis. Select Adjust Axis if the selected mask is parented to a hierarchy of objects.
5. Go to the first frame of the transition.
6. Click Stabilizer.
7. Set up the tracking point as needed.
8. Click Analyse.

   Fine-tune your analysis if necessary.
9. Click Return.

   The Wipe Editor reappears.

Tracking Individual Points on a Mask

You can also track individual points on a mask so that portions of the mask follow a point in the clip. Each point you select is assigned a tracker box in the Stabilizer. The points are repositioned according to the reference point you set in the Stabilizer.

To track individual points on a mask:

1. After creating a wipe, access the Wipe Editor.
2. Select a vertex or a group of vertices on a wipe's mask.

3 Click Mask.

(a) S (Stabilizer) button (b) Layer box (c) Adjust option box

4 Select Front or Back from the Layer box to specify whether you want to track on the outgoing clip (Front) or the incoming clip (Back).

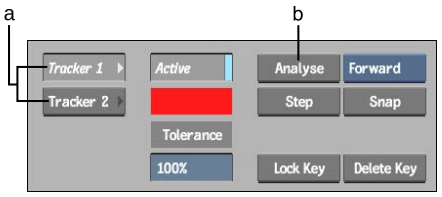
5 Select an option from the Adjust option box.

Select Adjust Tangents if you want the tangents for the selected points to be adjusted while the points are being tracked.

6 Go to the first frame of the transition.

7 Click Stabilizer.

The Stabilizer appears. A Tracker button appears for each selected vertex.



(a) Tracker buttons (b) Analyse button

8 Click Tracker 1, and then set up the first tracking point.

9 Click Tracker 2 to set up the second tracking point, and then continue setting up tracking points for all remaining vertices.

10 Click Analyse.

Fine-tune your analysis if necessary. For example, disable problem trackers and analyse again.

11 Click Return.

The Wipe Editor reappears.

12 Fine-tune your mask if necessary.

Animating Masks

You can animate the following mask properties:

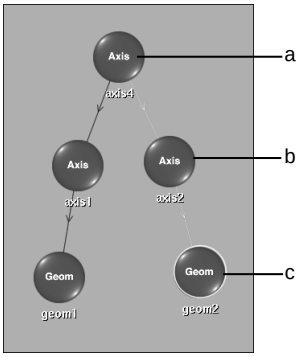
- The characteristics of the camera in the scene
- The position, rotation, scaling, and shearing
- The mask shape
- The offset, border offset, border alpha, colour, and opacity

To display the Animation menu, click the Animation button.

Using the Wipe Schematic

The schematic uses nodes to represent the elements in the scene. The schematic also shows the relationship between a garbage mask and its axis.

Use the schematic, for example, to create new relationships between elements in complex animations.



(a) Axis4 is the parent of axis2 and geom2 (b) Geom node represents a wipe mask (c) Axis for geom 2

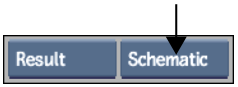
To view the schematic:

1 Do one of the following:

- Press **Esc**.

> **NOTE** Pressing **Esc** a second time returns to the previous view.

■ Select Schematic from the World View box.



Nodes

In Schematic view, there is one node for each element in the scene.

Axis Nodes

Axis nodes are added to the scene when you create a garbage mask. These node types are used to control a mask's position, rotation, scaling, and shape, for example.

Geom Nodes

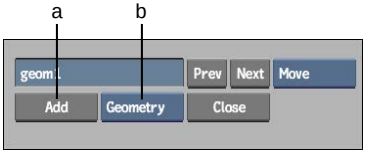
Geom nodes are added to the scene when you create a garbage mask. This type of node contains information about how the mask will affect the image (softness, opacity, alpha, and axis offset).

Adding Elements

You can add Axis nodes or Geom nodes.

To add an element to the wipe:

1 Select the type of element you want to add from the Element box.



(a) Add button (b) Element box

You can add the following elements to the scene.

Select:	To add:
Geometry	A garbage mask to the scene.

Select:	To add:
Axis	An axis to the scene.

2 Click Add.

The element is added to the scene and a node representing the element is added to the schematic.

Selecting Elements

You must select an element before you can edit or animate it. Select an element in any of the following ways:

- Click the element in the scene.
- Go to Schematic view and click the node for the element.
- Display the Channel Editor and select the element's name or one of its channels.

You can also use the Prev and Next buttons to select the next or previous element.

Naming Elements

Each element you add to a wipe is automatically assigned a default name. The default name identifies the element and the order in which it was added. For example, axes are named axis1, axis2, axis3, and so on.

An element's name appears beneath its node in the schematic and as a folder in the Channel Editor. For example, if you add an axis to a wipe, its name appears both beneath the node in the schematic and in the Channel Editor.

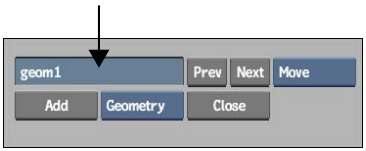
You can assign more meaningful names to the elements using the Name field. If you rename an element, the schematic updates to show the new name. The element is also renamed in the Channel Editor.

To change the name of an element:

1 Select the element in the scene.

The current name for the element appears in the Name field.

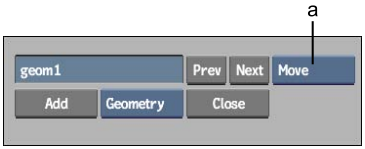
2 Enter a new name in the Name field.



Modifying Elements in the Schematic

Select a mode from the Edit Mode box while in Schematic view to move, parent, unparent, or delete elements. The selected mode remains in effect until you select a different mode. The modes in this box may be used in other views in the Wipe Editor.

You can perform some types of edits in the schematic using hot keys regardless of the edit mode.



(a) Edit Mode box

Move Mode

Use Move mode to move nodes in the schematic. Moving nodes in Schematic view has no effect on the relationships between elements, nor does it affect the position of the elements in the scene.

To move a node in Schematic view:

1 Select Move in the Edit Mode box.

2 Click the node you want to move and drag it to a new position.

To move an element and its children, press and hold **Alt** while dragging the parent.

Deleting Elements

You can delete elements from an entire scene or just remove them from an existing branch.

To delete an element from an entire scene:

1. Do one of the following:
   - To maintain the links between other nodes in the branch, select the node and **Shift**-drag to the bottom of the screen.
   - To break the links between other nodes in the branch, select Delete in the Edit Mode box and click the node corresponding to the element you want to delete, or select the node and drag to the bottom of the screen.
     The element is removed from the scene.

To remove an element from an existing branch:

1. Press **Ctrl+Alt** and drag the node away from the branch.
   The node is removed from the branch but remains in the schematic. Existing links between other nodes in the branch are maintained.

Parent and Cut Modes

There are two options in the Edit Mode box that you can use to change the relationship between nodes in the schematic:

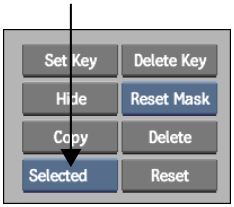
- Use Parent to make one element the parent of another element.
- Use Cut to undo the parent/child relationship between two elements.

Copying Elements

Use the Copy button to copy an element or a branch (element and its children).

To copy a single element or branch:

1. Go to Schematic view.
2. Select the element you want to copy.
3. Select an option from the Selection box.



Select:	To:
Selected	Copy the currently selected element. For example, this option copies a geometry node without copying its parent axis, or an axis without copying its surface.
Branch	Copy the selected element and all its children. To avoid copying elements by mistake, use the schematic to determine which elements you are copying.

NOTE The All Nodes option has no effect when copying. Use this option when hiding, deleting, or resetting elements.

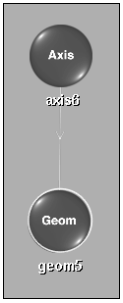
4 Click Copy.

Hiding Elements

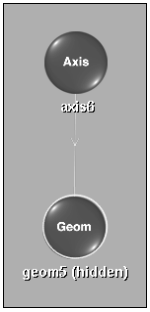
Use the Hide button to hide or unhide selected elements or branches. For example, when you are working on a specific surface, you may want to temporarily remove other elements from the scene without deleting them.

Hidden elements are marked "(hidden)" in Schematic view, and do not appear in the scene. For example, in the following *Before* schematic, both axis6 and

geom5 are shown in the scene. In the *After* schematic, geom5 is hidden and does not appear in the scene.



Before: geom5 is not hidden. It appears in the scene (below) as a wipe mask.



After: Geom5 is hidden. Its mask does not appear in the scene (below).

To hide a single element:

1. Go to Schematic view.
2. Select the element you want to hide.
3. Select Selected in the Selection box.
4. Click Hide.

To hide a branch:

1. Go to Schematic view.
2. Select the parent of the branch you want to hide.
3. Select Branch in the Selection box.

4 Click Hide.

To unhide an element or branch:

1 Select the hidden element or branch.

2 From the Selection box, select Branch if you are unhiding a branch or Selected if you are unhiding an element.

3 Click Hide.

Deleting Elements

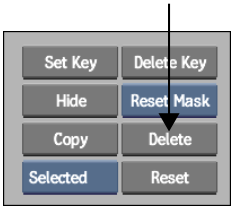
Use the Delete button to delete elements from the scene.

To delete elements:

1 Select an option from the Selection box.

Select:	To delete:
Selected	The currently selected element. For example, this option deletes a geometry node without deleting its parent axis, or an axis without deleting its surface.
Branch	The selected element and all its children. To avoid deleting elements by mistake, use Schematic view to determine which elements you are deleting.
All Nodes	All elements in the scene.

2 Click Delete.

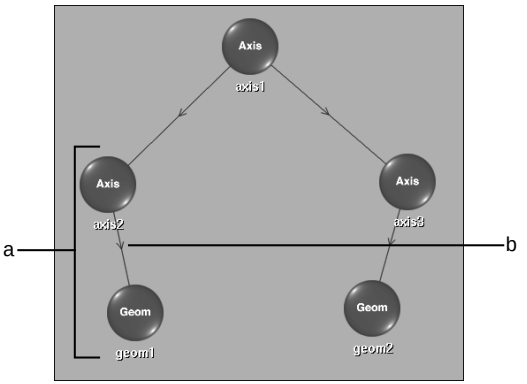


Creating Branches

With the Wipe Editor you can create complex animations where movements applied to one element are passed down to all connecting elements.

The relationship between elements is referred to as a *parent-to-child* relationship where the *parent* element passes its animations down to its child *element*. The structure of one parent and one or more child elements is referred to as a *branch*.

When you add certain elements to the scene, a parent-to-child relationship is created automatically. For example, when you add a surface to the scene, it is automatically parented by an axis.



(a) When you add a wipe mask to the scene, an axis is automatically added and made the parent of the Geom node. (b) An arrowed line indicates that axis2 is the parent of geom1.

In the schematic, arrowed lines between elements indicate parent-to-child relationships.

NOTE You can use the Parent and Cut modes in Perspective, Top, Side, or Front view, but it is easier to use these modes in Schematic view.

Adding a Parent Axis

You can add an axis to the scene by itself, and then make it the parent of another element. Use this method of parenting additional axes to create complex wipes.

For example, you can create two masks that change shape and size independently but are parented to another axis translation in the same direction at a constant rate.

To create a branch:

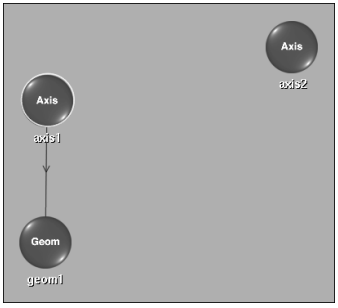
1 Add an axis (axis2) to the scene.

2 In the World View box, select Schematic view. The Schematic view should be similar to the *Before* figure in step 4.

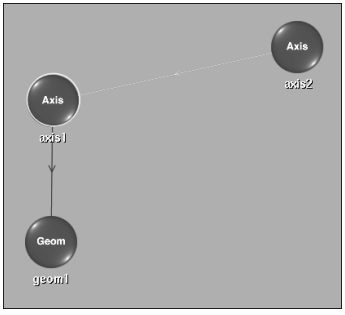
3 Select Parent in the Edit Mode box.

4 Drag the cursor from axis2 to axis1. Axis2 becomes the parent of axis1, as shown in the *After* figure.

TIP To add a node between two linked nodes, hold **Shift** and drag the node on top of the link. To link one node to another, select the node and **Shift**-drag so that it touches the other node. You can perform these actions regardless of the edit mode.



Before: The schematic shows axis1 as the parent of geom1.



After: Axis2 is made the parent of Axis1 (and geom1) using Parent mode.

Any transformations applied to axis2 are applied to axis1 and its surface (image1). If axis1 has any transformations, they are added to the transformations from axis2. For example, if axis2 is set to 500, 100, 0 and axis1 is set to -50, 20, -30, the positions are accumulated and applied to the surface. In this case, image1 is positioned at 450, 120, -30.

Removing Branches

Use Cut or Parent mode to undo the relationship between elements.

To cut a parent-to-child relationship:

1 Select Cut or Parent in the Edit Mode box.

2 Go to Schematic view.

3 Drag the cursor across the arrowed line that joins the two nodes.

The connecting line is deleted, indicating that the relationship between the two nodes has been undone.

TIP You can also hold **Alt**+**Ctrl** and drag the object away from the link to remove an object between two linked nodes.

Using Templates for SMPTE Wipes

Templates are included with the preset SMPTE wipes that come with your application.

If you modify the start position or increase the duration for a SMPTE wipe, the interpolation for the transition may not be as even as it should be. For example, if you load a preset SMPTE pattern and change its default start position by a large number of frames, the transition may appear to jump at the last frame. Or, if you increase the duration of the transition by a large number of frames, the interpolation may also appear to jump between some frames. Use Adjust to fix this problem.

Adjusting a Preset SMPTE Wipe

If you modify the start position for the wipe, you can adjust the interpolation for the transition.

To adjust a preset SMPTE wipe:

1 Select the SMPTE wipe transition icon on the timeline and display its quick menu.

(a) Alignment box (b) Duration field (c) SMPTE Pattern Number field (d) Global Axis box

2 Click Pattern, and then select a wipe pattern in the file browser.

3 Move the positioner to the first frame of the transition.

4 Select Position from the Global Axis box, and then change the start position of the transition of the wipe using the X and Y Position fields.

If you scrub the transition, you should see the wipe make a large jump at the last frame.

5 If the Adjust button is not greyed out, enable it.

NOTE If the Adjust button is greyed out, a template does not exist for the wipe and you must select a different pattern in order to use the Adjust feature.

The jump in the wipe should be gone and the interpolation for the wipe should be fairly even.

Adjusting a Custom Wipe

With custom wipes, you may need to create a template if:

- You intend to change the default start position for the wipe by using the X and Y Position fields in the Wipe quick menu.
- You intend to increase the duration of the transition by a large amount.
- You intend to use the custom wipe often.
- The custom wipe has no tracking data.

When you create a template, you must specify the default start position and then define an End Bias for all nine possible end positions. Once you create the template, you must enable the blue light on the Template button to make the Adjust option available.

To set the start position for a custom wipe:

1 Create your wipe. See Creating Customized Wipes with Garbage Masks on page 148.

2 Select the transition on the timeline and click Pattern.

The file browser appears.

3 Select Custom in the SMPTE wipes box to view saved custom transitions.

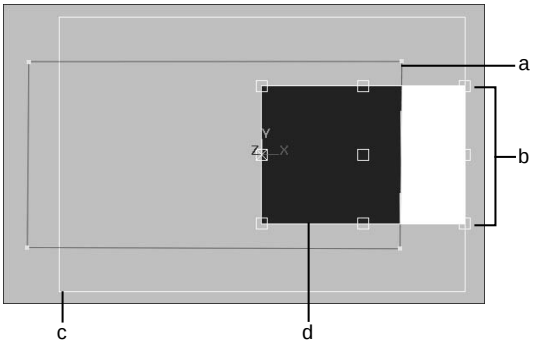
4 Select the custom transition you want to use.

Your custom wipe is applied to the transition icon on the timeline.

5 Click E beside the Wipe button to enter the Wipe Editor.

6 Click Template to display the Template menu.

7 Enable the Template Mode button to view the template in the image window.



(a) Mask (b) Default start positions (c) Maximum Mask size box (d) Minimum Mask size box

8 Click Start Position.

9 Set the default start position by enabling a Start Position button, for example, Top Left.

To set the end bias for a transition:

1 Click End Bias.

The positioner goes to the last frame of the wipe.

2 Set the value in the currently enabled End Bias box to 0. (The currently enabled End Bias box should be the same as the default start position.)

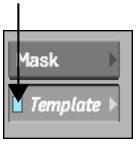
On the last frame, the point closest to the centre of the axis should be just outside the image. This ensures that the mask fully covers the incoming image. If it does not, click the Mask button and proportionately increase the scale of the mask.

3 Set an End Bias for every End Bias position:

- Click each End Bias box and drag the value until the mask is just large enough to encompass the entire image.

To adjust the custom wipe:

1 Enable Template.



2 Exit the Wipe Editor.

3 Change the X and Y position for the wipe in the Wipe quick menu, or increase the duration of the transition.

4 Scrub the transition.

Notice how the interpolation causes the last frame of the wipe to jump.

5 Enable Adjust in the Wipe quick menu.

6 The interpolation of the transition should be much smoother.

Creating an Axis Transition

You can now create axis transitions from the Batch and Player timelines.

When you create an Axis transition, you modify the scaling, rotation, and position for the axis of one image to create the transition effect.

With an Axis transition, you can quickly swap the incoming and outgoing sources to reverse the animation. Swapping sources accommodates applications such as Apple® Final Cut Pro® and Avid® products, where the effect is applied to the outgoing source rather than the incoming one.

The Axis Transition menu is the same menu as the Axis Soft Effect menu, allowing you to add 3D text, and camera motion, as well as track any element within the image.

NOTE There is a palette of predefined Axis transitions located in */usr/discreet/<product name>/setups_edm*. These setups fit the duration of the selected Axis transition.

To create an Axis transition:

1 Select a cut and then click Axis.

The Axis transition icon appears.

2 Display the Axis Transition quick menu and create the effect.

3 If you want more control over the transition, enter the Axis Editor by clicking E beside the Axis button. See Creating Axis Soft Effects on page 114.

To reverse the animation using the swap source option:

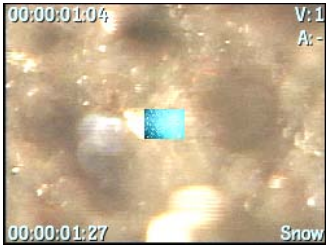
1 Select a cut point between two video elements.

2 Apply a soft Axis transition.

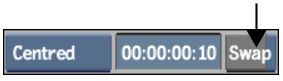
3 Create the transition. For example:

- At the first frame of the transition, set the Scale X and Y values to 0.
- At the last frame of the transition, set the Scale X and Y values to 100.

4 Play the transition.



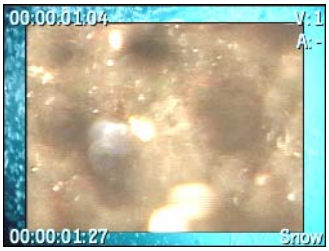
5 In the Axis Transition quick menu, enable Swap.



NOTE The Swap button in the Axis Transition Editor is called Swap Sources.

6 Play the transition again.

The incoming and outgoing sources are switched and the animation is reversed.



Copying Transitions

A transition can be copied to another cut on the Batch or Player timeline.

In Batch, the icon can also be lifted off the timeline and dragged to the Batch schematic. The resulting proxy can then be pasted onto a cut in the timeline.

To copy a transition using the Batch schematic:

1. Press **Alt+Shift** and drag the transition icon to the Batch schematic.
2. Set the clip where you want to copy the transition as the record clip and the dissolve in the schematic as the source clip.
3. Go to the cut in the record timeline where you want to copy the transition.
4. Press **I**.

To copy a transition to another cut on the timeline:

1. Press **Alt+Shift** and drag the icon to the other cut.

To remove a transition from the timeline:

1. Select the transition on the timeline.
2. Do one of the following:
   - Drag the icon off the timeline to the bottom of the screen and release the cursor.
   - Press **Delete** (or **Shift+Delete** for multiple tracks).

Effects

10

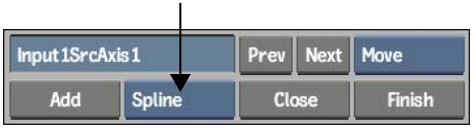
Topics in this chapter:

Drawing Splines

New for this release: You can draw single-point or open splines around the features you want to warp or morph at the beginning of the effect.

To draw a single-point or open spline:

1. Go to the frame where you want the effect to begin.
2. Select Spline from the Node box.



3. If you are creating a morph, select the input where you want to draw the spline. To add a spline to Input1, for example, select Input 1 in the Morph menu's Input box.

NOTE When creating a morph, a common strategy is to create the spline on just one input, and then copy it to the other. This has important advantages over creating splines on both inputs independently.

4 Click Add (or press **N**).

5 Do any of the following:

- Click to add vertices. If you are drawing a single-point spline, proceed to the next step.
- **Shift**-drag to add freehand segments to the spline. Vertices are added where you drag, and appear after you release **Shift**. You can then use the Lasso Fit parameter to increase or decrease the number of vertices that define the freehand segments of the spline. If you add or delete vertices on the spline, or exit, the influence of the Lasso Fit parameter on the number of vertices is lost.

6 To finish the spline, do one of the following:

- Click Finish.
- Press **F**.
- Click the last vertex.

When the spline is finished, its vertices and tangents can then be edited.

If you want to view the nodes that are added with each new spline, select DistortSchm from the View box or press the ~ key. You can use Distort's schematic to access a menu, create parent-child relationships between splines and axes, delete splines, link Input1 and Input2 splines to create morphs, as well as perform other organizational tasks.

Action

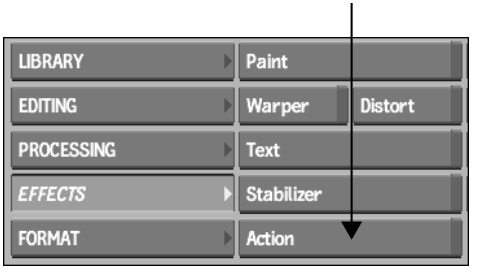
Topics in this chapter:

Accessing the Action Module

When you access the Action module, you load the front and matte clip for the first media and the back clip used for the background. You load these clips in the order front, back, then matte. You now have two extra options in the Input Mode box when entering Action: None and Clear All (see step 3 in the following procedure).

To access Action:

1. In the Main menu, click Effects.
2. In the Effects menu, click Action.



3 Select an option from the Input Mode box.

Select:	**To:**
Front Back Matte	Select source clips from the Desktop. The clips are selected in the order front, back, and then matte.
MultiTrack	Select a multitrack clip. The first frame of the first segment is used to fill the beginning, and the last frame of the last segment is used to fill the end.
MultiTrack Fill Gap	Select a multitrack clip. Each gap is filled with black frames.
MultiTrack SelfKey	Select a multitrack clip. The last track is loaded into the background and the other tracks are loaded as fronts. The mattes are created based on each front. Gaps are filled with the last frame from the preceding segment.
MultiTrack Self Gap	Select a multitrack clip with gaps. Each gap is filled with the last frame from the preceding segment. Mattes are created based on each front.
None	Enter Action with no media or back clip. From the Resolution menu that appears, choose a resolution, width, height, pixel aspect ratio, bit depth, scan mode, and frame depth. If Action already contains a setup, entering with the None option keeps the objects present in the scene and creates empty media placeholders in the Media list for each object. Press the **Alt** key when you click the Action button to automatically select the None option. Press **Alt** when you select your destination to open Action with all media and nodes deleted and all parameters (except for resolution) set to default.

Select:	To:
Clear All	To reset all parameters (except for resolution), delete all nodes and media, and prompt you to select front, back, and matte clips. Press the **Ctrl+Alt** key when you click the Action button to automatically select the Clear All option.

Although you can use differing resolutions per media, you cannot specify clips of different resolutions to act as the front and matte clip of media (except for 10-bit, 12-bit, and 12-bit unpacked clips, which are interchangeable). An error appears in the message bar if the specified clips are not able to be loaded to the same media.

TIP To standardize some of your clip resolutions, you can resize them before entering Action. See the Resize chapter in the Help.

4 Select the front, back, and matte clip or the multitrack video clip. If you selected None from the Input Mode box, proceed to the next step.

If you are selecting clips and not a multitrack clip, you can press **Ctrl** to load multiple fronts and mattes. The **Ctrl** key changes the order of clips to front and matte of media 1, front and matte of media 2, and so on. The back clip and destination are selected after the last media is filled or when the **Ctrl** key is released.

TIP Pay attention to the cursor colours to know which clips you are selecting (front = red cursor, matte = blue cursor, background = green cursor, and destination = white cursor).

5 Select the destination.

The Action module appears and the selected clips or tracks are loaded into the appropriate media.

The composite of the front, matte, and back clips appear in the image window and their names are listed in the Media list. The Total Frames field defaults to the length of the longest clip loaded.

Using Floating Point Images

You can use 16-bit floating point OpenEXR clips in Action. You can use clips of different resolutions on separate media, but you cannot specify clips of different resolutions to act as the front and matte clip of a specific media. Here

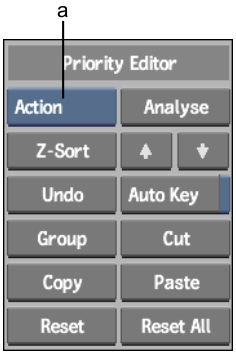
are some things to keep in mind when working with 16-bit floating point clips:

- You are not able to enter the Colour Corrector, Keyer, or Stabilizer from Action with a 16-bit floating point clip. An error appears in the Action message bar, and the module does not open.
- All other Media List effects, such as blurring, cropping, and slipping are supported for 16-bit floating point clips, as are all Action objects.
- Action operations and settings that are supported with 16-bit floating point clips include 3d tracking, textures, displacement mapping, motion blur, blending modes, anti-aliasing, and depth of field.
- You can enable or disable colour clamping when working with 16-bit floating point clips in Action. When colour clamping is disabled, a light's intensity can be set to brighter than 100% or darker than 0%, for example. The Colour Clamping button is located in the Setup menu's Rendering section.
- You can set the output resolution for your Action composite to 16-bit fp in the Frame Depth box located in the Setup menu's Resolution section.
- You are not able to burn 16-bit floating point clips. An error appears in the Action message bar.

Reordering Surfaces with Re-entry

You can change the drawing order of the re-entered sources of DVE Layer Objects or nodes parented under re-entered objects using the DVE Re-entry Selection box in the Priority Editor.

To access the Priority Editor, swipe the bar at the bottom of the Media or Object menu.



(a) DVE Re-entry Selection box

Depending on how your DVE Layer object is re-entered, you can choose to display the priority of the main scene (Action), or the re-entered Front or Matte source.

Selecting Objects and Populating Menu Tabs

New for this release: You can now easily access your result camera in the Object menu with a special orange Camera tab.

Before you can edit or animate an object, you must select it. To select an object in the schematic, click the node representing the object. You can also use the Prev and Next buttons to select the previous or next object.

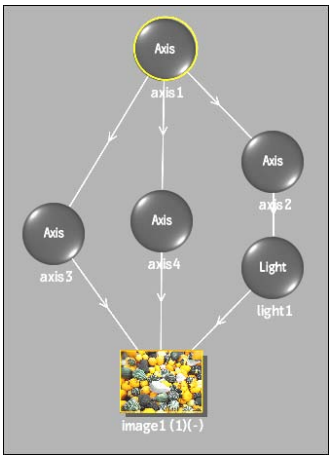
Depending on what type of object is selected, the tabs in the Object menu are populated based on different rules, as illustrated in the following examples.

Axis selected

The Axis menu of the selected axis appears on the left side of the Object menu, and a limited number of the children objects' menus appear on the right side of the Object menu. The children objects are identified by scanning the hierarchy of the schematic from top-to-bottom (starting at the selected axis). The hierarchical scanning stops for any given branch when a non-axis object is encountered.

The order of tabs is determined on a per branch basis; that is, all of the tabs of one branch are listed before moving to another branch, starting with the highest levels in the parenting hierarchy (lowest index levels).

For example, in the following schematic, Axis 1 is selected.



The tabs in the Object menu appear as follows. The image1 tab appears in light blue to signify that multiple objects are connected down to it. Use the tabs to switch between menus within the Object menu. The Camera tab appears in orange as the first tab on the right side of the Object menu, and is exempt from the tab population rules.

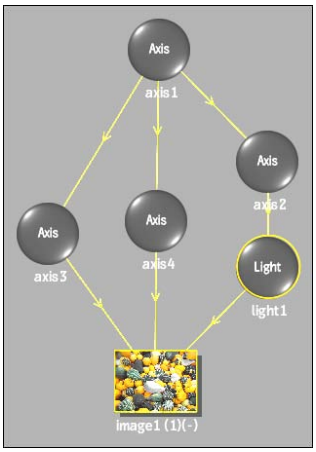
NOTE If there are more than five tabs on either side of the Object menu, use the arrows beside the tab names to navigate to the desired tab.

Other object selected (no "axis attributes")

These objects include generators, bouncers, deformations, surfaces, textures, shadows, geometries, and 3D text. When one of these objects is selected in the schematic, an ascending (bottom-to-top) scanning of branches is performed. The hierarchical scanning stops for any given branch when an axis or object with axis attributes is encountered.

The menu of the selected object appears on the right side of the Object menu, and a limited number of the parent objects' menus appear on the left side of the Object menu.

For example, in the following schematic, Image 1 is selected.

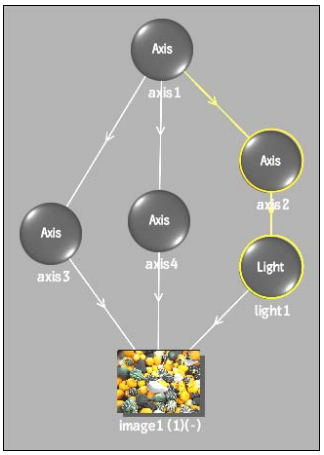


The tabs in the Object menu appear as follows. The image1 tab appears in light blue to signify that multiple objects are connected down to it. Use the tabs to switch between menus within the Object menu. The Camera tab appears in orange as the first tab on the right side of the Object menu, and is exempt from the tab population rules.

Object with "axis attributes" selected

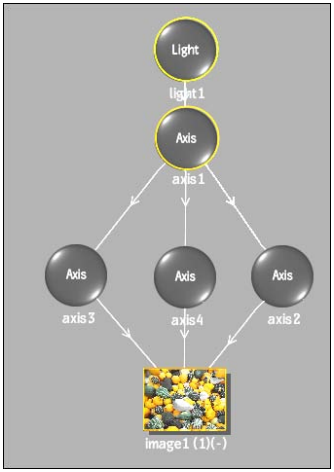
These types of objects include lights, animators, projectors, and cameras. These objects trigger a different scanning behaviour depending on their position within the schematic hierarchy. If the selected object is the first of its branch (top of the hierarchy), it inherits the tab population rules of an axis, that is, descending branch scanning. If the selected object is not the top object of its branch, it inherits the tab population rules of other objects, that is, ascending branch scanning.

For example, in the following schematic, light 1 is selected.



Since Light 1 is not the top object in its branch, the tabs in the Object menu appear as follows.

In the following schematic, light 1 is moved to the top of the branch.



The tabs in the Object menu appear as follows. The image1 tab appears in light blue to signify that multiple objects are connected down to it. Use the tabs to switch between menus within the Object menu.

NOTE The Camera tab appears in orange as the first tab on the right side of the Object menu, and is exempt from the tab population rules. If a camera node is selected in the schematic, the special Camera tab does not appear, and the normal tab population rules apply.

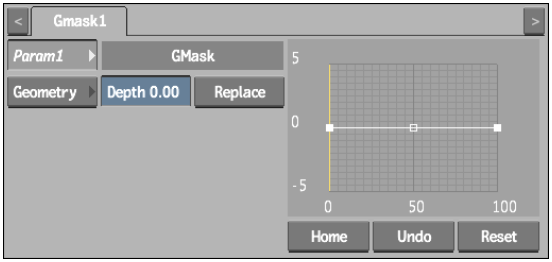
Using Garbage Masks as 3D Geometry

You can now import saved garbage mask setups into Action as 3D models.

Garbage mask files are created through the Keyer or by the GMask node in Batch. You can import a saved garbage mask setup into Action, and specify 3D properties, such as depth and geometry settings. Softness and offset settings in the imported garbage mask are not brought into Action. Any holes in the imported garbage mask are also holes in the 3D geometry. If your garbage mask is animated, only the first shape is imported into Action. For help creating garbage masks, see the Garbage Mask chapter in the Help.

TIP A library of preset garbage mask setups is available. To load a preset garbage mask, navigate to the */usr/discreet/<product home>/gmask* directory when importing your 3D model.

Once you import a garbage mask as a 3D geometry into Action, use the GMask menu to extrude the garbage mask.



Depth field Extrudes the garbage mask, making it three dimensional. Use the depth setting in conjunction with the Axis controls to manipulate the garbage mask.

Replace button Applies changes to the garbage mask geometry.

Bevel curve Adds a bevelled edge to your garbage mask geometry. Use the options in the Edit Mode box to add, select, delete, or move keyframes on the Bevel curve. The Bevel curve behaves in much the same way as an animation curve in the Channel Editor.

Home button Resets the Bevel curve viewer to show the whole curve.

Undo button Undoes Bevel curve operations.

Reset button Resets the Bevel curve.

Click the Geometry tab to access the Geometry menu to apply any of the geometry settings to your garbage mask.

Auto 3D Tracking

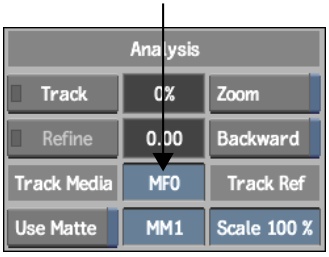
The Auto 3D Tracker introduces a number of enhancements for this release, including algorithm optimizations to improve overall precision. See the following sections for specific new features.

The first step in 3D auto tracking is to perform your initial tracking. Depending on the result, you can also fine-tune the track.

To create a 3D auto track:

1 From the 3D Tracker option box, select Auto.

2 In the Track Media field, specify the media number of the front clip you want to track. A value of 0 indicates that the Back clip is tracked.



3 Enable Use Matte and specify the Matte media if you want to use a matte to delimit the tracking results. For example, in an image sequence of a

busy street, you can create a matte of moving elements (such as cars and people) to isolate this area from the analysis.

White areas of the matte are considered for calculating the solution; black areas are ignored (unless you selected Matte Invert from the Matte Clip box).

NOTE Use a matte made from real frames. Keyer or Gmask outputs do not work as a matte for 3D tracking.

4 If needed, set Camera and Film Back options. See Setting Camera Properties for 3D Auto Tracking on page 187.

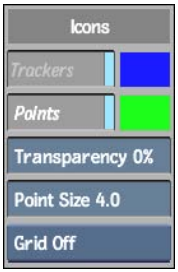
5 If needed, select Analysis options.

Enable:	To:
Zoom	Calculate the zoom value of the reconstructed camera for each frame (assuming the camera that shot the tracked clip has a variable zoom value). By default, Zoom is disabled (that is, the track analyses with a fixed zoom).
Backward	Track the image sequence backward after the forward tracking has completed. This option takes longer, but you may get better results.

6 If needed, adjust the scale of the trackers.

Smaller trackers can speed up the calculation, while larger trackers make the analysis more robust with regard to image noise and variations. A general rule is to increase the scale of the trackers when tracking high-resolution footage (2K or larger) that contains more noise or less sharpness.

7 From the Icons section, select tracker display options.

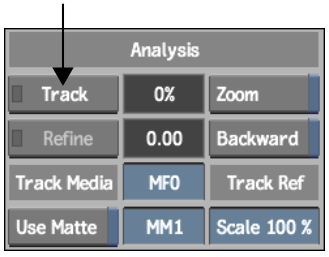


Enable:	To display:
Trackers	2D tracks. Use the colour pot to select the colour of the tracks.
Points	3D points. Use the colour pot to select the colour of the points. The points option is also available in the Display section of the Setup menu (or with the hot key **Alt+D**), so that you can enable the display of 3D points while you are working in other Action menus. 3D points are viewable in 3D in all Camera views in Action (Side, Front, Top, or Camera) to help you position objects in the reconstructed scene.

You can also adjust the transparency of the trackers and points and the size of the points in your image.

Use the Grid box to display a grid so that you can position objects in the scene more accurately. The same Grid box is available in the Display section of the Setup menu.

8 Click Track. Tracking occurs in the background, allowing you to continue working while tracking.



You can see a progress indicator beside the Track button. You can interrupt the analysis and resume it by clicking Track again. After tracking has completed and you press Confirm, the Track button changes to Calibrate, and you can see the 2D tracks (the blue squares in the following example) and 3D points (green crosses) in your image, if you chose to display them.

A camera called *Camera_3dt_sync* is also generated when an analysis is performed. This camera synchronizes to the results of your auto 3D tracking, and any further changes you make to the 3D track are reflected in this camera.

NOTE If you reset the 3D tracker settings, the synchronized camera becomes a regular Action camera.

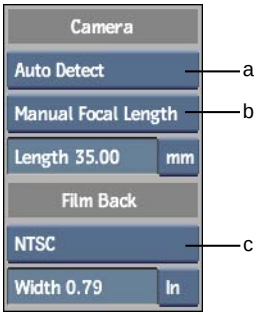
Image courtesy of Behavior Communications Inc.

9 If you are satisfied with the results of the tracking analysis, proceed to Defining the Auto Track Ground Plane on page 191 and Converting the 3D Auto Tracking Results on page 192. If you want to tweak your track results, see Fine-tuning the 3D Auto Track on page 189.

Setting Camera Properties for 3D Auto Tracking

Before analysing the 3D motion, you can define your camera properties. The camera represents the device used to acquire the sequence of images you are tracking. For each camera parameter, you can choose to let the auto 3D tracker calculate the value automatically or you can specify the value yourself. This information can help the auto 3D tracker calculate better results.

NOTE You can set the camera properties before initial tracking, or after intial tracking when calibrating or refining the track.



(a) Camera Type box (b) Focal Length box (c) Film Back box

The Camera and Film Back controls are described as follows.

Camera Type box Select the type of camera used to shoot the scene.

Select:	To:
Free 3D Motion	Track a clip shot with a free-moving camera.
Pan and Tilt	Track a rotating clip shot with a camera on a tripod.
Auto Detect	Automatically detect the camera type and track accordingly (default value).

Focal Length box If you know the properties of the camera that shot the scene, you can switch to Manual Focal Length, and set the length and film back settings.

NOTE Before initial tracking, if Zoom is enabled, Auto Focal Length is the only choice. In this case, you can switch to Manual Focal Length only after initial tracking to clean up the FOV animation before refining or calibrating.

Length field Enter the focal length.

Focal Length Units box Specify inches or millimeters to be used as the length.

Film Back box Select the film back size preset of the camera that shot the scene.

Width field Enter the width of the film back.

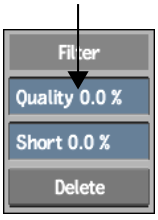
Width Units box Specify inches or millimeters to be used as the width.

Fine-tuning the 3D Auto Track

If the initial auto tracking does not give desired results, you can use some or all of the Filter options to calibrate and refine your track analysis. These procedures are not necessarily required, but depending on your image and the initial tracking, may give better tracking results.

To fine-tune the 3D auto track:

1 Use the Quality slider to adjust the number of good trackers kept. The higher the quality setting, more low quality trackers are selected, such as trackers that drift off their initial reference point. Click Delete to delete the selected trackers.



Trackers of lower quality may hinder the accuracy of the camera tracking.

NOTE After you have made a change that requires the 3D tracking analysis to be refined or calibrated, notice that the LED next to the Refine and Calibrate buttons turns yellow. This signifies that a Refine or Calibrate is required, but you do not have to perform it until you have completed your tracker selections.

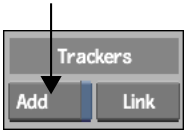
2 Adjust the Short slider to select short duration trackers, that is, trackers that only track a feature for a few frames. Click Delete to delete the selected trackers, leaving the longer duration trackers intact.

3 You can manually select and delete trackers from the image that you feel are not tracking properly. Do one of the following:

- To select an individual tracker, click the tracker, and then click Delete.
- To select multiple trackers in the same area, **Ctrl**-drag a selection box over a series of trackers, and then click Delete.
- To add another tracker to a multiple selection, **Shift**-click the tracker, and the click Delete.

- With Delete mode selected in the Edit Mode box, select trackers in the image.

4 If you want to add a tracker manually, enable Add and click an area of the image to track from this area automatically.



A tracker may or may not be added, depending on the ability of the track analysis algorithm to find an appropriate feature to track in this area.

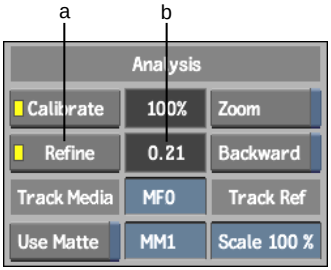
5 If the analysis creates different trackers that refer to the same feature in the image, you can link these trackers. Press **Shift** and select two or more trackers from the image, and then click Link.

For example, an element leaving the scene at frame 28 and returning at frame 50 may result in two different trackers attached to the same element in the image. In this case, select the trackers and click Link to teach the algorithm that these trackers are the same.

To refine or calibrate the 3D track:

1 Depending on the changes you have made, you can choose to refine or calibrate the 3D track. Do one or both of the following:

- Click Refine.



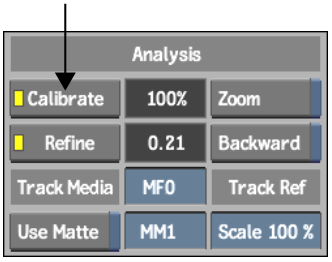
(a) Refine button (b) Pixel Error value

The track analysis uses the current results as a starting point, and refines from this point.

Click Refine again to stop the process once an acceptable pixel error value is reached. The pixel error value is a representation of the distance of the 2D tracks from the repositioned 3D points.

TIP The refine process is footage-dependant, so your acceptable pixel error value may change depending on what is tracking. Since the refine process continues until you stop it, as a general rule, if the pixel error value does not change for a length of time (for example, 30 seconds), you can stop the refine process. The lower the pixel error value, the more accurate the reconstructed track is.

- Click Calibrate.



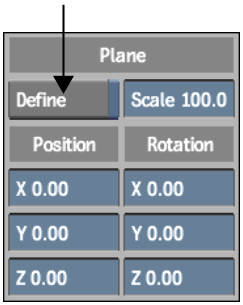
NOTE The calibrate operation deletes all previous points and starts over based on the new information. Depending on your footage, and how many trackers you added, deleted, or linked, multiple calibrations may yield different results.

Defining the Auto Track Ground Plane

Although it is not mandatory to define a ground plane in your image, it helps orient the reconstruction of the cameras.

To define the auto track ground plane:

1 Enable Define.



NOTE If you selected Pan and Tilt as the camera type (or if the Auto Detect switched to Pan and Tilt) the Plane Define button is not available. The rest of the settings in this group are still available, but only for orientation purposes.

2 Select a minimum of three points in the image that represent the plane of the X/Z axes, such as the ground, a table, or any flat surface.

The selected points appear as red squares with white crosses.

TIP You may want to disable the tracker temporarily and point display options (or raise the transparency level) to help you find and select the plane points. You can also change the plane display size from the Icons section.

3 Use the Position and Rotation controls to define the orientation of the ground plane.

4 Use the Scale field to specify the scale of the scene.

5 Disable Define.

The plane is displayed as a red grid.

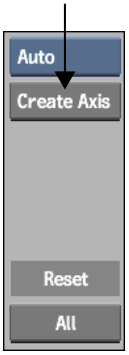
Converting the 3D Auto Tracking Results

When you are satisfied with the results of the 3D auto tracking analysis, you can convert the selected reconstructed points to actual axes in your scene.

To create axes from the 3D tracking results:

1 Select the points in the image that you want converted to axes. Selected points are displayed as green squares with red crosses.

2 Click Create Axis.



Selected points are converted to axes with a parent Axis called *Points_3dt_sync*. The axes synchronize to the results of your auto 3D tracking, and any further changes you make to the 3D track are reflected in these axes.

NOTE If you want to apply settings manually to a synchronized axis, change its name so that it does not update automatically when 3D Track settings are changed. If you reset the 3D Track settings, the synchronized axes become regular Action axes.

3 Exit the 3D Track menu. Use the created axes to view the reconstructed camera motion.

Remember that it is the camera that is moving and not the points in the clip. You can attach objects such as surfaces, 3D text, and 3D models to the new axes to help position them in 3D space.

You can export the newly created camera, as well as the axes and points created from the 3D tracker analysis, to *.fbx* format for use in other 3D applications.

Batch Paint

12

Topics in this chapter:

Using Sources

Sources are additional image data that can be used in Reveal paint operations and displayed as an overlay on the result or output matte. You can scale, rotate, and offset a source. Any transformations applied to a source will be displayed in Reveal paint strokes.

In the Batch Paint menu, all sources appear in the Sources list. The Sources list allows you to select sources to be hidden, cleared, or displayed as an overlay. The first entry in the list is the front clip and matte clip.

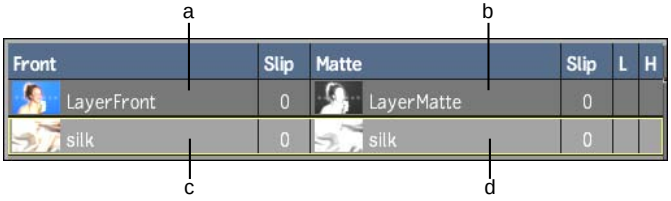
In the Batch schematic, source clips are connected to a Paint node through a source node, which accepts a source front and source matte input.

A source can be a clip or the result of any Batch process, and can include a front and/or matte clip. You can add a source node from the Batch menu or the Batch schematic.

If a clip with frames that are missing media is attached to a source node, the Paint node processes incoming frames set to No Media as transparent. Strokes

created with the source are stored, although they are not visible on the canvas at frames with No Media input. See .

When adding a source input, it is recommended that you use clips as input, or cache the node closest to the source node instead of parenting a large Batch tree to a source node. This speeds up processing when changing frames, making for a more interactive experience.



(a) Front (b) Matte (c) Source front (d) Source matte

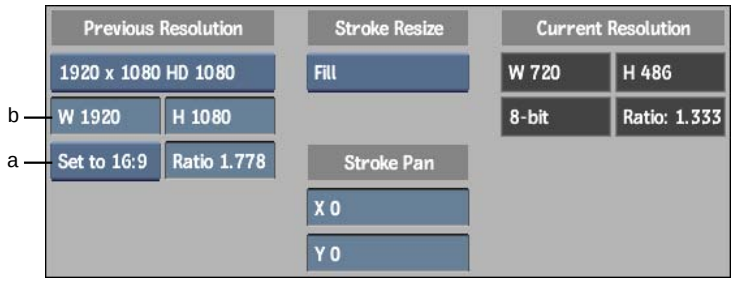
When you delete a source, it is removed from the Sources list, along with its associated strokes. When you clear a source, it remains in the Sources list, but all strokes are removed.

Scaling Brush Strokes

You can set scaling options for brush strokes associated with the Paint node. By specifying the previous resolution of an input clip before it was resized, the brush strokes applied to the clip can also be scaled based on these settings.

To display the stroke scaling options:

1. Double-click the Paint node.
2. Click Node Setup.



(a) Aspect Ratio Presets box (b) Project Resolution Presets box

Project Resolution Presets box Provides preset aspect ratio options and an option to use a custom resolution. Set this option to indicate the previous resolution of the clip.

Width and Height fields Displays the frame width and height of the selected resolution preset. If you select Custom from the Project Resolution Presets box, use these fields to enter the values you want to use.

Aspect Ratio Presets box Provides standard frame aspect ratio options and a w:h option to use a ratio based on the values entered in the Width and Height fields. Also provides a Custom option so you can enter a frame aspect ratio in the Ratio field.

Ratio field Displays the original aspect ratio of the clip. When Ratio is set to Custom, this field becomes active so that you can enter a custom frame aspect ratio.

Fit Method box Select a fit method option to be applied to the clip.

Select:	To:
Centre/Crop	Center the strokes over the destination frame. If the clip at the original resolution is larger than the destination, the strokes are cropped.
Crop Edges	Fit one edge of the original clip input into the destination frame without stretching or squashing the frame. Excess parts of the original clip after resizing are cropped.
Fill	Fit the original stroke width and height into the destination frame. If the clip at its original resolution and destination frames do not have the same aspect ratio, the brush strokes can become distorted.
Letterbox	Fit the original stroke to the destination frame without squashing or stretching it, and without cropping the source.

Keep Aspect button Enable to preserve the aspect ratio of non-square pixels. This button only appears if you selected Crop Edges or Letterbox in the Fit Method box.

Stroke Pan fields Enter an X and Y value to offset existing strokes on the result. You can also reposition strokes by holding down **Ctrl**+**Shift** and panning the image.

Current Resolution fields Displays details of the current resolution of the clip.